IPART
New South Wales

Independent Pricing and Regulatory Tribunal

Prices for wholesale water and sewerage services

Sydney Water Corporation and
Hunter Water Corporation

Water — Draft Report
November 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 7 December 2016.

We would prefer to receive them electronically via our online submission form <https://www.ipart.nsw.gov.au/Home/Contact-Us/Make-a-Submission>.

You can also send comments by mail to:

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1 Executive Summary

The Independent Pricing and Regulatory Tribunal of NSW (IPART) is currently reviewing the prices Sydney Water Corporation (Sydney Water) and Hunter Water Corporation (Hunter Water) can charge for wholesale water and sewerage services.[1,2] These are services purchased by wholesale customers for the purpose of supplying water and/or sewerage services to end-use (or 'retail') customers. These wholesale customers are private-sector providers licensed under the *Water Industry Competition Act 2006* (the WIC Act).

This is our first review of prices for wholesale water and sewerage services, as the emergence of competition in the NSW water market is relatively new. By encouraging innovation, competition can deliver benefits to water and sewerage customers. Given the early stage of market development, we are seeking to encourage entry where this will ultimately deliver benefits to customers.

In our consultations to date, some stakeholders have suggested a broader review of the NSW water industry may be required to achieve this objective. We recognise that our regulation of wholesale prices is just one part of the regulatory framework for the industry. However, given that a broader review is not underway, and it is not possible to foresee with certainty how the water and sewerage market will evolve, we have focused our review on considering the current market, including the current policy settings and legislative frameworks.

We consider that this price review and a broader industry review are not mutually exclusive. We acknowledge that some issues may warrant further consideration in future wholesale price reviews or in a future broader review, and that policy settings may change in the future.

This Draft Report and the Draft Determinations set out our draft decisions on pricing Sydney Water's and Hunter Water's wholesale services. We invite submissions on all our draft decisions, which we will consider before making our final decisions and releasing our Final Report and Final Determinations.

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

2 We also regulate the water and sewerage prices of the Central Coast Council. We will consider the potential regulation of prices for wholesale water and sewerage services at our next review of the Council's prices (due to commence mid 2017).

1.1 Overview of our draft decisions

The sections below outline our draft decisions on the nature of wholesale services and customers (to identify the services and customers that are within the scope of this price review), how we will implement our wholesale pricing decisions, the wholesale services for which we have set prices, and the pricing approach for each of these services.

1.1.1 Nature of wholesale services and customers

As this is our first review of wholesale prices, we have considered the nature of wholesale services and customers. This is to identify the services and customers that are within the scope of this price review. It is particularly important to distinguish between the services to be considered in this review and other services provided by Sydney Water and Hunter Water for which we already set prices (ie, water and sewerage services provided to retail or 'end-use' customers). In defining the services considered in this review, we are not seeking to limit the types of services Sydney Water and Hunter Water can provide to wholesale customers or that may be provided by wholesale customers in future as the market evolves.

For this review, we consider that a 'wholesale service' is a service purchased from Sydney Water or Hunter Water that is used by the customer to ultimately compete with the wholesale service provider for end-use customers and has the following characteristics:

- The service purchased by the wholesale customer is a monopoly service.
- The service purchased by the wholesale customer is used to provide its end-use customers with the same service or a close substitute to one provided by Sydney Water or Hunter Water (the wholesale service provider). In effect, this means wholesale services:
  - are limited to those used to supply end-use customers with services that Sydney Water or Hunter Water could provide within the limits of their operating licences
  - can include some transformed services (eg, a wholesale drinking water service to top up a recycled water scheme to provide recycled water).
- The service purchased by the wholesale customer is used (by the wholesale customer or another party that it supplies) to supply end-use customers under a retail supplier's licence under the WIC Act.

1.1.2 We have decided to set system-wide prices for some services

We have considered three broad options to implement our wholesale pricing decisions for this review:

- determining system-wide, average or typical wholesale prices
- determining a methodology that wholesale service providers must apply to calculate scheme-specific wholesale prices
- determining scheme-specific wholesale prices.

In the Discussion Paper we stated that, in considering these implementation options, we would take account of the following factors:

- the ability of system wide prices to reflect scheme-specific characteristics and facilitate efficient entry to the market, and
- administrative costs and feasibility.

Our draft decision is to set system-wide prices for new wholesale arrangements – ie, our determined prices would not apply to existing services. Under our draft determinations, a wholesale service is an 'existing service' if, before commencement of the determination (1 March 2017):

- Sydney Water or Hunter Water has commenced supplying the wholesale service to a wholesale customer, and
- the price to be levied by Sydney Water or Hunter Water for that service (under an agreement with the wholesale customer) is different to the price set out in IPART's draft wholesale pricing determinations.

For existing and new wholesale arrangements, wholesale service providers or customers would have the option of seeking a scheme-specific price determination by IPART or, if both parties agree, entering into unregulated pricing agreements. For example:

- **For a new scheme**, parties may seek a scheme-specific determination by IPART, if either party considers the system-wide prices set by IPART do not reflect the characteristics of the scheme and they cannot reach agreement on price.
- **For an existing scheme**, a wholesale customer or service provider may seek a scheme-specific determination by IPART if they cannot reach agreement on price.

By setting system-wide prices for new schemes, we have reduced the need for potentially costly scheme-specific reviews, but have provided the option for parties to seek a scheme-specific review where the system-wide determination does not reflect scheme-specific characteristics. In considering a request to undertake a scheme-specific review, we would consider the extent to which the determined system-wide prices are appropriate for the particular schemes.

Where an existing agreement is in place between a wholesale service provider and customer, we have not sought to replace any agreed prices with our system-wide prices. In reaching this decision, we were mindful of the following:

- Existing agreements are private commercial agreements that have been agreed to by both parties and were negotiated prior to our draft prices being released. We have sought to provide flexibility to the parties to those agreements to determine the best course of action in response to our pricing decisions – eg, to remain on their current price, negotiate alternative prices or seek a scheme-specific review.
- Our pricing decisions may warrant some transitional arrangements to be put in place to manage the impacts of the pricing decision. We do not currently have sufficient information regarding the current pricing arrangements in every existing scheme to be able to accurately assess the impact of our pricing decisions on particular schemes or customers. In the absence of this information, it is not possible to adequately consider and design any necessary transitional arrangements for individual schemes.
- If current arrangements are unsatisfactory to either party, under our draft decision, a wholesale service provider or wholesale customer would be able to seek a scheme-specific wholesale price review and determination from IPART.

Our draft decision is for the determinations of system-wide prices to apply from 1 March 2017 to 30 June 2021.

This report serves to explain our Draft Determinations of wholesale prices for new schemes. In doing so, it also provides information to parties to existing agreements of our likely approach to a scheme-specific determination.

Chapter 9 outlines our proposed process for considering applications for scheme-specific determinations and then conducting these determinations. We would consider conducting a scheme-specific determination for existing or new wholesale schemes in response to a request from a wholesale service provider or a wholesale customer.

In addition, we have made a draft decision that wholesale service providers and wholesale customers can opt-out of IPART's Determinations for new schemes by agreeing to an unregulated agreement.[3] This is similar to the approach we took for large non-residential customers in our recent determinations of retail prices for Sydney Water and Hunter Water.

[3] These unregulated agreements are referred to in the Draft Determinations as "Negotiated Services Agreements".

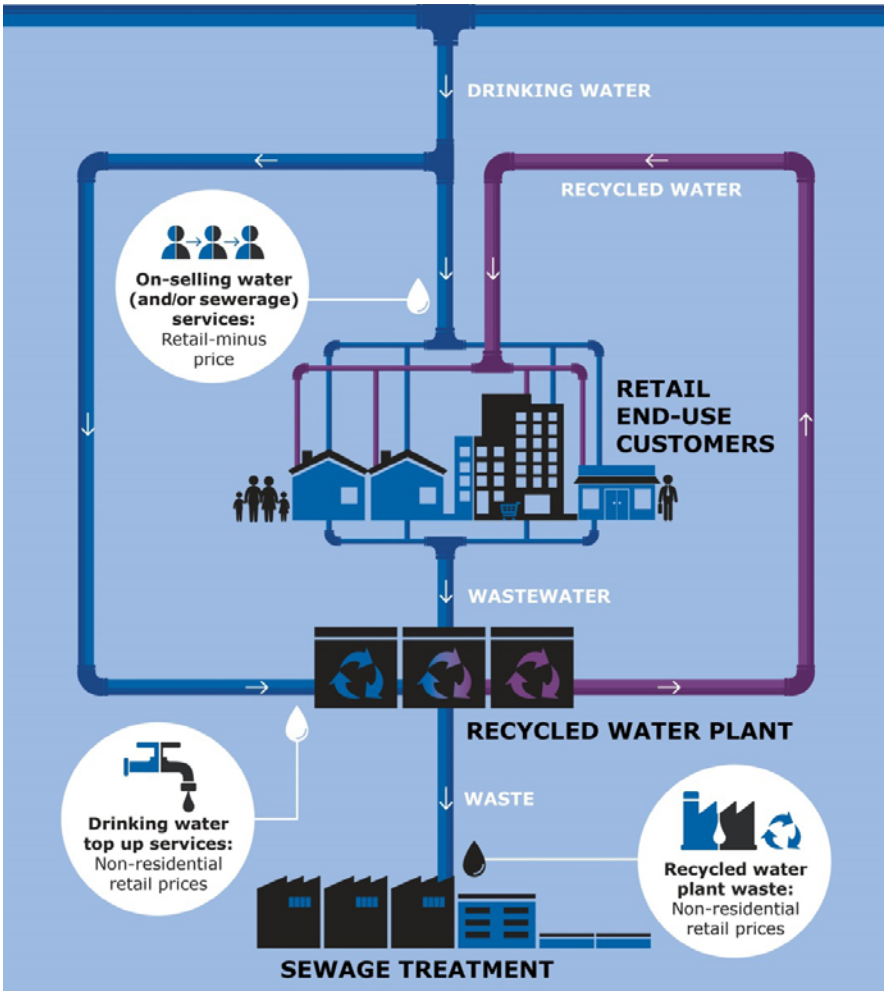
1.1.3 Services we have set draft prices for

We have set draft prices for the following specific services:

- **On-selling water services**. The wholesale customer purchases drinking water for the purpose of selling drinking water to end-use customers.
- **On-selling sewerage services.** The wholesale customer purchases sewerage services for the purpose of selling sewerage services to end-use customers.
- **Drinking water top-up water services.** The wholesale customer purchases drinking water for the purpose of topping up its recycled water scheme's water supply, to sell recycled water to end-use customers.
- **Recycled water plant waste disposal services.** The wholesale customer purchases a sewerage service for the purpose of disposing of waste from its recycled water plants.

Our draft decision is to apply different pricing approaches for the above services. We provide a summary of our draft decisions on pricing approaches in Figure 1.1 below.

Figure 1.1 Overview of our draft decisions on pricing approaches



Note: Not all wholesale schemes undertake all of the above services. For recycled water plant waste, the non-residential retail prices also include applicable trade waste charges.

1.1.4 Pricing approach for on-selling water and sewerage services

Our draft decision is to set a **retail-minus price**[4] for services a wholesale customer purchases for the purposes of **on-selling** water and/or sewerage services. Given the current retail postage stamp pricing policy that applies to water and sewerage services provided by Sydney Water and Hunter Water to end-use customers, retail-minus pricing would enable efficient entry and competition for the benefit of end-use customers over time.

[4] Retail-minus is based on the total end-user retail charges (as determined by IPART) minus the costs of the services provided from the point of wholesale purchase to end-use customers. The services included in this minus element usually relate to retail (eg, billing, dealing with customer queries, meter reading) and reticulation services (transporting water and/or sewerage from or to the point of wholesale connection and end use customers).

In addition, we have decided the minus component for these services should be based on the costs a '**reasonably efficient competitor**' would incur in providing services from the point of wholesale purchase to end-use customers. At this stage of market development, this approach provides greater scope for dynamic efficiency gains than other approaches (such as the 'as efficient competitor' cost approach). Over time as the market develops, there would be a case to move towards basing the minus component on 'as efficient' competitor costs.

We have set draft system-wide prices for on-selling services based on the retail minus reasonably efficient competitor costs for retail and reticulation services. Retail and reticulation services are the most common services delivered by wholesale customers who undertake on-selling services.

Retail minus reasonably efficient competitor cost prices for water and sewerage on-selling would be:

- the sum of end-use customer retail charges based on the prevailing Sydney Water or Hunter Water Determination for water and sewerage, less
- the minuses shown in Table 1.1, applied based on number of end-use customers and kilometres of pipeline for the applicable service.

Table 1.1 Draft reasonably efficient competitor cost minuses ($2016-17)

	Annual Minus
Water	
Retail ($/customer/year)	69.60
Reticulation ($/kilometre/year)	4,227.91
Sewerage	
Retail ($/customer/year)	46.40
Reticulation ($/kilometre/year)	7,692.63

Note: The Determinations commence on 1 March 2017, and so for 2016-17, these minuses would only apply for four months (ie, 1 March to 30 June 2017).

1.1.5 Pricing approach for drinking water top-up services and recycled water plant waste disposal services

We have decided that wholesale customers should be charged **non-residential (retail) prices** for drinking water top-up services and recycled water plant waste disposal services (including trade waste charges, were applicable).

In making this decision, we were mindful that these services could be considered inputs to the product or service the wholesale customer provides to end-users via its recycled water plant.

Our draft decision for these services means that the relevant charges from the 2016 Sydney Water and Hunter Water retail price determinations would apply, noting that these prices have been set until 30 June 2020. Our draft decision is for this determination of wholesale water and sewerage prices to apply from 1 March 2017 to 30 June 2021. This means that 2016-17 prices would apply for four months (ie, 1 March to 30 June 2017). In addition, 2020-21 prices would be determined as part of the next retail price determinations (due for completion by mid-2020).

Tables 1.2 and 1.3 below show the prices that would apply for drinking water top-up services from Sydney Water and Hunter Water (respectively). These prices are included in IPART's 2016 final determinations of Sydney Water's and Hunter Water's retail prices.

Table 1.2 Prices for drinking water top-up from Sydney Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge				
Water usage charge ($/kL)	2.00	2.00	2.00	2.00
SDP uplift ($/kL)	0.12	0.12	0.12	0.12
Meter connection charge				
20mm ($/meter)	89.95	89.95	89.95	89.95
25mm ($/meter)	140.55	140.55	140.55	140.55
32mm ($/meter)	230.28	230.28	230.28	230.28
40mm ($/meter)	359.82	359.82	359.82	359.82
50mm ($/meter)	562.22	562.22	562.22	562.22
80mm ($/meter)	1,439.27	1,439.27	1,439.27	1,439.27
100mm ($/meter)/unmetered	2,248.86	2,248.86	2,248.86	2,248.86
150mm ($/meter)	5,059.94	5,059.94	5,059.94	5,059.94
200mm ($/meter)	8,995.44	8,995.44	8,995.44	8,995.44
Other meter sizes ($/meter)	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			

Note: Meter connection charges will be altered by the SDP pass through in 2017-18, 2018-19 and 2019-20. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

In cases where a wholesale customer buys drinking water both to top up to its recycled water scheme and to on-sell drinking water to end-use customers, our draft decision is that these services would be charged for separately and consistently with the pricing approach for each service.

In cases where drinking water top-up supply is not individually metered, our draft decision is that the non-residential retail service charge for drinking water top-up should be based on a **deemed** meter size of 100mm (as outlined in Table 1.2 and Table 1.3).

Table 1.3 Prices for drinking water top-up from Hunter Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge				
Water usage charge ($/kL)	2.25	2.25	2.25	2.25
Water supply service charge				
20mm ($/meter)[a]	30.17	54.97	75.43	95.17
25mm ($/meter)	47.13	85.88	117.85	148.71
32mm ($/meter)	77.23	140.72	193.10	243.64
40mm ($/meter)	120.67	219.86	301.71	380.69
50mm ($/meter)	188.55	343.54	471.43	594.82
80mm ($/meter)	482.67	879.45	1,206.85	1,522.74
100mm ($/meter)/unmetered	754.18	1,374.13	1,885.70	2,379.28
150mm ($/meter)	1,696.91	3,091.81	4,242.83	5,353.39
200mm ($/meter)	3,016.71	5,496.54	7,542.80	9,517.14
Other meter sizes ($/meter)	$\frac{(\text{meter size})^2 \times 20\text{mm water supply service charge}}{400}$			

Note: If a wholesale customer only has a single 20mm meter they would receive a lower water supply service charge. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

Tables 1.4 and 1.5 below show the prices that would apply for recycled water plant waste disposal services from Sydney Water and Hunter Water (respectively). These are the prices as set out in the 2016 retail price determinations for Sydney Water and Hunter Water. Wholesale customers may also incur trade waste charges as set out in the prevailing Sydney Water and Hunter Water retail price determinations. These charges are listed in Appendix F.

Table 1.4 Sewerage charges for recycled water plant waste disposal services from Sydney Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge[a]				
20mm	555.26	555.26	555.26	555.26
25mm	867.59	867.59	867.59	867.59
32mm	1,421.45	1,421.45	1,421.45	1,421.45
40mm	2,221.02	2,221.02	2,221.02	2,221.02
50mm	3,470.35	3,470.35	3,470.35	3,470.35
80mm	8,884.09	8,884.09	8,884.09	8,884.09
100mm	13,881.39	13,881.39	13,881.39	13,881.39
150mm	31,233.13	31,233.13	31,233.13	31,233.13
200mm	55,525.57	55,525.57	55,525.57	55,525.57
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge				
Deemed usage charge	167.15	167.15	167.15	167.15
Sewerage usage charge				
Below discharge allowance	0.00	0.00	0.00	0.00
Above discharge allowance	1.11	1.11	1.11	1.11

[a] Discharge factors will apply, which will reduce the meter connection charge.

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

Table 1.5 Sewerage charges for recycled water plant waste disposal services from Hunter Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge[a]				
20mm	1,135.05	956.59	841.05	718.97
25mm	1,773.51	1,494.66	1,314.14	1,123.39
32mm	2,905.72	2,448.86	2,153.10	1,840.55
40mm	4,540.18	3,826.34	3,364.21	2,875.87
50mm	7,094.04	5,978.67	5,256.59	4,493.55
80mm	18,160.74	15,305.38	13,456.85	11,503.47
100mm	28,376.16	23,914.65	21,026.33	17,974.17
150mm	63,846.35	53,807.97	47,309.26	40,441.88
200mm	113,504.62	95,658.60	84,105.34	71,896.66
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge				
Deemed usage charge	45.23	56.95	68.68	80.40
Sewerage usage charge				
Below discharge allowance[a]	0.00	0.00	0.00	0.00
Above discharge allowance[a]	0.67	0.67	0.67	0.67
Environmental improvement charge				
Environmental improvement charge	38.87	38.87	38.87	38.87

a Discharge factors will apply, which will reduce the meter connection charge.

Note: If a wholesale customer only has a single 20mm meter they would receive a lower meter connection charge. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

1.1.6 Facilitation costs

Facilitation costs are costs (positive) or cost savings (negative) to the wholesale service provider of servicing the wholesale customer. For example:

- a positive facilitation cost may arise if a wholesale service provider needs to upgrade or extend its water or sewerage network to provide water or sewerage services to a wholesale customer, and
- a negative facilitation cost may arise if a wholesale customer produces recycled water that allows the wholesale service provider to defer its next scheduled water supply augmentation.

Our draft decision is that, in principle, prudent and efficient facilitation costs should be included in wholesale prices, where they are:

- additional to what the wholesale service provider would have otherwise incurred in the absence of servicing the wholesale customer

- not reflected elsewhere in the wholesale price or recovered via another charging or funding mechanism of the wholesale service provider.

We also consider that facilitation costs should:

- reflect the status of water and sewerage developer charges
- include positive (costs) and negative costs (cost savings), where appropriate
- exclude initial transaction costs
- exclude ongoing administration costs, except where they are material.

Further, prices for facilitation costs cannot be accurately set on a system-wide or average basis. That is, they should be set on a scheme-specific basis.

However, in practice, given Sydney Water's and Hunter Water's water and sewerage developer charges are currently set to zero by the Government, positive infrastructure facilitation costs (such as augmentation to part of the supply network) should generally be zero where such costs are prudent and efficient and consistent with the wholesale service provider's 'business as usual' growth plans. This is because the wholesale service provider would have the ability to fund these costs via its regulated retail customer base (ie, through retail postage stamp prices).

We have therefore not made any provision for facilitation costs in the draft system-wide wholesale prices. Rather, we would consider facilitation costs as part of a scheme-specific review of wholesale prices.

1.1.7 Likely impacts of our draft decisions

Our decisions in this review would impact on wholesale customers, along with Sydney Water and Hunter Water and their retail customers. In making the draft decisions, we have considered the trade-offs involved and the impacts of our draft decisions.

We have developed some indicative wholesale schemes to test the impacts of our decisions on wholesale customers. These indicative schemes do not represent any particular existing or proposed scheme. The results of this assessment for each type of wholesale service can be found in Chapters 5 to 7. Further information on the approach used to assess impacts is available in Appendix G.

1.2 Our review process

As part of our review process, we have undertaken extensive investigation and public consultation, including:

- inviting Sydney Water and Hunter Water to consider the issue of wholesale pricing as part of their pricing proposals submitted in June 2015 for our reviews of retail water and sewerage prices

- consulting on wholesale pricing as part of the Issues Papers[5] for the reviews of Sydney Water's and Hunter Water's retail prices for water and sewerage services, which were released in September 2015
- inviting stakeholders to make submissions on the Issues Papers and the pricing proposals of Sydney Water and Hunter Water by 5 October 2015
- holding a separate public hearing on wholesale pricing in December 2015
- deciding to conduct a separate review of wholesale pricing and releasing a separate Discussion Paper in April 2016, outlining our preliminary views
- inviting stakeholders to make submissions on the Discussion Paper by the end of May 2016[6]
- engaging consultants, to provide expert advice, and
- releasing this Draft Report and Draft Determinations and inviting stakeholders to make submissions.

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

We now invite stakeholders to make submissions on all issues in response to this Draft Report and the Draft Determinations. These submissions are due by 7 December 2016. Information on how to make a submission can be found on page iii, at the front of this report. We will also hold a public hearing on 28 November 2016 to give stakeholders a further opportunity to comment on the Draft Report and Draft Determinations.

We will consider all the information and views expressed in submissions and at the public hearing before finalising our decisions.

Table 1.6 sets out our indicative timetable for completing this review.

Table 1.6 Timetable for completing the review

Milestone	Date
Hold public hearing	28 November 2016
Receive submissions to the Draft Report and Draft Determinations	7 December 2016
Release Final Report and Final Determinations	February 2017

5 IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 – Issues Paper*, September 2015; IPART, *Review of prices for Hunter Water Corporation – Issues Paper*, September 2015.

6 A total of 14 submissions were received from other interested parties. Some of these submissions were confidential and/or anonymous. All submissions were considered, however this Draft Report includes references to only those submissions which are publicly available.

1.3 Structure of this report

The rest of this Draft Report discusses our draft decisions in more detail:

- Chapter 2 explains the key context for the review, including the factors we have taken into account in making our decisions
- Chapter 3 discusses the nature of the wholesale services and customers that have been included within the scope of this review
- Chapter 4 sets out our draft decisions on how we would implement wholesale prices for this review
- Chapters 5 to 7 discuss our draft decisions on the pricing approach and prices for specific services, including on-selling water and sewerage services, drinking water top-up services to recycled water plants, and recycled water plant waste disposal services
- Chapter 8 focuses on our draft decisions on facilitation costs and charges
- Chapter 9 explains the draft process we would follow in conducting scheme-specific price reviews and determinations, and
- Chapter 10 sets out matters that we have considered in making our draft decisions, and that we are required to consider under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).

1.4 List of draft decisions

Our draft decisions are outlined in the chapters in this Draft Report. For convenience, they are also listed below.

Definition of wholesale services

1 For the purposes of this review, we have decided a wholesale service is: (a) a service purchased from Sydney Water or Hunter Water by a customer; (b) that is used by that customer to potentially compete with the relevant utility (ie, Sydney Water or Hunter Water) for end-use customers; and (c) that has the following characteristics: 29

- The service purchased by the wholesale customer is a monopoly service. 29
- The service purchased by the wholesale customer is used to provide its end-use customers with the same service or a close substitute to one provided by Sydney Water or Hunter Water (the wholesale service provider). In effect, this means wholesale services: 29

a. are limited to those used to supply end-use customers with services that Sydney Water or Hunter Water could provide within the limits of their operating licences 29

b. can include some transformed services (eg, a wholesale drinking water service to top up a recycled water scheme to provide recycled water). 29

– The service purchased by the wholesale customer is used (by the wholesale customer or another party that it supplies) to supply end-use customers under a retail supplier's licence under the WIC Act. 29

Approach to implementing wholesale prices for this review

2 We have decided to adopt a determination period of four years and four months, from 1 March 2017 to 30 June 2021 for the system-wide determinations. 42

3 We have decided the system-wide wholesale price determinations would only apply to new wholesale services (or 'schemes'). 43

Pricing approach for on-selling drinking water and sewerage services

4 We have decided to use a retail-minus approach to set prices for the wholesale supply of drinking water and sewerage services for the purpose of on-selling to end-use customers. 46

5 We have decided to use the reasonably efficient competitor cost as the minus component in retail-minus prices for the wholesale supply of drinking water and sewerage services for the purpose of on-selling to end-users. 50

6 We have decided the retail charges in the retail minus reasonably efficient competitor cost prices will be the sum of end-use customer retail charges based on the prevailing Sydney Water or Hunter Water determination. 56

7 We have decided to calculate the reasonably efficient competitor costs based on: 57

– an annual building block cost that has an initial valuation of assets at the undepreciated cost to reflect a new entrant's costs, operating expenditure matched to asset age, gifted assets treated as assets free of charge, and a return on assets based on the prevailing Sydney Water and Hunter Water real post-tax WACC of 4.9% 57

– an equivalent annuity of the annual building block costs over a 50-year period using a discount rate based on the prevailing Sydney Water and Hunter Water real pre-tax WACC of 5.9%, and 57

– the cost drivers of the service (ie, per customer for retail functions and per kilometre of pipeline for reticulation functions). 57

Pricing approach for drinking water top-up to recycled water schemes

8 We have decided wholesale customers that purchase drinking water to top up their recycled water schemes should be charged the wholesale supplier's non-residential service and usage retail prices for the drinking water supply. 67

9 We have decided that wholesale customers that purchase drinking water for the purpose of on-selling *and* drinking water top-up should be charged: 70

- a retail-minus price for the water supplied for on-selling, and 70
- the retail non-residential water service and usage prices for the water supplied for drinking water top-up. 70

10 We have decided that in cases where the connection to the recycled water system (drinking water top-up) is not separately metered, wholesale customers should be charged a non-residential retail service charge for drinking water top-up based on a deemed meter size of 100mm. 71

Pricing approach for recycled water scheme waste disposal

11 We have decided that waste from recycled water plants should be subject to non-residential retail prices (including trade waste charges, where applicable) for sewerage services. 76

Facilitation costs

12 We have decided that facilitation costs should be included in wholesale prices where they are: 83

- additional to what the wholesale service provider would have otherwise incurred in the absence of servicing the wholesale customer, and 83
- not reflected elsewhere in the wholesale price or recovered via another charging or funding mechanism of the wholesale service provider. 83

13 We have decided not to include facilitation costs in the draft system-wide wholesale prices and therefore would only consider them in scheme-specific determinations. 84

14 We have decided that facilitation costs should: 84

- reflect the status of water and sewerage developer charges 84
- include positive (costs) and negative costs (cost savings), where appropriate 84
- exclude initial transaction costs, and 84
- exclude ongoing administration costs, except where they are material. 84

Scheme-specific reviews and unregulated pricing agreements

15 We have decided to use the process in Box 9.1 to review and determine scheme-specific prices for wholesale water and/or sewerage services. 90

16 We have decided not to set an interim price to apply while a scheme-specific review is being undertaken, or apply a true-up mechanism to adjust for any differences between the price before and after a scheme-specific determination is made. 90

17 We have decided to allow wholesale service providers and wholesale customers to opt-out of IPART's determined wholesale water and sewerage prices by voluntarily entering into unregulated pricing agreements. 97

2 Context for this review

As Chapter 1 noted, this is our first review of prices for Sydney Water and Hunter Water's wholesale services. To provide context for this review, the sections below outline:

- why we are determining wholesale prices
- the current market for water and sewerage services
- the factors we took into consideration
- other issues that are relevant to competition in the water and sewerage market, and
- the approach we used to make our draft decisions.

2.1 We are regulating wholesale prices so that services are provided efficiently to all water and sewerage customers

Under the IPART Act, we are required to determine the maximum prices that Sydney Water and Hunter Water can charge their customers for their water, sewerage, stormwater, trade waste and miscellaneous services.

Until recent years, these utilities only supplied end-use (or 'retail') customers, so we only needed to regulate the prices for these services. However, wholesale customers have emerged. We consider that wholesale services are "water supply services" and "sewerage services" under the *Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997.* Therefore, we are required to regulate prices for wholesale services.[7]

Unlike retail customers, wholesale customers do not purchase services from Sydney Water or Hunter Water for their own end use. They use these services to ultimately compete with Hunter Water and Sydney Water in the market for end-use customers. Therefore, as part of this review, we have considered what an appropriate and proportionate approach to regulating prices for wholesale services are so that services are provided efficiently to all water and sewerage customers.

7 We also consider there to be an in-principle need for IPART to regulate Sydney Water and Hunter Water's wholesale prices because Sydney Water and Hunter Water are monopoly suppliers of water and sewerage services in their areas of operation.

2.2 Our main objective for regulating wholesale prices

Our main objective for this review is to establish an approach for regulating wholesale prices that allows new entry to the market for end-use water and sewerage services to occur where this is efficient, to promote competition for the benefit of consumers.

This means we need to set wholesale prices that:

- encourage efficient entry where it would result in lower prices (at the same or better service levels) over time for end-use customers, and
- do not encourage inefficient entry where it would result in higher prices for end-use customers.

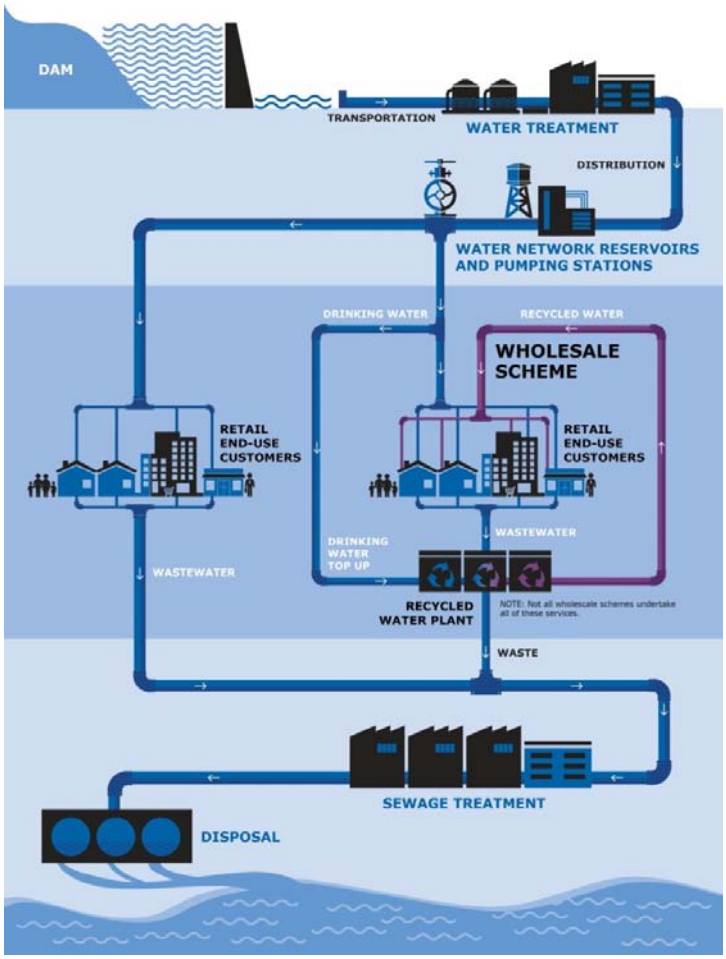
Over time, increasing competition should encourage greater efficiency in the supply of water and sewerage services, and thus reduce costs and enhance services for the benefit of consumers.

2.3 Current market for end-use water and sewerage services

Currently, a number of WIC Act licensees purchase services from either Sydney Water or Hunter Water in order to provide services to end-use customers. The services purchased by the wholesale customer from Sydney Water and/or Hunter Water and the services provided to end-use customers vary in each scheme.

Figure 2.1 below provides an overview of a wholesale scheme that on-sells drinking water, provides recycled water to end-use customers and purchases a sewerage service from a wholesale provider.

Figure 2.1 Overview of a wholesale scheme that on-sells water, provides recycled water to end-use customers and purchases a sewerage service from a wholesale provider



Note: Not all wholesale schemes include all the services shown.

While the scale of entry is relatively small at this stage, it is likely to increase in the future. There are currently ten WIC Act licensed schemes in Sydney Water's area of operations, and three in Hunter Water's area of operations (in Appendix B we provide further details on each of the licensed schemes).[8] Based on the licenses approved, the current schemes could eventually provide services to over 10,000 residential lots[9] in Sydney Water's areas of operations (this compares with Sydney Water's current residential customer base of about

8 In Hunter Water's area of operations, licence applications have been submitted but not yet granted for Catherine Hill Bay (for 600 lots; 540 residential and associated retail) and North Bellbird (for 3,500 lots; 1,600 residential and 6,000m^2 of retail floor space) (See Hunter Water submission to IPART Discussion Paper, May 2016, p 5).

9 See Table B.1 in Appendix B. This estimate does not include the 19 commercial residential and hotel buildings at Barangaroo South, and future commercial and residential buildings of Barangaroo Central.

1.9 million customers)[10], and similarly over 10,000 residential lots[11] in Hunter Water's area of operations (this compares with Hunter Water's current residential customer base of about 240,000 customers)[12]. Hunter Water also noted that WIC Act licensees may supply almost half of the projected greenfield dwellings growth in the Lower Hunter region.[13]

2.4 Factors we took into consideration

To arrive at our draft decisions, we had regard to the existing legislative framework and current NSW Government policies. This legislative and policy environment affects what we are able and required to do in making our pricing decisions, as well as what we need to consider to meet our objectives for this review.

The factors that particularly affected our decision making included:

- the requirements of the IPART Act
- the current postage stamp retail pricing policy for Sydney Water's and Hunter Water's water and sewerage services, and
- the Government's current direction that Sydney Water and Hunter Water set water and sewerage developer charges to zero.

2.4.1 Requirements of the IPART Act

The IPART Act limits the form our regulation of prices can take. In particular, it requires us to either:

- fix a maximum price, such as a price cap (as we currently do for Sydney Water's and Hunter Water's retail water and sewerage services), or
- set a methodology for fixing the maximum price (a pricing methodology).[14]

The IPART Act also requires us to have regard to a range of matters in making a determination.[15]

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10 Sydney Water Annual Report, 2014-15, p 8.

11 This does not include the potential number of customers at Catherine Hill Bay and North Bellbird.

12 Hunter Water Annual Report, 2014-15, p 78.

13 Hunter Water submitted that the Department of Planning and Environment's Draft Hunter Regional Plan and the Draft Plan for Growing Hunter City, forecasts 60,000 new dwellings in the Lower Hunter region by 2036 (of these new dwellings around 70% is envisaged to occur in greenfield areas). Hunter Water submission to IPART Discussion Paper, May 2016, p 5.

14 IPART Act, section 13A. IPART may also use a combination of the two approaches, fixing a maximum price for part of the service, and setting a methodology for the fixing of a maximum price for the other parts of the service.

15 IPART Act, section 15.

Chapter 10 summarises how we have had regard to each of the matters listed in section 15(1) of the IPART Act in making our draft decisions.

2.4.2 Postage stamp pricing policy

The current postage stamp pricing policy means Sydney Water and Hunter Water charge their retail customers in their area of operations the same water and sewerage prices – regardless of differences in the cost to supply them due to their location and other site-specific factors.[16] In other words, their retail water and sewerage prices reflect the system-wide average cost of supplying the service in their area of operations. This results in cross-subsidies between the retail customers where:

- customers located in areas that are lower than average cost to supply (eg, because they are close to a sewerage treatment works or in a lower cost sewerage treatment catchment) pay more than the actual cost of supply, and
- customers located in areas that are higher than average cost to supply (eg, because they are far from a sewage treatment works or in a higher cost sewerage treatment catchment) pay less than the actual cost of supply.

The wholesale prices we determine must take into account retail postage stamp pricing. If they did not, wholesale customers may face a competitive disadvantage in areas that are more expensive to supply – as wholesale service providers can offer lower prices to end-use customers in these areas (ie, the postage stamp price), rather than a price that reflects the costs to service that particular location, due to these cross-subsidies. Alternatively, in areas that are less expensive to supply, the wholesale service providers may face a disadvantage because they must charge a higher price to end-use customers (ie, the postage stamp price), rather than the price that reflects the actual servicing costs.

2.4.3 Developer charges set at zero

Under IPART's 2000 water and sewerage developer charges determination,[17] Sydney Water and Hunter Water could levy developer charges to recover the additional costs (relative to postage stamp pricing revenue) of servicing new developments (see Box 2.1). However, in 2008, the then NSW Government directed Sydney Water and Hunter Water to set developer charges for water, sewerage and stormwater assets to zero.[18]

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16 However, there are some exemptions. For example, Hunter Water has location-based water usage charges for customers that consume over 50,000 kL of water per year and are located in particular zones, it also has some catchment-based trade waste charges. (see IPART, *Review of prices for Hunter Water Corporation – Final Repor*t, June 2016, pp 104 & 192).

17 IPART, *Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wyong Shire Council Developer Charges from 1 October 2000, Determination No. 9, 2000,* September 2000.

18 Developer charges can still be levied for out-of-sequence developments (for Sydney Water) and recycled water. See IPART, *Review of prices for water, sewerage, stormwater and other services for Hunter Water Corporation – Final Report*, July 2009, p 190.

The combined effect of postage stamp pricing and zero developer charges is that Sydney Water and Hunter Water can use revenue from the broader customer base to cross-subsidise growth infrastructure in areas that are higher than average cost to service. That is, provided IPART considers this expenditure prudent and efficient, Sydney Water and Hunter Water can recover the costs of servicing new development areas through their retail postage stamp prices.

This can provide Sydney Water and Hunter Water with a competitive advantage over other providers (including wholesale customers), as other providers may have to recoup all the costs of servicing a new development area through charges to customers in these new areas (rather than spread the costs across a broader 'postage stamp' pricing customer base). This can effectively limit new entrants to growth areas where they can identify servicing solutions that are viable at the retail price caps set by Sydney Water's or Hunter Water's average costs, rather than incremental connection costs. This means the incumbent utilities can have no or little threat of competition in higher cost growth areas, which can reduce their incentive to find the most efficient servicing solution.

However, having outlined this concern, our approach to facilitation costs seeks to address this issue and create a level playing field in the context of the current policy framework for developer charges. This is discussed further in Chapter 8.

Box 2.1 Developer charges are based on the postage stamp price

A developer charge is a site-specific up-front charge that reflects the additional costs of servicing that development area (above the average network-wide costs recovered through postage stamp retail pricing revenue).

Under IPART's 2000 determination, the basic formula for calculating Sydney Water and Hunter Water's maximum developer charge for a new development area is:

$$\text{Developer charge} = \frac{\text{Net present value [capital costs + operating costs - revenue]}}{\text{Number of customers}}$$

The capital costs in this formula include past, present and future capital expenditure required to service the development area (in practice, this means capital costs have to be shared or allocated between the particular development and other customers). The operating costs reflect the expected operating costs of servicing the new development. The forecast revenue included in the calculation is from postage stamp retail prices (usage and service charges) to be levied on customers within the new development area.

The developer charge was designed to recover the total difference between the average system cost (reflected in the postage stamp price) and the costs of the servicing the development.

2.5 Other factors that impact on competition

The prices that apply to the provision of wholesale services are only one element of the regulatory framework for Sydney Water and Hunter Water's monopoly services. Their operating licences also place requirements on them in relation to levels of service and obligations to service certain customers.

The emergence of wholesale services and customers and the implications for the development of competition in the NSW water sector requires the consideration of factors other than prices, including whether there should be any requirements imposed on Sydney Water and Hunter Water in terms of:

- obligations to service wholesale customers within their areas of operations
- the level of service to wholesale customers, and
- any other consumer protection measures required for wholesale customers.

As we outlined in the Discussion Paper, neither the operating licences for Hunter Water or Sydney Water nor their customer contracts currently distinguish between wholesale and retail services and customers. Matters relating to levels of service and the obligation to service are outside the scope of this price review. However, we are currently undertaking a review of Hunter Water's operating licence, with the new operating licence scheduled to apply from 1 July 2017.[19] The review of Hunter Water's operating licence provides an opportunity to consider whether modification should be made to the provisions relating to obligation to service,[20] level of service and the definition of 'customer' and 'consumer' in the operating licence, in light of the emergence of wholesale customers. A number of stakeholders commented on issues relating to operating licences:

- Sydney Water noted that it should not be obliged to supply wholesale customers where the end-users are outside of the area of operation, even if the connection is inside the area of operation.[21]
- Hunter Water noted that complications may arise from obligations to service utilities near the boundary or adjacent to the area of operation.[22]
- Flow Systems noted that shortcomings in the operating licences should be addressed. Flow Systems also suggested that operating licence provisions are inconsistent with the IPART Act and the obligation to service does not take into account areas of operation where there are WIC Act licensees.[23]

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19 Details can be found at https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Licensing-Hunter-Water-Corporation/Review-of-Hunter-Waters-Operating-Licence-2012-2017

20 *Hunter Water Operating Licence 2012-2017*, clause 1.6.

21 Sydney Water submission to IPART Discussion Paper, May 2016, p 5.

22 Hunter Water submission to IPART Discussion Paper, May 2016, p 9.

23 Flow Systems submission to IPART Discussion Paper, May 2016, pp 29-30.

- WSAA noted that non-price terms and conditions are important and current operating licences are aimed at obligations to end use customers only, therefore this may need to be reviewed.[24]

2.5.1 Broader review of policy settings for competition

Throughout this review, a number of stakeholders have called for a broader review of the water sector, with a view to removing all impediments to competition between the incumbent utilities (Sydney Water and Hunter Water) and new entrants, enhancing competition, and promoting integrated water cycle management and alternative water servicing solutions (see Box 2.2).

Box 2.2 Call for a broader review of the NSW water industry

In submissions to our Discussion Paper, a number of stakeholders called for a broader review of the water industry. Some put the view that the current market is not 'perfect' due to other impediments to competition and market development. They argued that in this context, setting prices so as to facilitate efficient entry and competition may not achieve the desired objective.

Others considered an in-depth industry review should integrate the WIC Act, the Metropolitan Water Plan, City of Sydney's Sustainable Sydney 2030 Plan, integrated infrastructure planning and the contribution of recycled water to water security.

Stakeholders that supported a broader industry review included Flow Systems, Permeate Partners, Urban Development Institute of Australia, City of Sydney, Institute for Sustainable Futures, Green Building Council of Australia and the Water Services Association of Australia.

Source: Flow Systems submission, May 2016, p 5; Permeate Partners submission, May 2016, p 1; UDIA submission, May 2016, p 3; City of Sydney submission, May 2016, p 1, Institute of Sustainable Futures submission, May 2016, pp 1-2; Green Building Council of Australia submission, May 2016, p 2; WSAA submission, May 2016, p 18.

We agree that it is important that all unnecessary impediments to competition in the water industry are removed and that, where necessary, policy and regulatory settings should be adjusted. We also agree that competition in the water industry extends beyond wholesale pricing.

However, we do not consider that our current review of wholesale pricing should be put on hold or delayed until a broader review of the water industry occurs. Our current review of wholesale prices and a broader industry review are not mutually exclusive. Rather, this wholesale pricing review is an important step to facilitating efficient entry and competition in the water market. This review, for example, will provide information to market participants about the

[24] WSAA submission to IPART Discussion Paper, May 2016, p 17.

cost of wholesale services and ensure that monopoly wholesale services are subject to the appropriate degree and form of price regulation.

2.6 Future work

We have identified a number of areas of future work that are related to wholesale pricing. For instance, our Discussion Paper noted that IPART may decide to use **component pricing** in future retail price reviews. This would mean that we may allocate costs and set prices for each component of Sydney Water's and Hunter Water's water and sewerage supply chains. This could involve, for example, determining separate costs and prices for each of the following supply chain components:

- Water
  - retail services
  - reticulation/transport services
  - treatment services
  - bulk water services
- sewerage
  - retail services
  - reticulation/transport services
  - treatment services, and
  - disposal services.

In particular, this work may inform future wholesale price determinations. In addition, we are planning to conduct the following reviews in 2017-18:

- **Recycled water pricing** - We plan to conduct a full review of our approach to regulating recycled water pricing in 2017-18. This will include a review of our 2006 determination on *Pricing arrangements for recycled water and sewer mining*.[25]
- **Developer charges** – We plan to conduct a review of our developer charges determinations (for water, sewerage, stormwater and recycled water services) in 2017-18. This will provide us with an opportunity to:
  - Review and, where necessary, update the current 'active' developer charges determinations, being those that are not subject to the above-mentioned 2008 Government direction (ie, the Central Coast Council's developer charges and Sydney Water and Hunter Water's recycled water developer charges).
  - Update all other developer charges determinations (including those that are currently 'inactive') to reflect our decisions on any required changes to the terms of the determination, methodologies, input values and

[25] 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.

parameters. This will mean these determinations are up to date, in the event the Government decides to reverse or change the 2008 direction.

- Consider any potential new charges – eg, in the 2015-16 review of Hunter Water's retail prices, Hunter Water proposed a new 'major service connection charge', which we said we would consider in the 2017-18 review of developer charges.
- Consider our approach to reviewing Sydney Water and Hunter Water's proposed growth expenditure in future retail price determinations.
- Consider how developer charges revenue should be recovered in the absence of developer charges.

2.7 Our approach for making our draft decisions

To meet our main objective for this review and take account of the current market for end-use water and sewerage services, we considered the following topics to make our draft decisions:

- **The nature of wholesale water and sewerage services for the purpose of this review.** This step involved identifying the nature and characteristics of the services that are being supplied to wholesale customers.
- **Identifying the appropriate pricing approach and calculating draft prices for specific services.** This involved considering the nature of each service (or category of service) and assessing different pricing approaches.
- **Deciding how to implement these pricing approaches for this review.** That is, whether to determine:
  - system-wide wholesale prices
  - a methodology to be used by Hunter Water and Sydney Water to calculate their wholesale prices
  - scheme-specific wholesale prices, or
  - a combination of one or more of the above.

3 Nature of wholesale services and customers

Wholesale customers are a relatively new category of customers for Sydney Water and Hunter Water. To date, our determinations for Sydney Water and Hunter Water have set maximum prices for 'residential' and 'non-residential' customers, with no specific reference to wholesale customers.[26] Therefore, a key part of this review was to consider the nature of the services that should fall within the scope of this separate, wholesale price review.

We considered the nature of wholesale services to:

- identify the scope of this price review - ie, to differentiate between wholesale services and customers, and retail (or end-use) customers, and
- inform our decisions on what services to set prices for – ie, to which services and customers the wholesale price determinations apply (as opposed to the relevant retail price determinations).

We do not intend to define the potential wholesale market, or the scope for competition in the NSW water and sewerage market, or the types of services that will be provided as the market evolves.

Our consideration of this issue was informed by stakeholder responses to our Discussion Paper. We also considered the most common wholesale services Sydney Water and Hunter Water currently provide (or are likely to provide over the next few years).

The sections below set out our draft decisions on the nature of wholesale services for this review.[27]

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26 IPART, *Sydney Water Corporation Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016; IPART, *Hunter Water Corporation Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

27 These draft decisions are the basis for the definition of the term "Wholesale Service" in the Draft Determinations.

3.1 Services to be considered in this review

In this review of wholesale prices, we included services that reflect the current market for water and sewerage services. In future wholesale price reviews, we may need to consider different services to reflect market developments.

Draft decision

1 For the purposes of this review, we have decided a wholesale service is: (a) a service purchased from Sydney Water or Hunter Water by a customer; (b) that is used by that customer to potentially compete with the relevant utility (ie, Sydney Water or Hunter Water) for end-use customers; and (c) that has the following characteristics:

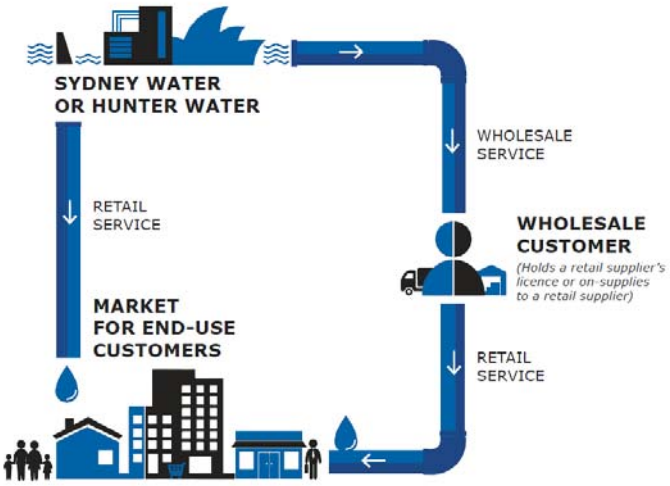
- The service purchased by the wholesale customer is a monopoly service.
- The service purchased by the wholesale customer is used to provide its end-use customers with the same service or a close substitute to one provided by Sydney Water or Hunter Water (the wholesale service provider). In effect, this means wholesale services:
  a. are limited to those used to supply end-use customers with services that Sydney Water or Hunter Water could provide within the limits of their operating licences
  b. can include some transformed services (eg, a wholesale drinking water service to top up a recycled water scheme to provide recycled water).
- The service purchased by the wholesale customer is used (by the wholesale customer or another party that it supplies) to supply end-use customers under a retail supplier's licence under the WIC Act.

3.2 The service must be used by the wholesale customer to ultimately compete for end-use customers

Wholesale services are different to retail services because they are ultimately used by the wholesale customer to compete with Sydney Water or Hunter Water for end-use water and/or sewerage customers. As Figure 3.1 illustrates:

- Sydney Water or Hunter Water provide the service to the wholesale customer
- this customer then uses the service to produce a product or service to supply to its end-use customers, and
- Sydney Water or Hunter Water also produces the same or a close substitute product or service to supply to their end-use customers.

Figure 3.1 Features of a wholesale service



If any of the links shown in Figure 3.1 are not present, then for the purposes of this review, we do not consider the service to be a wholesale service.[28] For example, if the customer uses the service to provide a service that Sydney Water or Hunter Water does not provide, such as bottled cola, then we do not consider this a wholesale service.

3.3 The service must be a monopoly service

We regulate the maximum prices Sydney Water and Hunter Water can charge for monopoly services – that is, services for which they are the only supplier in that part of the market, and for which there is no contestable market by potential suppliers in the short term in that part of the market.[29] Therefore, for the purpose of this price review, a wholesale service must be a monopoly service sold by Sydney Water or Hunter Water. In particular, we have focused on the utilities':

- drinking water supply services
- sewerage services, and
- trade waste services.

28 That is, if any of those links are not present, the Draft Determinations do not set a price for that service.

29 The Premier has declared certain services provided by Sydney Water and Hunter Water to be "government monopoly services" under section 4 of the IPART Act: see *Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997*.

3.4 The service must be used to provide end-use customers with the same service or a close substitute to one provided by Sydney Water or Hunter Water

To be considered a wholesale service, the service purchased by the wholesale customer must be used to provide its end-use customers with the same service or a close substitute to one provided by Sydney Water or Hunter Water (the wholesale supplier). This ensures that they are competing in the same market.

In effect, this means wholesale services:

- are limited to those used to supply end-use customers with services that Sydney Water or Hunter Water could provide within the limits of their operating licences, and
- can include some transformed services (eg, a wholesale drinking water service to top up a recycled water scheme to provide recycled water).

3.4.1 The limits of Sydney Water's and Hunter Water's Operating Licences

Sydney Water and Hunter Water are currently limited in the services they can provide (and hence the markets where they can compete) by their operating licences in two key ways:

- Authorised services – the operating licences describe the types of services the utilities can provide (eg, the supply of water, provision of sewerage and drainage services and disposing of sewerage).[30]
- Area of operation – the operating licences limit the area within which the utilities can provide the services, generally defined as local government areas.[31]

Therefore, for the purpose of this review, wholesale services are considered those services used to supply end-use customers with services that Sydney Water or Hunter Water could provide within the limits of their operating licences. This means that:

- services used to provide end-use customers with services that Sydney Water and Hunter Water are **not authorised** to provide (eg, bottled cola as shown in Figure 3.2) are **not** considered wholesale services, and
- services used to provide end-use customers **outside** Sydney Water's or Hunter Water's **area of operation** are **not** considered wholesale services (eg, it is not a wholesale service if end-use customers are outside of the area of operations as shown in Figure 3.3).

[30] Hunter Water Corporation Operating Licence 2012-2017, p 1; Sydney Water Corporation Operating Licence 2015-2020, pp 3-4.

[31] Hunter Water Corporation Operating Licence 2012-2017, p 33; Sydney Water Corporation Operating Licence 2015-2020, p 31.

Figure 3.2 **If Sydney Water and Hunter Water are not authorised to provide the end-uses it is not a wholesale service**

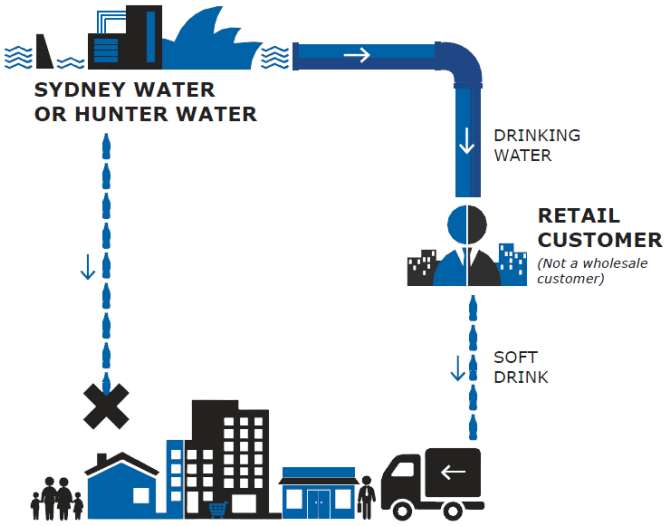
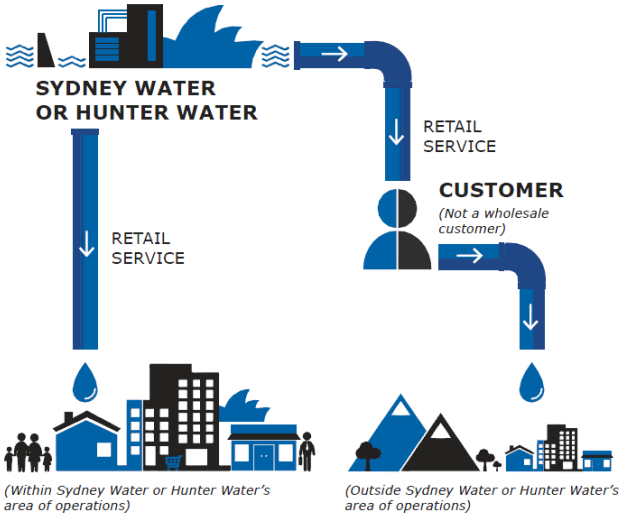


Figure 3.3 **If end-use customers are outside of the area of operation it is not a wholesale service**



Stakeholders who commented on this issue generally agreed that services provided to end-use customers outside the area of operations should not be covered by this review. See Box 3.1 for more detail.

Box 3.1 Stakeholder views on area of operations

Stakeholders agreed that services provided to end-use customers outside of the area of operations should not be considered wholesale services for the purposes of this review. For example:

- Sydney Water argued that it may be contrary to its operating licence to supply customers outside its area of operations and therefore there is no relevant retail price on which to base a retail-minus price. It considered these supply arrangements should be covered by unregulated pricing agreements. Sydney Water also suggested amendments to the definition of wholesale customer in the Discussion Paper to exclude customers outside of the area of operations.[32]
- Hunter Water argued that it does not compete for customers outside its area of operations, so its supply scenarios with adjacent councils should not be considered wholesale services, as each utility is prohibited from servicing end-use customers in each other's areas of operations.[33]

3.4.2 The service provided to end-use customers may be a transformed service

Subject to the other criteria outlined in this chapter, the service purchased by the wholesale customer does not have to be the same as the service provided to end-use customers for it to be considered a wholesale service. This means that we consider some 'transformed services' to be wholesale services.

The two most common examples of this occur in recycled water schemes:

- A wholesale customer purchases a drinking water service, and uses this to top up its recycled water system ('drinking water top-up'), and provides end-use customers with a recycled water service.
- A wholesale customer purchases a sewerage and/or trade waste service to dispose of excess recycled water and/or treatment plant waste (either through a direct connection or trucking), and provides end-use customers with a sewerage service and recycled water service.

Stakeholder views were mixed on whether transformed services should be considered wholesale services, as outlined in Box 3.2.

[32] Sydney Water submission to IPART Discussion Paper, May 2016, pp 3-5.
[33] Hunter Water submission to IPART Discussion Paper, May 2016, pp 8-9.

Box 3.2 Stakeholder views on transformed services

For drinking water top-up of recycled water schemes:

- Hunter Water argued that all inputs to a service transformation (such as taking drinking water as an input to recycled water) should be considered a wholesale service.[34]
- Sydney Water put forward the opposite view: it submitted that this is not a wholesale service in its own right as the wholesale customer is not on-supplying the drinking water service. If upgrades to Sydney Water's system are required to supply drinking water top-up to a recycled water system, Sydney Water is likely to enter into a commercial agreement with the wholesale customer to cover these costs.[35]

For recycled water schemes waste disposal (sewerage and/or trade waste) services:

- Hunter Water argued that by-products from a service transformation (such as taking sewerage and making trade waste) should be considered a wholesale service.[36]
- Sydney Water had not yet formed a view on this issue as many of its utility services agreements with wholesale customers currently include trade waste provisions.[37]
- City of Sydney submitted this is not a wholesale service because a sewerage service is not simply being 'on-sold'.[38]

For standalone sewerage or recycled water schemes that do not connect to the incumbent's network, but dispose of waste to the incumbent's network via trucking:

- Sydney Water considered that this is not a wholesale service because the new entrants do not directly purchase a service from Sydney Water. It considered that tankering is likely to be an inefficient servicing solution, but that this should be regulated through licensing under the WIC Act, rather than wholesale pricing.[39]

3.5 The service must be provided to end-use customers under a retail supplier's licence under the WIC Act

For the purpose of this review, we have limited a 'wholesale customer' to an entity that provides services to end-use customers under a retail supplier's licence under the WIC Act (or on-supply services to a retail supplier). We have used the requirement as a proxy to identify the wholesale customers that are in competition with Sydney Water or Hunter Water for end-use customers.

A retail supplier's licence is required under the WIC Act to supply water or provide sewerage services by means of any water industry infrastructure.[40]

34 Hunter Water submission to IPART Discussion Paper, May 2016, pp 8-9.
35 Sydney Water submission to IPART Discussion Paper, May 2016, p 4.
36 Hunter Water submission to IPART Discussion Paper, May 2016, pp 8-9.
37 Sydney Water submission to IPART Discussion Paper, May 2016, p 42.
38 City of Sydney submission to IPART Discussion Paper, May 2016, p 1.
39 Sydney Water submission to IPART Discussion Paper, May 2016, pp 4-5.
40 WIC Act, s 5(1)(b).

There are several exemptions from this requirement, including public water utilities providing services within their area of operations.[41]

The benefit of including this criterion is that it is simple and clear. The drawback is that the requirement for a retail supplier's licence under the WIC Act is only a proxy for those in competition for end-use customers with Sydney Water or Hunter Water. There are several exemptions from the requirement for a retail supplier's licence, which may apply to wholesale customers that are in fact in competition with Sydney Water and Hunter Water, such as local councils providing water and sewerage services.

3.5.1 WIC Act amendments

The licensing framework under the WIC Act will change when the *Water Industry Competition Amendment (Review) Act 2014* (Amending WIC Act) comes into force (expected in mid-2017). Under the Amending WIC Act, retailer's licences will only be required for schemes servicing 30 or more small retail customers.[42] Therefore, smaller schemes would fall out of our definition of wholesale services. However, we are not aware of any schemes serviced by WIC Act licensees that purchase wholesale services from Sydney Water and Hunter Water that will service less than 30 customers.

3.5.2 On-supply of services

There could be situations where the customer is not itself a retail supplier under the WIC Act, but on-supplies the services that are ultimately used by such a retail supplier. For example:

- a network operator licensed under the WIC Act could purchase services and on-sell these (with or without transformation) to a retail supplier, or
- a landowner may purchase a service and provide this to its tenant (this tenant being a retail supplier under the WIC Act) who then on-supplies to customers.

We consider that it is important to also capture these situations, as the service provided by Sydney Water or Hunter Water is ultimately being used to compete in the market for end-use customers.

41 WIC Act, s 5(3).
42 Amending WIC Act, ss 5(1)(a), 9.

3.6 Current wholesale services that meet the draft definition

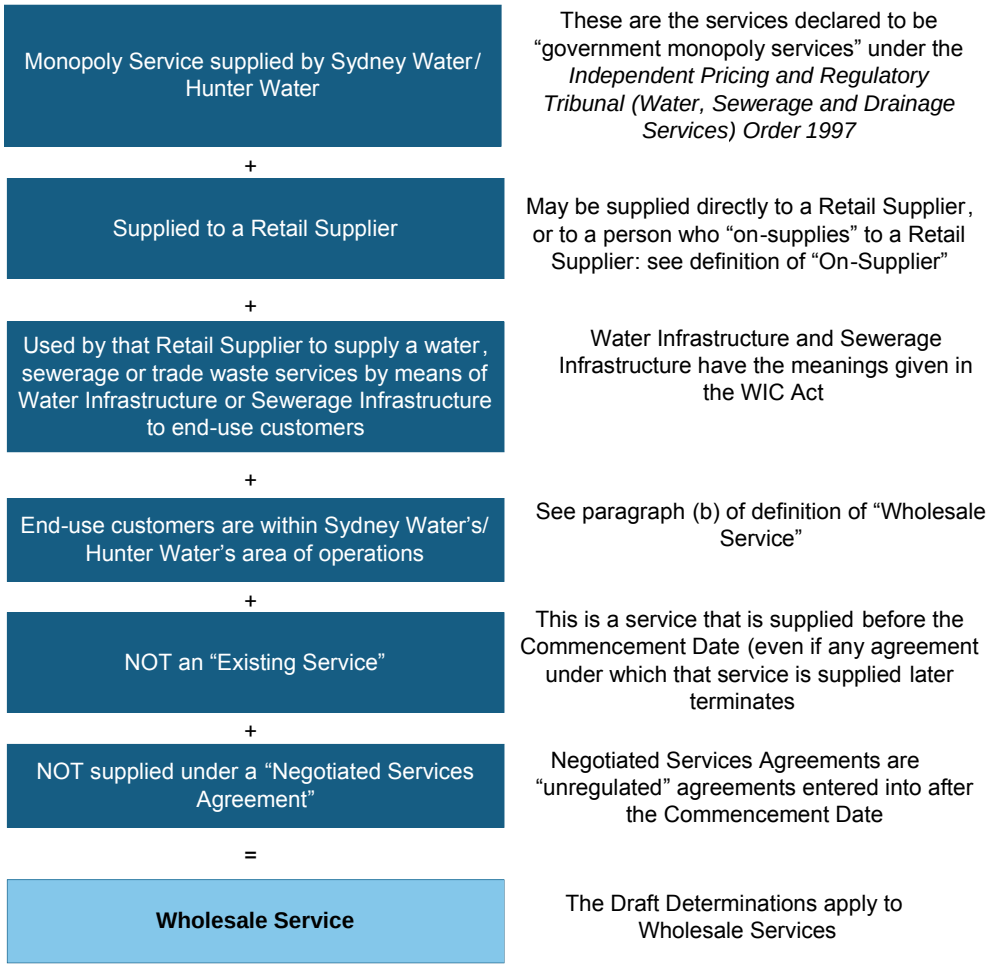
By applying the above to the services Sydney Water and Hunter Water currently supply to WIC Act licensees, we identified three types of wholesale service arrangements:

1. **Drinking water and sewerage for on-selling**. This relates to:
   a) The purchase of **drinking water** by the wholesale customer for the purpose of selling drinking water to end-use customers.
   b) The purchase of **sewerage** services by the wholesale customer for the purpose of selling sewerage services to end-use customers.
2. **Drinking water for top-up of a recycled water system.** The wholesale customer purchases drinking water for the purpose of topping-up its recycled water system in order to supply recycled water to end-use customers.
3. **Recycled water plant waste disposal.** The wholesale customer purchases a sewerage service for the purpose of disposing of waste from its recycled water plant. At a minimum, the service provided to end-use customers is a recycled water supply service. In most current schemes, end-use customers are also provided a sewerage service by the wholesale customer. The wholesale customer (or an 'on-supplier' to the wholesale customer) takes raw sewerage from its end-use sewerage customers to its recycled water plant. This is then transformed into recycled water (for supply to its recycled water customers), and concentrated sewerage/sludge/trade waste is discharged into the wholesale service provider's sewerage network.

In some existing schemes, a combination of the above wholesale services is provided by Sydney Water or Hunter Water.

"Wholesale Services" are defined in clause 1.1 of schedule 5 of the Draft Determinations. The figure below summarises the elements of this definition.

Figure 3.4 Services that are covered by the Wholesale Draft Determinations

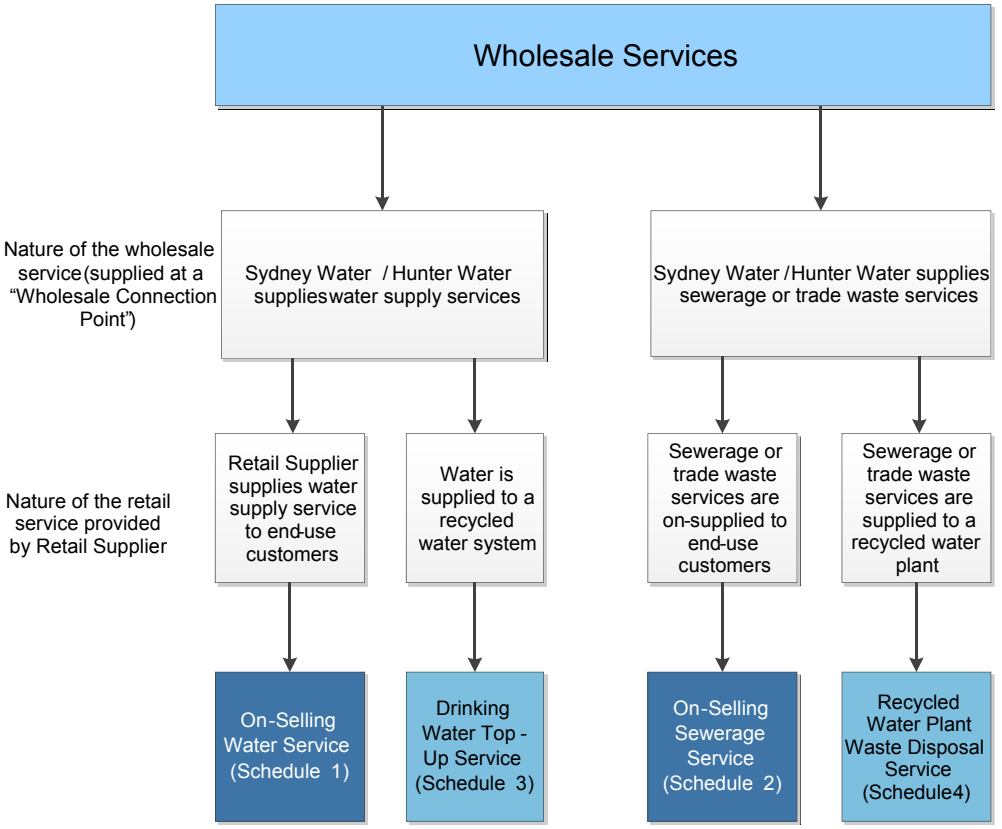


Note: References to paragraph, table and schedule numbers in this figure refer to paragraphs, tables or schedules in the Draft Determinations, and is provided for explanatory purposes only.

The diverse nature of these services suggests that differing pricing approaches may be needed to achieve our objectives for this review. Therefore, identifying the most appropriate pricing approach, we separately considered the **on-selling services**, **drinking water top-up services** and **recycled water plant waste disposal services**. Our draft decisions on each of these service types are discussed in the following chapters.

The Draft Determinations have separate pricing schedules for four categories of Wholesale Services – ie, on-selling water, on-selling sewerage, drinking water top-up and recycled water plant waste disposal service. The figure below provides an overview of which pricing schedule applies to which Wholesale Service.

Figure 3.5 Categories of "Wholesale Services" (see schedule 5, clause 1.2)



Note: References to paragraph, table and schedule numbers in this figure refer to paragraphs, tables or schedules in the Draft Determinations, and is provided for explanatory purposes only.

4 Approach to implementing wholesale pricing approaches for this review

In the Discussion Paper, we outlined three potential options for implementing wholesale pricing:

- Determining system-wide, average or typical wholesale prices to be used for all wholesale schemes.
- Determining a methodology[43] that the wholesale service provider must use to calculate the specific wholesale prices for individual wholesale customers' schemes.
- Determining specific wholesale prices for individual wholesale schemes.

We have decided not to adopt the second option above. This option was not supported by stakeholders, see Box 4.1 for details.

We have decided to:

1. Determine system-wide wholesale prices for specific services. These determinations (one each for Sydney Water and Hunter Water) would apply to new wholesale schemes (ie, they would not apply to existing services[44]).
   - This would allow parties to existing wholesale servicing arrangements to maintain the prices in their existing agreements or seek a scheme-specific determination from IPART (see below).
2. Allow for wholesale customers and wholesale service providers to opt-out of IPART's Determinations and opt into unregulated pricing agreements, where there is mutual agreement to do so.
3. Consider requests to undertake price reviews and determinations for individual wholesale schemes (existing and new).[45]

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43 The Discussion Paper stated that this option would be similar to the approach to regulating developer charges in IPART's current developer charges determinations (see section 4.4 of the Discussion Paper).

44 Under our draft determinations, a service is an 'existing service' if, before commencement of the determination (1 March 2017): Sydney Water or Hunter Water has commenced supplying the service to a wholesale customer; and the price to be levied by Sydney Water or Hunter Water for that service (under an agreement with the wholesale customer) is different to the price set out in IPART's draft wholesale pricing determinations.

45 Any scheme-specific price review would be initiated pursuant to IPART's standing reference to conduct investigations and determine prices for the monopoly services supplied by Hunter Water and Sydney Water.

This means wholesale service providers or customers would have the option of seeking a scheme-specific price determination by IPART or, if both parties agree, entering into unregulated pricing agreements. For example:

- **For a new scheme**, parties may seek a scheme-specific determination by IPART if either party considers the system-wide prices set by IPART do not reflect the characteristics of the scheme and they cannot reach agreement on price
- **For an existing scheme**, a wholesale customer or service provider may seek a scheme-specific determination by IPART if they cannot reach agreement on price.

To make our draft decision, we assessed these options based on:

- their ability to result in wholesale prices that reflect scheme-specific characteristics and facilitate efficient entry to the water and sewerage service end-use market
- their feasibility, simplicity and administrative costs, and
- feedback from stakeholders in submissions to the Discussion Paper.

Our draft decision to set system-wide prices for new schemes means we have reduced the need for potentially costly scheme-specific reviews of every scheme, but have provided the option for parties to seek a review where the system-wide determination does not reflect scheme-specific characteristics.

In addition, we have made a draft decision that wholesale service providers and customers can opt-out of IPART's Determinations by agreeing to an unregulated agreement. This is similar to the approach we took in our recent determination of retail prices for Hunter Water and Sydney Water.

Under this framework:

- The prices set in this review would provide existing wholesale service providers and customers with information on IPART's positions, which may assist either party if they consider there is a need to renegotiate their current agreements or consider seeking a scheme-specific determination by IPART.
- Wholesale service providers and wholesale customers for new schemes would be able to assess whether the system-wide prices in the determinations reflect the particular scheme characteristics and, if either party considers that they do not, they could seek a scheme-specific review. Alternatively, if both parties agree, they could opt out of regulated prices via an unregulated pricing agreement.

The sections below set out our draft decisions in relation to the implementation of prices for this review.

Chapter 9 discusses our draft decisions on scheme-specific reviews of wholesale prices and unregulated pricing agreements.

4.1 Services subject to system-wide wholesale prices

The merits of determining system-wide wholesale prices relate primarily to lower administration costs, compared to undertaking scheme-specific reviews. In addition, system-wide prices provide information to existing and potential market participants about prices, which will inform decisions regarding entry to the market.

Several stakeholders, including Sydney Water, Hunter Water and Permeate Partners, supported a system-wide price for simple schemes.[46]

As Chapter 8 discusses, our draft decision is to not set system-wide, average facilitation costs in this review.

[46] Sydney Water submission to IPART Discussion Paper, May 2016, p 46, Hunter Water submission to IPART Discussion Paper, May 2016, p 1 and Permeate Partners submission to IPART Discussion Paper, May 2016, pp 4-5.

Box 4.1 Why we ruled out setting wholesale prices via a methodology (ie, 'Option 2')

The Discussion Paper included an option for IPART to determine wholesale prices via a methodology that Sydney Water and Hunter Water would be required to use to set wholesale prices for individual wholesale schemes (ie, 'Option 2' in the Discussion Paper). We have decided not to adopt this approach.

This option was the least preferred implementation option in stakeholder submissions to the Discussion Paper. For example, the Institute for Sustainable Futures said it would create additional costs and risks through added negotiations, even without the potential for dispute resolution. It considered higher costs for all parties were unwarranted given the current market size. In addition, it was unlikely that the process would be flexible, rapid and robust enough to meet investment timelines for new developments. Sydney Water argued that implementing a methodology would likely promote uncertainty, involve high administrative costs and lead to lengthy arbitration. It argued this option could be effective in the long term if it was flexible and adaptable, as it could lessen the regulatory burden and promote more commercially negotiated outcomes.

We agree that the potential administrative burden and dispute risks associated with this option are too high at this stage. As the market is developing, there is a risk that entrants could be deterred from entering negotiations by uncertainty about the effectiveness or potential costs of the dispute resolution process. Under section 31 of the IPART Act (which outlines the dispute resolution process), an arbitrator would be appointed by agreement between the wholesale service provider and wholesale customer and could be a body other than IPART. This gives IPART limited scope to provide market participants certainty about the costs and timeliness of dispute resolution. There is also a risk that wholesale customers may expect that wholesale service providers could exercise their monopoly power in applying the methodology. Even if the approach did not allow for this, the perception alone could stifle market development.

As the market matures and the costs of providing wholesale services are better understood, the possible risks may be reduced and this approach to regulating wholesale prices may become more feasible.

Source: Institute of Sustainable Futures submission to IPART Discussion Paper, May 2016, p 12; Sydney Water submission to IPART Discussion Paper, May 2016, p vii.

4.2 Determination length

Draft decision

2 We have decided to adopt a determination period of four years and four months, from 1 March 2017 to 30 June 2021 for the system-wide determinations.

The Discussion Paper proposed that where we determine system-wide prices, our determinations would be suited to periodic review and replacement in line with Sydney Water's and Hunter Water's retail price reviews (eg, 4-year determination periods). This would allow periodic adjustment of the prices to optimise price signals.

In submissions to the Discussion Paper, stakeholders supported a short determination period, since the market is in its infancy. Sydney Water considered prices should initially be set for no more than five years, providing an opportunity for review to ensure the approach that has been adopted works in practice.[47] Central Coast Council supported a typical 4-year determination period aligned to retail price reviews.[48] Permeate Partners supported system-wide prices being subject to minor adjustments at each retail price review.[49]

Hunter Water supported system-wide prices being set for a fixed period and noted that it would make sense for the wholesale price determinations to lag the retail price determinations by a period, possibly 12 months.[50]

The current retail price determinations for Sydney Water and Hunter Water cover the period 1 July 2016 to 30 June 2020. As this wholesale pricing review is due to be completed in February 2017, the Draft Determinations provide for a commencement date of 1 March 2017. In deciding the length of the determinations, we are mindful of the stage of the wholesale market's development, and the need to achieve the appropriate balance between minimising administrative and regulatory costs, providing sufficient certainty and ensuring prices take account of market developments.

Our draft decision is for the determination period to be 4 years and 4 months – ie, to apply from 1 March 2017 until 30 June 2021. This means that the review of the determinations of system-wide prices for Sydney Water and Hunter Water would run at a slight lag (6 to 12 months) to the review of retail prices. This also means that where the wholesale prices for 2020-21 are set by reference to the next retail determinations, the Tribunal would consider any impacts of that retail review on those wholesale prices.

4.3 Application of system-wide wholesale prices to new schemes

Sydney Water and Hunter Water currently supply wholesale services to customers in their areas of operation. These supply arrangements are subject to contractual agreements that have been privately negotiated between the parties. Permeate Partners suggested IPART should consider grandfathering existing agreements.[51]

Draft Decision

3 We have decided the system-wide wholesale price determinations would only apply to new wholesale services (or 'schemes').

47 Sydney Water submission to IPART Discussion Paper, May 2016, p 41.
48 Central Coast Council submission to IPART Discussion Paper, May 2016, p 2.
49 Permeate Partners submission to IPART Discussion Paper, May 2016, p 5.
50 Hunter Water submission to IPART Discussion Paper, May 2016, p 24.
51 Permeate Partners submission to IPART Discussion Paper, May 2016, p 5.

Our draft decision is to set system-wide prices for new wholesale arrangements – ie, our determined prices would not apply to existing services. Under our draft determinations, a service is an 'existing service' if, before commencement of the determination (1 March 2017):

- Sydney Water or Hunter Water has commenced supplying the service to a wholesale customer, and
- the price to be levied by Sydney Water or Hunter Water for that service (under an agreement with the wholesale customer) is different to the price set out in IPART's draft wholesale pricing determinations.

In reaching this decision, we were mindful of the following:

- Existing agreements have been accepted by both parties and were negotiated prior to our draft prices being released. We have sought to provide flexibility to the parties to those agreements to determine the best course of action in response to our pricing decisions - eg, to retain the current arrangements, negotiate a new agreement or request a scheme-specific price review and determination by IPART.
- If current arrangements are unsatisfactory to either party, a wholesale service provider or wholesale customer would be able to seek a scheme-specific price review and determination from IPART. Our draft decisions provide information to parties to an existing agreement of our likely approach to a scheme-specific determination.

5 Pricing approach for on-selling drinking water and sewerage services

On-selling refers to where a wholesale customer:

- buys drinking water from Sydney Water or Hunter Water to sell drinking water to end-use customers, and/or
- buys sewerage services from Sydney Water or Hunter Water to sell sewerage services to end-use customers.

Typically, in these cases, once they have purchased the wholesale services, the wholesale customers perform retail and/or local reticulation services for their end-use customers.

5.1 Summary of draft decisions

Our draft decision is to apply a **retail-minus** approach for wholesale water and sewerage services purchased for the purpose of on-selling to end-use customers. This pricing approach allows wholesale customers and wholesale service providers to compete for end-use (or 'retail') customers, without being advantaged or disadvantaged by retail pricing policies that apply to Sydney Water and Hunter Water (such as postage stamp pricing).

Further, our decision is that the minus component of retail-minus prices for these wholesale services is to reflect the costs a '**reasonably efficient competitor**' would incur in performing retail and/or local reticulation services for their end use customers (ie, the services from point of wholesale purchase to end-use customers). This approach is designed to provide reasonably efficient wholesale customers with a margin (between the regulated wholesale prices and Sydney Water's or Hunter Water's postage stamp retail prices) that allows them to match Sydney Water or Hunter Water's postage stamp retail price when supplying end-use customers.

We have made a draft decision to set system-wide wholesale prices for on-selling services. Therefore, the Draft Determinations include prices for water on-selling and sewerage on-selling based on the retail minus reasonably efficient competitor cost approach. Our draft reasonably efficient competitor cost minuses are shown in Table 5.1 below.

Table 5.1 Draft reasonably efficient competitor cost minuses ($2016-17)

	Annual Minus
Water	
Retail ($/customer/year)	69.60
Reticulation ($/kilometre/year)	4,227.91
Sewerage	
Retail ($/customer/year)	46.40
Reticulation ($/kilometre/year)	7,692.63

Note: The Determinations commence on 1 March 2017, meaning in 2016-17 these minuses would only apply for four months (ie, 1 March to 30 June 2017).

Our approach to calculating the reasonably efficient competitor cost minuses is discussed in detail in Appendix E.

5.2 Retail-minus pricing approach is appropriate for on-selling water and sewerage services

Draft Decision

4 We have decided to use a retail-minus approach to set prices for the wholesale supply of drinking water and sewerage services for the purpose of on-selling to end-use customers.

In reaching this draft decision, we considered three possible alternative approaches for pricing wholesale water and sewerage services purchased for the purpose of on-selling to end-users:

- retail-minus approach
- cost-of-service approach, and
- non-residential retail price approach.

The retail-minus approach is compatible with postage stamp retail pricing. Under postage stamp retail pricing, Sydney Water and Hunter Water generally charge all their retail customers in their area of operations the same drinking water, sewerage and stormwater prices – regardless of differences in the cost of supplying different locations and other site-specific factors.[52],[53],

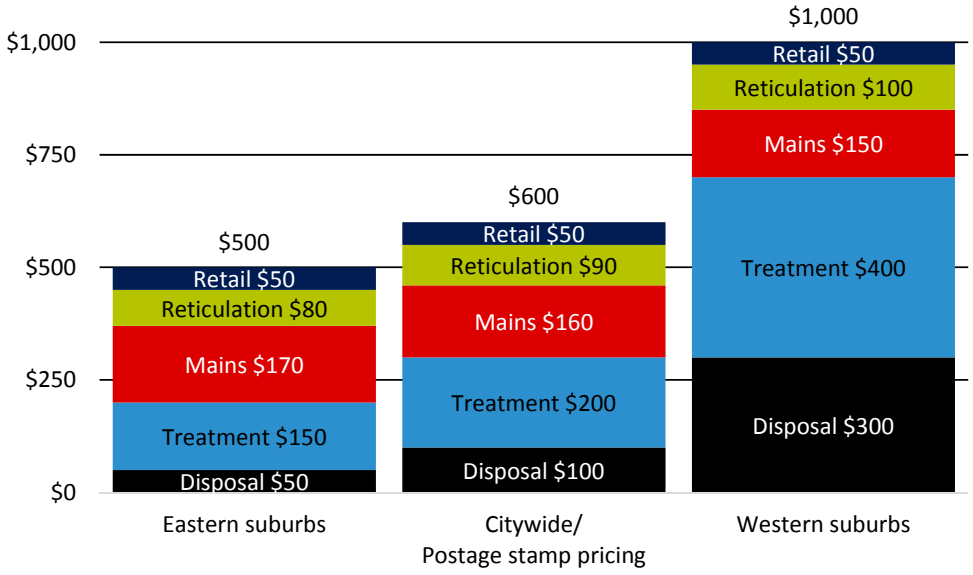
Figure 5.1 shows an illustrative example of a postage stamp sewerage service charge compared to the cost of providing the service in different locations across Sydney Water's or Hunter Water's area of operation. The postage stamp retail

[52] Exceptions to postage stamp pricing include recycled water prices, Sydney Water's Rouse Hill stormwater area and trade waste charges, and Hunter Water's location-based water usage charges for large consumers and trade waste charges.

[53] IPART, *Sydney Water Corporation Maximum prices for water sewerage, stormwater drainage and other services from 1 July 2016 - Determination*, June 2016; *Hunter Water Corporation Maximum prices for water sewerage, stormwater drainage and other services from 1 July 2016 - Determination*, June 2016.

price is $600 per year and the localised cost of service ranges from $500 to $1000 per year. The postage stamp retail price therefore includes cross-subsidies between end-users in locations with different servicing costs.

Figure 5.1 Illustration of effect of postage stamp pricing compared to the cost of providing the service in different locations ($ per year)



Note: The costs shown in this figure are illustrative only.

Under a retail-minus approach, the wholesale price for on-selling a service would be based on the total postage stamp retail prices of that service, minus the costs of the contestable service (or services).

The contestable service(s) is the service the wholesale customer is providing (or seeking to provide) to retail customers 'upstream' or 'downstream' of the wholesale services it has purchased from the wholesale service provider. That is, the service(s) between the wholesale connection point and the end-use (retail) customers. They often include reticulation and retail services.

Stakeholders had mixed views on retail-minus pricing. Sydney Water strongly supported a retail-minus pricing approach for on-selling, arguing that:

> Retail-minus is the only pricing approach that will support efficient market entry where there is a vertically-integrated incumbent and a postage stamp pricing policy.
>
> Retail-minus is also consistent with the pricing principles under the WIC Act's third party access regime and the approach determined by the Australian Competition and Consumer Commission (ACCC) for access to Sydney Water's declared wastewater networks.[54]

54 Sydney Water submission to IPART Discussion Paper, 31 May 2016, pp 11-13.

Hunter Water, Permeate Partners, Central Coast Council and the Water Services Association of Australia also supported a retail-minus approach in this scenario.[55] Flow Systems did not support retail-minus and argued for an efficient cost tariff for all wholesale services.[56] Most other stakeholders opposed retail-minus pricing, but focused their arguments on wholesale service scenarios other than on-selling.

5.2.1 Cost-of-service pricing is inferior to retail-minus pricing where a postage stamp price is applied

A cost-of-service approach sets the wholesale price equal to the cost of providing the wholesale service to the wholesale customer. In general, there are two ways the cost-of-service approach could be applied:

- on a scheme/location specific basis, or
- on a postage stamp price/geographically averaged basis.

A location based cost-of-service price would typically be:

- lower in low cost areas, and
- higher in high cost areas.

Given Sydney Water and Hunter Water are bound to postage stamp retail prices, inefficient price signals would be created under location based cost-of-service prices, as shown in Figure 5.1 above.

In Figure 5.1 above, if the wholesale price reflected the actual bottom-up cost of servicing a specific wholesale scheme:

- A retailer seeking to enter in the Eastern Suburbs would have a margin of $150 per customer (being the retail postage stamp price of $600 less the cost-of-service wholesale charge of $450 (the sum of disposal, treatment, mains and reticulation)). This is $100 more per customer than the efficient cost of retail services, allowing inefficient entry (ie, a wholesale customer that was less efficient than Sydney Water or Hunter Water could enter and compete).
- A wholesale customer seeking to enter in the Western Suburbs, selling a retail and reticulation service, would have a margin of negative $250 per customer (being the retail postage stamp price of $600 less the cost-of-service wholesale charge of $850 (the sum of disposal, treatment and mains in Figure 5.1 above)). This would block entry, even if the wholesale customer were more efficient than Sydney Water or Hunter Water.

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55 Hunter Water submission to IPART Discussion Paper, 31 May 2016, p I; Permeate Partners submission to IPART Discussion Paper, 1 June 2016, p 4; Central Coast Council submission to IPART Discussion Paper, 27 May 2016, p 2; and Water Services Association of Australia submission to IPART Discussion Paper, 31 May 2016, p 5.

56 Flow Systems submission to IPART Discussion Paper, 3 June 2016, p 4 and 5.

This would lead to cherry-picking, where entry occurs only in low cost areas, potentially by inefficient utilities. Cherry-picking increases Sydney Water's and Hunter Water's average cost by reducing the low cost customer base while leaving the high cost customer base unchanged. This would push up the postage stamp price as higher than average costs need to be recovered over a smaller number of customers. In turn, this could lead to further cherry-picking. The regulated customers of Sydney Water and Hunter Water would be worse off, having to pay higher water and sewerage prices than they would otherwise face.

5.2.2 The non-residential price creates an arbitrage opportunity for on-selling

Under the current price structures for retail water and sewerage prices, Sydney Water and Hunter Water charge customers differently depending on whether the properties are used for non-residential or residential purposes.

Residential customers' service charges are set on a per dwelling basis (ie, an apartment serviced by Sydney Water is charged the same as a house, regardless of the size of the meter servicing the apartment block)[57]; whereas non-residential customers' service charges are based on the actual meter size at point of connection. This means that if Sydney Water or Hunter Water were to charge wholesale customers the **non-residential service charge** (based on meter size at connection) and wholesale customers were then able to charge individual houses and/or apartments Sydney Water's **residential service charges**, an arbitrage opportunity may exist (see Table 5.2).

Such an arbitrage opportunity could make it profitable for wholesale customers to enter the market without providing any additional services or improving overall system efficiency. That is, wholesale customers could enter the market through the arbitrage opportunity rather than by being as or more efficient than the wholesale service provider. Overtime, this could increase the revenue Sydney Water and Hunter Water need to recover from their wider customer bases, which would increase prices to all their remaining retail customers, without any offsetting system-wide efficiency gains from the new entry.

[57] This follows IPART's 2012 pricing principles, which state that water and sewerage residential service charges should be the same for all residential dwellings, unless there is evidence that there are material differences in the cost of servicing different residential property types (IPART, *Review of price structures for metropolitan water utilities – Final Report*, March 2012, p 3). For the recent reviews of Sydney Water's and Hunter Water's retail prices (for prices to apply from 1 July 2016), we decided that all residential customers (including houses and apartments) be *deemed* to have a 20mm meter for the purpose of determining service charges.

Table 5.2 The difference between non-residential prices

		
Description	Commercial tower	Residential tower
Units	100 businesses	100 apartments
Meter connection	80mm	80mm
Service charge basis	Meter based	Dwelling based
Water usage	16,000kL	16,000kL
Discharge factor	75%	75%
Annual charge in Sydney	$53,312	$99,355 *($46,043 more)*
Annual charge in Newcastle	$58,143	$83,894 *($25,751 more)*

Source: IPART analysis.

5.3 Reasonably efficient competitor cost is the most appropriate minus component

In order to apply the retail-minus price approach to on-selling, we considered four approaches for determining the minus component:

- as efficient competitor cost
- avoidable cost
- reasonably efficient competitor cost, and
- avoided cost.

Draft Decision

5 We have decided to use the reasonably efficient competitor cost as the minus component in retail-minus prices for the wholesale supply of drinking water and sewerage services for the purpose of on-selling to end-users.

5.3.1 The reasonably efficient cost standard balances the need to maximise productive and dynamic efficiencies

The reasonably efficient competitor cost approach is designed to leave a margin equal to a reasonably efficient utility's costs of providing the contestable services. This should ensure that a reasonably efficient wholesale customer can enter the market, while charging the regulated retail postage stamp prices of the incumbent.

The reasonably efficient competitor cost approach can be used in industries with increasing returns to scale, which could benefit from competition. That is, where dynamic efficiencies are expected to be realised.

In industries with increasing returns to scale, scale is a major impediment to entry. It would not be feasible for a wholesale customer to replicate the scale economies available to Sydney Water or Hunter Water immediately upon entry, particularly as they are largely restricted to new growth areas. As such, an entrant could not reasonably be expected to match the retailing costs of Sydney Water and Hunter Water in the short-term.

In these instances, entry could be assisted to allow wholesale customers to reach a competitive scale, where the benefits of competition can be realised. That is, potentially sacrificing some immediate productive efficiency for longer term dynamic efficiency gains. We note that greater competition for the market could create a stronger incentive for Sydney Water and Hunter Water to reduce their costs of servicing new developments, increasing productive efficiency even if actual entry did not occur.

Over time, as the market develops and wholesale customers have had an opportunity to grow and experience economies of scale, there would be a case to transition away from the reasonably efficient competitor cost approach.

In its submission to the Discussion Paper, Sydney Water argued that the reasonably efficient competitor approach:

- does not represent a best practice approach for setting access prices
- subsidises new entry (by increasing prices for customers or decreasing returns to shareholders) without providing a direct link to long-term benefits, and
- assumes new entrants are at a competitive disadvantage due to an absence of scale and scope economies.[58]

In its submission to the Discussion Paper, Hunter Water argued that the reasonably efficient competitor approach:

- is based on an unfounded premise that economies of scale exist in the contestable parts of the industry and the potential for dynamic efficiency gains outweighs the productive and allocative efficiency losses in the short to medium term, and
- is not practical to apply, as IPART would need to use its discretion to identify the efficient costs and servicing solutions applied by entrants.[59]

Some other stakeholders supported retail minus reasonably efficient competitor cost prices in limited instances.

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58 Sydney Water submission to IPART, 31 May 2016, p iv.
59 Hunter Water submission to IPART, 31 May 2016, pp 11-13.

We consider that there is still sufficient scope for productive and dynamic efficiency gains within the WIC Act's provisions. These restrictions limit the scope for 'competition in' the market (eg, there is little scope for new wholesale customers to compete with Sydney Water to supply drinking water to infill areas of Sydney). However, the 'competition for' the market puts pressure on Sydney Water and Hunter Water to continue to offer a competitive product.

The reasonably efficient competitor cost standard is based on efficient competitor tests for margin squeeze (see Box 5.1 below).

Box 5.1 Efficient competitor tests

Efficient competitor tests are margin squeeze tests. A margin squeeze is where a vertically integrated firm exploits a position of dominance in an input market to restrict competition in an output market. It does this by pricing either the input or end-product so that the margin between input cost and end-product price is so small that rivals cannot profitably compete.

Efficient competitor tests assess whether an efficient competitor to a vertically integrated business could be charged a given wholesale price and deliver the same product to end users at the retail price. Where an efficient competitor, based on the relevant benchmark, could not sustainably pay the wholesale price for the input and charge the vertically integrated business' retail price, a margin squeeze has occurred.

There are two common efficient competitor benchmarks used in efficient competitor tests:

- **As efficient operator** – this benchmark is based on the costs of the vertically integrated business. This benchmark requires that the margin would allow businesses to enter the market when they are as efficient as or more efficient than the vertically integrated business.
- **Reasonably efficient operator** – this benchmark is based on the costs of a business operating without the same access to economies of scale and scope as the vertically integrated business. This benchmark typically requires a higher margin to allow entry of efficient firms of a smaller scale.

Source: Niels G., Jenkins H., Kavanagh J., *Economics for Competition Lawyers*, Oxford University Press, 2011, p 239.

Retail minus reasonably efficient competitor costs may encourage some inefficient entry

There is a risk that using the reasonably efficient competitor costs approach would encourage inefficient entry. The reasonably efficient competitor cost standard is designed to support entry by utilities that are less efficient than the wholesale service provider. We consider that this is necessary at this stage to encourage entry when increasing returns to scale apply.

It could lead to some inefficient entry, particularly where the wholesale customer does not become more efficient over time. However, IPART can manage this risk by periodically reviewing the use of the reasonably efficient competitor cost approach including considering the transition to the use of the as efficient cost standard over time.

Sydney Water[60] and Hunter Water[61] both noted that under certain retail-minus pricing approaches, such as the reasonably efficient competitor approach, the minus is greater than the costs avoided by the wholesale service providers. In such instances, Sydney Water and Hunter Water requested that IPART identify who funds this difference, which is a deficit to the wholesale provider.

There are broadly two entities that would fund the difference between avoided cost and the 'minus':

- Sydney Water or Hunter Water's other customers, or
- Sydney Water or Hunter Water's shareholders.

The next review of retail prices for Hunter Water and Sydney Water is the appropriate forum to review this issue. A key consideration will be the evidence provided to support the estimates of the size of any deficit.

5.3.2 The as efficient cost standard focuses on productive efficiencies

As efficient competitor costs are the costs a wholesale customer that is as efficient as the wholesale service provider would incur to provide the contestable service to end-users. Setting the price for a wholesale water or sewerage service to be on-sold at the wholesale service provider's retail price minus the costs that Sydney Water or Hunter Water would incur if it provided the service to end-users would ensure that any equally or more efficient wholesale customer can enter the market while charging the regulated postage stamp retail prices.

This approach is a hybrid of two wholesale pricing approaches:

- the efficient component pricing rule (ECPR), and
- the as efficient competitor test for margin squeeze (see Box 5.1).

The retail-minus as efficient competitor cost approach would focus on productive efficiency at the expense of potential dynamic efficiencies. We consider that, at this stage, supporting dynamic efficiency gains in the water and sewerage services markets is important.

60 Sydney Water submission to IPART Discussion Paper, 31 May 2016, pp 12-14.
61 Hunter Water submission to IPART Discussion Paper, 31 May 2016, p 14.

5.3.3 Retail minus avoidable cost also focuses on productive efficiency

Avoidable costs are the costs that Sydney Water or Hunter Water could avoid if they no longer directly supplied water or sewerage services to *any* end-use customers. For example, if a wholesale customer is performing water retail and local reticulation services in Sydney Water's area of operations, it would assume that Sydney Water could, in the future, cease to perform any retail or local reticulation services.

We supported this approach in September 2015.[62]

Retail minus as efficient competitor costs and retail minus avoidable costs are similar pricing approaches

The retail minus avoidable costs approach would lead to wholesale prices that could restrict efficient entry. Prices calculated by a retail minus **avoidable** cost approach should be nearly identical to prices calculated by a retail-minus **as efficient competitor** cost approach. In their submissions to our Discussion Paper, Sydney Water and Hunter Water both considered that as efficient competitor costs (plus net facilitation costs) and avoidable costs were equivalent.[63] While we recognise that they are very similar, they are not identical:

- avoidable costs are based on what the wholesale service provider can potentially avoid (for example, Sydney Water and Hunter Water cannot avoid the fixed costs of the services that are bypassed, the unavoidable costs, so they are not included in the minus in a retail minus avoidable cost price), and
- as efficient costs are based on what an as efficient wholesale customer will need to incur in providing the contestable services from point of wholesale connection to end-users (eg, the wholesale customer incurs all the costs of these services, even those the wholesale service provider cannot avoid, and all these costs are included in the minus in a retail-minus as efficient cost price).

A key issue is the valuation of the regulatory asset base (RAB). As part of our early regulation of Sydney Water and Hunter Water, we valued the assets of both companies based on cash flows generated from prevailing prices. As such, their RABs do not reflect the replacement cost of all assets, and are not directly assigned to each water or sewerage supply chain component. Where Sydney Water or Hunter Water would cease to provide a retail service, it would write off its assets related to retail services. However, regulatory discretion needs to be used in deciding how to write off RAB assets.

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62 See our Issues Papers for the 2016 Sydney Water (p 182) and Hunter Water (p 107) price reviews.

63 Sydney Water submission to IPART Discussion Paper, 31 May 2016, p 44; and Hunter Water submission to IPART Discussion Paper, 31 May 2016, p 12.

In this context, valuation rules or approaches can be important. For example, the ACCC overcame issues regarding a RAB being valued below the replacement costs of assets by requiring contestable assets (included in the minus) to be valued at depreciated optimised replacement cost value in the minus component of the retail minus charge (see Box 5.2 below).[64]

Box 5.2 ACCC's determination of Sydney Water's access charges

The ACCC arbitrated in an access dispute between Services Sydney Pty Ltd and Sydney Water for the North Head, Bondi and Malabar sewerage reticulation networks. The ACCC determined a retail minus avoidable costs plus direct costs of facilitating access methodology:

According to the ACCC (emphasis added):

> Avoidable costs are the costs that Sydney Water would otherwise incur in the provision of sewerage services that could be avoided if it **completely ceased** provision of the relevant contestable components of providing sewerage services.

In the arbitration, Sydney Water and Services Sydney both sought to use a building block methodology for calculating their preferred pricing approach (Sydney Water proposed a retail-minus approach and Services Sydney proposed a cost of service approach):

> In the context of determining avoidable costs, a building block approach will determine Sydney Water's average costs of providing the contestable services in the long-run.

The ACCC considered that the avoidable building block costs should be based on a forward looking valuation of the assets in question. That is, the ACCC required that these assets (for the purpose of the building block avoidable costs) are valued based on depreciated optimised replacement cost (DORC).

To make a DORC valuation, assets needed to be optimised:

> Asset optimisation in this context refers to the extent to which the treatment and disposal assets should be redesigned in the optimisation process. This includes any redesign necessary to satisfy a specified level of service… and the extent to which any elements of the facility should be reconfigured in the optimisation process…

Source: Australian Competition and Consumer Commission, *Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, Arbitration Report, 19 July 2007, p 2; and Australian Competition and Consumer Commission, *Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, Final Determination Statement of Reasons, 22 June 2007, pp 61, 67.

Sydney Water and Hunter Water supported retail minus avoidable cost prices

In their submission to our Discussion Paper, Sydney Water considered that as efficient competitor costs (plus net facilitation costs) and avoidable costs were the same.[65] As such, its comments on both approaches are included here.

64 Australian Competition and Consumer Commission, *Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, Final Determination under Section 44V, 19 July 2007, p 2.

65 Sydney Water submission to IPART Discussion Paper, 31 May 2016 p 21.

Sydney Water argued for a retail-minus as efficient competitor cost approach in its submission and noted that it is equivalent to the avoidable cost standard. Sydney Water noted that such a pricing approach could be in the long-term interests of customers.[66]

Hunter Water argued for a retail minus avoidable cost approach in its submission. Hunter Water noted the advantages of the retail minus avoidable cost approach are:

- the minus component can be calculated by reference to the costs that it could avoid in the long term
- it does not require any resetting of past RAB values, and
- it does not require IPART to assess whether it is efficient for the wholesale customer to operate differently from the wholesale service provider.[67]

5.3.4 Retail minus avoided costs is the ECPR

Avoided costs are the costs that Sydney Water or Hunter Water would **actually** avoid if they no longer directly supplied water or sewerage services to end-use customers. This is the efficient component pricing rule. We have not supported the retail-minus **avoided** cost pricing approach at any stage of this pricing review, as we consider that it would not likely promote new entry and competition in the water and sewerage services markets.

5.4 Calculating system-wide retail minus reasonably efficient competitor cost prices

In order to apply retail minus reasonably efficient competitor cost prices for the Draft Determinations, it is necessary to:

- calculate the retail charges, and
- calculate the reasonably efficient competitor costs.

5.4.1 Calculating the retail charges

Draft Decision

6 We have decided the retail charges in the retail minus reasonably efficient competitor cost prices will be the sum of end-use customer retail charges based on the prevailing Sydney Water or Hunter Water determination.

66 Sydney Water submission to IPART Discussion Paper, 31 May 2016 pp 16-17, 21.
67 Hunter Water submission to IPART Discussion Paper, 31 May 2016 p 21.

We calculated retail charges for water on-selling and sewerage on-selling by calculating the sum of end-use customers retail charges based on the prevailing Sydney Water or Hunter Water determination (depending on the region within which the wholesale customer operates). We decided that retail-minus charges should be levied on the wholesale customer on an on-going basis.

Further information on how to calculate the retail charges is included in Appendix D.

5.4.2 Calculating the reasonably efficient competitor cost

Draft Decision

7 We have decided to calculate the reasonably efficient competitor costs based on:

- an annual building block cost that has an initial valuation of assets at the undepreciated cost to reflect a new entrant's costs, operating expenditure matched to asset age, gifted assets treated as assets free of charge, and a return on assets based on the prevailing Sydney Water and Hunter Water real post-tax WACC of 4.9%
- an equivalent annuity of the annual building block costs over a 50-year period using a discount rate based on the prevailing Sydney Water and Hunter Water real pre-tax WACC of 5.9%, and
- the cost drivers of the service (ie, per customer for retail functions and per kilometre of pipeline for reticulation functions).

Appendix E discusses our methodology for calculating reasonably efficient competitor costs and our rationale for this methodology in detail.

The Draft Determinations apply the retail minus reasonably efficient competitor cost methodology to on-selling water and sewerage services. The figures below provide an overview of how the Draft Determinations apply this methodology.

Figure 5.2 On-selling Water Service

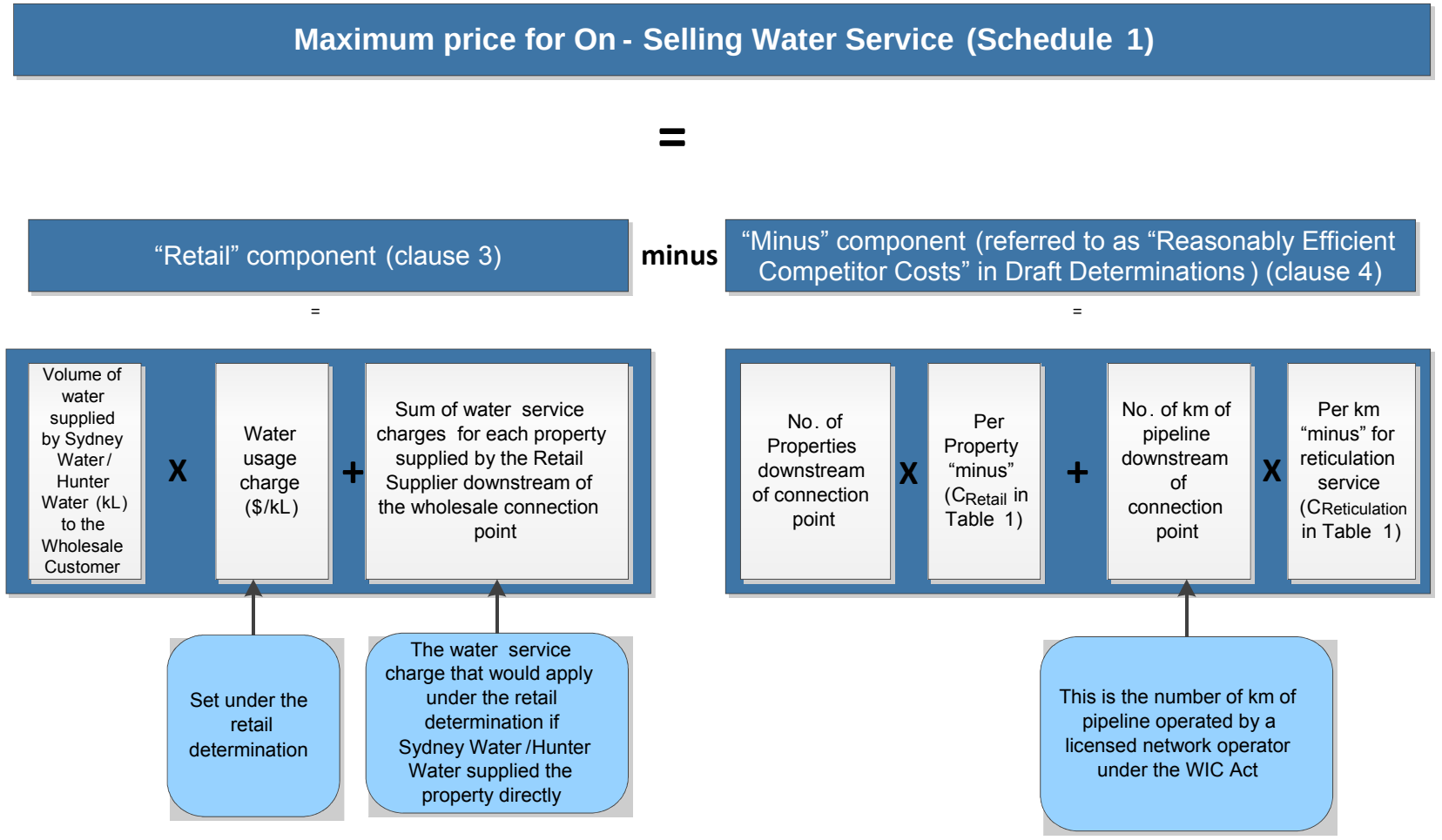
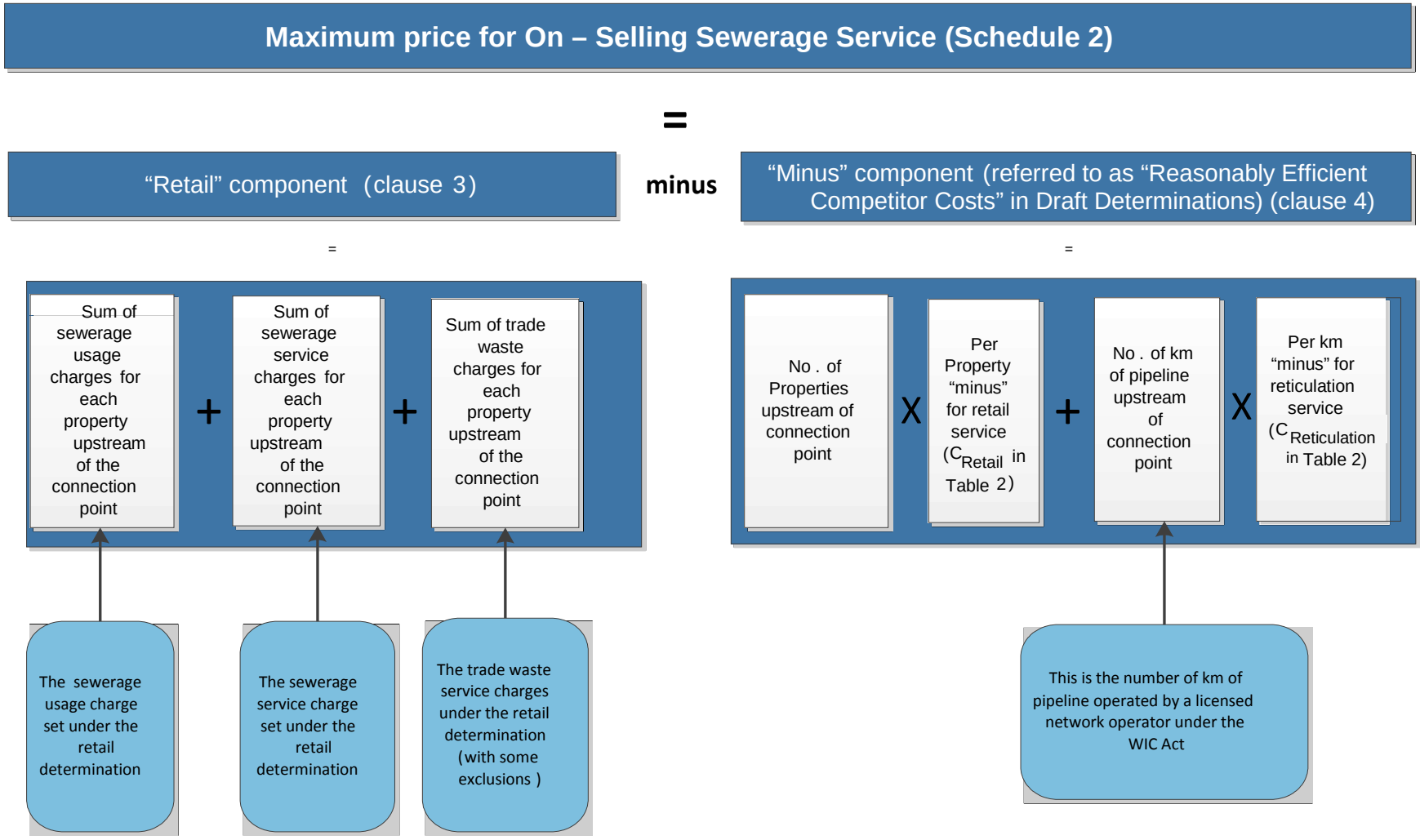


Figure 5.3 On-selling Sewerage Service



Note: References to paragraph, table and schedule numbers in this figure refer to the paragraphs, tables or schedules in the Draft Determinations. This figure is a simplified outline of sections of the Draft Determinations, and is provided for explanatory purposes only.

5.5 Stakeholder impacts of this pricing approach

In this section we outline indicative impacts on wholesale customers of our draft pricing decisions for on-selling water and sewerage services.

5.5.1 On-selling water services

The tables below show bill impacts for three indicative wholesale schemes, with simplified assumptions to highlight the general outcome under our draft prices for on-selling water services.

Under our draft decision to set wholesale charges for on-selling water services using a retail-minus approach, the impact on wholesale customers' bills depends on the specific characteristics of the scheme (ie, the numbers of customers and length of reticulation network).

For the indicative schemes we outline below, our draft prices for on-selling water would generally result in a lower bill than if the price was set at the wholesale service provider's non-residential retail prices.

In Table 5.3 below, for an inner city development (with 2,000 residential end-use customers), the total expected revenue from end-use customers for water services based on IPART's 2016 retail determination for Hunter Water would be $2.9 million (over the 4-years from 2016-17 to 2019-20 in present value terms), which comprises about $2.5 million in usage revenue and about $0.4 million in residential water service charge revenue.

Under our draft decision, the total wholesale bill for this scenario would be $2.4 million over the same period – ie, the total minus for retail and reticulation services is about $0.5 million over the period. This is lower than if the wholesale bill were to be set using non-residential retail prices. The wholesale bill under non-residential prices would be about $2.52 million, which comprises about $2.5 million in usage revenue and about $0.02 million in meter based water service charge revenue.

For a wholesale customer of Sydney Water, the reverse would occur for this indicative scheme. The wholesale bill under our draft decision would be $2.4 million (for retail minus retail and reticulation contestable services), which is higher than a wholesale bill of $2.3 million if it were to be set using non-residential retail prices. Under our draft decision, it also means that the margin decreases by about $0.1 million.

The difference between the expected revenue from end-users and the wholesale bill would be the same under Sydney Water and Hunter Water – for this indicative scheme it is $0.5 million. This is because we have applied the same reasonably efficient competitor costs to both Sydney Water and Hunter Water for the 'minus' component (see Section 5.1).

We also provide indicative impacts for a small greenfield low density development and a large greenfield low density development in Table 5.4 and Table 5.5.

We provide further detail underpinning our impact analysis in Appendix G.

Table 5.3 On-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Inner city high density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Inner city high density development (2,000 end-use customers)	Expected revenue from end-users[a]	$2,848	$2,911
	Wholesale customers' bill: non-residential retail prices	$2,250	$2,520
	Wholesale customers' bill: IPART draft decision	**$2,364**	**$2,427**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$597	$391
	Under IPART's draft decision	$484	$484
	Change in margin	*-$113*	*+$92*

[a] The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year, and a 150mm meter and two 80mm meter connections to Sydney Water or Hunter Water (for the non-residential retail prices). We have also assumed 0.02km of reticulation. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 5.4 On-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Small greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Small greenfield low density development (2,000 end-use customers)	Expected revenue from end-users[a]	$3,514	$3,662
	Wholesale customers' bill**:** non-residential retail prices	$2,938	$3,285
	Wholesale customers' bill: IPART draft decision	**$2,590**	**$2,738**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$576	$378
	Under IPART's draft decision	$924	$924
	Change in margin	*+$348*	*+$546*

[a] The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year to 220kL per year, and a single 250mm meter connection to Sydney Water or Hunter Water. We have assumed 30km of reticulation. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 5.5 On-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Large greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Large greenfield low density development (10,00 end-use customers)	Expected revenue from end-users[a]	$17,780	$18,547
	Wholesale customers' bill: non-residential retail prices	$14,752	$16,555
	Wholesale customers' bill: IPART draft decision	**$13,160**	**$13,927**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$3,028	$1,992
	Under IPART's draft decision	$4,620	$4,620
	Change in margin	*+$1,592*	*+$2,628*

[a] The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year to 220kL per year, and a single 350mm meter connection to Sydney Water or Hunter Water. We have assumed 150km of reticulation. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

5.5.2 On-selling sewerage services

The tables below show example bill impacts for three indicative wholesale schemes, with simplified assumptions, to highlight the general outcome under our draft prices for on-selling sewerage services.

Our draft decisions on prices for on-selling would generally result in a higher bill for wholesale customers than if they were subject to Sydney Water and Hunter Water's retail non-residential prices.

In Table 5.6, for an inner city development (with 2,000 residential end-use customers), the total revenue from end-use customers for sewerage services based on IPART's 2016 retail determination for Sydney Water would be $4.1 million (over the 4-years from 2016-17 to 2019-20 in present value terms).[68] Under our draft prices, the wholesale bill for this scenario would be $3.7 million (for retail minus retail and reticulation contestable services), which is $3.2 million higher than a wholesale bill of $0.5 million if it were to be set using non-residential retail prices. Under our draft decision, it also means that the difference between the expected revenue from end-users is about $0.3 million,

[68] That is, the total bill in present value terms as at 1 July 2016 (for illustrative purposes only).

which is lower than the difference of $3.6 million if non-residential prices were applied.

For a wholesale customer of Hunter Water, the wholesale bill for the same scenario would be $3.3 million, which is higher than a wholesale bill of $0.4 million if it were to be set using non-residential prices. Under our draft decision, it also means that the difference between the expected revenue from end-users is about $0.3 million, which is lower than the difference of $3.2 million if non-residential prices were applied.

We also provide similar indicative impacts for a small greenfield low density development and a large greenfield low density development in Table 5.7 and Table 5.8, respectively.

Table 5.6 On-selling sewerage: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Inner city high density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Inner city high density development (2,000 end-use customers)	Expected revenue from end-users[a]	$4,054	$3,591
	Wholesale customers' bill: non-residential retail prices	$491	$350
	Wholesale customers' bill: IPART draft decision	**$3,731**	**$3,268**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$3,563	$3,240
	Under IPART's draft decision	$323	$323
	Change in margin	*-$3,240*	*-$2,917*

a The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year, and a 150mm meter and two 80mm meter connections to Sydney Water or Hunter Water. We have also assumed 0.02km of reticulation. We have also assumed a discharge factor of 75% for residential properties and 78% for non-residential properties. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 5.7 On-selling sewerage: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Small greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Small greenfield low density development (2,000 end-use customers)	Expected revenue from end-users[a]	$4,063	$4,392
	Wholesale customers' bill**:** non-residential retail prices	$667	$502
	Wholesale customers' bill: IPART draft decision	**$3,207**	**$3,535**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$3,397	$3,890
	Under IPART's draft decision	$857	$857
	Change in margin	*-$2,540*	*-$3,033*

[a] The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year to 220kL per year, and a single 250mm meter connection to Sydney Water or Hunter Water. We have assumed 20km of reticulation. We have also assumed a discharge factor of 75% for residential properties and 78% for non-residential properties. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 5.8 On-selling sewerage: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Large greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Large greenfield low density development (10,000 end-use customers)	Expected revenue from end-users[a]	$20,317	$22,184
	Wholesale customers' bill**:** non-residential retail prices	$3,054	$2,001
	Wholesale customers' bill: IPART draft decision	**$16,034**	**$17,901**
	Margin (difference in expected revenue from end-users and wholesale bills)		
	Under non-residential retail prices	$17,264	$20,184
	Under IPART's draft decision	$4,283	$4,283
	Change in margin	*-$12,980*	*-$15,900*

[a] The expected revenue has been calculated using prices from our 2016 retail price reviews.

Note: We have applied simplified assumptions purely for illustrative purposes, eg, average end-use customer water consumptions of 160kL per year to 220kL per year, and a single 350mm meter connection to Sydney Water or Hunter Water. We have assumed 100km of reticulation. We have also assumed a discharge factor of 75% for residential properties and 78% for non-residential properties. The above analysis is also done over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

6 Pricing approach for drinking water top-up to recycled water schemes

A number of wholesale customers buy drinking water to top up the supply of water to their recycled water schemes. This is known as 'drinking water top-up' or 'potable top-up'. This water is an input to the recycled water system not directly on-sold to end-use customers for drinking purposes (ie, the final product sold to end-use customers is non-potable water).

It is used by wholesale customers to ensure a constant supply from their recycled water systems to their end-use recycled water customers. Drinking water top-up may be needed if the wholesale customer is temporarily unable to source sufficient input to its recycled water system through other sources, such as sewerage services, sewer mining or stormwater harvesting.

In some instances, wholesale customers that purchase drinking water to top up a recycled water scheme will also purchase drinking water for the purpose of on-selling to end-use customers (through separate reticulation infrastructure).

We have considered what pricing approach is most appropriate for these two types of drinking water services. We took into account the nature of the service, particularly whether the wholesale service is on-sold to end-users or used as an input to a service sold to end-use customers. We also had regard to stakeholders' comments in response to our Discussion Paper.

The sections below summarise our draft decision, discuss our analysis and considerations in more detail, and the likely impacts on stakeholders.

6.1 Summary of draft decision on pricing drinking water top-up

Draft decision

8 We have decided wholesale customers that purchase drinking water to top up their recycled water schemes should be charged the wholesale supplier's non-residential service and usage retail prices for the drinking water supply.

Our draft decision would mean that wholesale customers purchasing drinking water to top up their recycled water schemes would get charged:

- a non-residential water service charge based on their connection size to either Sydney Water's or Hunter Water's network, and

- a drinking water usage charge at the same rate per kL as retail customers in Sydney Water's or Hunter Water's network.

The reasons for our draft decision are outlined below.

First, postage stamp retail prices do not apply to regulated recycled water charges. This removes one of the strongest rationales for retail-minus wholesale prices, which are designed to accommodate postage stamp pricing of water and sewerage services. Under our 2006 *Pricing arrangements for recycled water and sewer mining*, recycled water schemes operated by Sydney Water and Hunter Water are to be ring-fenced and self-financing. [69,70] As such, the prices for each recycled water scheme should be cost-reflective for that scheme, unlike postage stamp pricing. This also means there is no standard 'retail' that can be used as the basis for a retail-minus price.

Second, drinking water top-up is a relatively minor input into recycled water production that is only used occasionally and not in fixed proportion to recycled water output. Recycled water plants, just like factories, bottling plants and cafés, use drinking water as one input into their production process. Drinking water for top-up is sold as recycled water (that is, not for drinking). Drinking water top-up is only used when the supply of sewerage is insufficient to cover recycled water demand. The main input into the production process is sewerage. Sydney Water forecasts that less than 20% of Rouse Hill recycled water is drinking water top-up, and Hunter Water forecasts that about 2% of the recycled water it sells to residential recycled water customers will be drinking water top-up.[71] In this sense, drinking water top-up is an input into a recycled water scheme in the same way that drinking water is an input into many non-residential customers' production.

Finally, non-residential retail prices were favoured (over retail-minus prices) for drinking water top-up in stakeholder submissions. Sydney Water did not consider water for drinking water top-up a wholesale service, suggesting that the non-residential price would be appropriate.[72,] Hunter Water has no drinking water top-up only schemes, and so did not raise this service in its submission. Non-residential retail pricing for recycled water schemes was supported in

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69 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 53, 63.

70 Under our 2006 Guidelines, recycled water prices should recover the full direct cost of implementing the recycled water scheme concerned, unless:
- the scheme gives rise to **avoided costs** that benefit the water agencies and users other than the direct users of the recycled water,
- the scheme gives rise to broader **external benefits** for which external funding is received, or
- 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.

71 Sydney Water Annual Information Return, September 2015; Hunter Water Annual Information Return, September 2015.

72 Sydney Water submission to IPART Discussion Paper, 31 May 2016, p 4.

submissions from the Urban Development Institute of Australia and the Institute for Sustainable Futures.[73] In addition, Permeate Partners supported the inclusion of recycled water as a wholesale service during the next review of recycled water supply arrangements.[74] We are due to undertake a review of recycled water pricing in 2017-18.

Tables 6.1 and 6.2 below show the prices that would apply for drinking water top-up services from Sydney Water and Hunter Water (respectively).

Table 6.1 Wholesale charges for drinking water top-up from Sydney Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge				
Water usage charge ($/kL)	2.00	2.00	2.00	2.00
SDP uplift ($/kL)	0.12	0.12	0.12	0.12
Meter connection charge				
20mm ($/meter)	89.95	89.95	89.95	89.95
25mm ($/meter)	140.55	140.55	140.55	140.55
32mm ($/meter)	230.28	230.28	230.28	230.28
40mm ($/meter)	359.82	359.82	359.82	359.82
50mm ($/meter)	562.22	562.22	562.22	562.22
80mm ($/meter)	1,439.27	1,439.27	1,439.27	1,439.27
100mm ($/meter)	2,248.86	2,248.86	2,248.86	2,248.86
150mm ($/meter)	5,059.94	5,059.94	5,059.94	5,059.94
200mm ($/meter)	8,995.44	8,995.44	8,995.44	8,995.44
Other meter sizes ($/meter)	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			

Note: Meter connection charges will be altered by the Sydney Desalination Plant (SDP) pass through in 2017-18, 2018-19 and 2019-20. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

[73] Urban Development Institute of Australia submission to IPART Discussion Paper, 4 June 2016, p 3; and Institute for Sustainable Futures submission to IPART Discussion Paper, 31 May 2016, p 1.

[74] Permeate Partners submission to IPART Discussion Paper, 1 June 2016, p 2.

Table 6.2 Wholesale charges for drinking water top-up from Hunter Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge				
Water usage charge ($/kL)	2.25	2.25	2.25	2.25
Water supply service charge				
20mm ($/meter)[a]	30.17	54.97	75.43	95.17
25mm ($/meter)	47.13	85.88	117.85	148.71
32mm ($/meter)	77.23	140.72	193.10	243.64
40mm ($/meter)	120.67	219.86	301.71	380.69
50mm ($/meter)	188.55	343.54	471.43	594.82
80mm ($/meter)	482.67	879.45	1,206.85	1,522.74
100mm ($/meter)	754.18	1,374.13	1,885.70	2,379.28
150mm ($/meter)	1,696.91	3,091.81	4,242.83	5,353.39
200mm ($/meter)	3,016.71	5,496.54	7,542.80	9,517.14
Other meter sizes ($/meter)	$\frac{(\text{meter size})^2 \times 20\text{mm water supply service charge}}{400}$			

Note: If a wholesale customer only has a single 20mm meter they would receive a lower water supply service charge. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

6.2 A consistent pricing approach for schemes that purchase water for drinking water top-up and on-selling

As outlined above, in some cases the wholesale customer buys drinking water both as top-up to its recycled water scheme and to on-sell drinking water to end-use customers. Our draft decision is that Sydney Water and Hunter Water should charge for each of these services separately and consistently with the appropriate pricing approach for each of the services - ie:

- a retail-minus price for water to water on-selling (as outlined in Chapter 4), and
- the non-residential price for water for drinking water top-up (as outlined above).

Draft decision

9 We have decided that wholesale customers that purchase drinking water for the purpose of on-selling *and* drinking water top-up should be charged:

  – a retail-minus price for the water supplied for on-selling, and

  – the retail non-residential water service and usage prices for the water supplied for drinking water top-up.

10 We have decided that in cases where the connection to the recycled water system (drinking water top-up) is not separately metered, wholesale customers should be charged a non-residential retail service charge for drinking water top-up based on a deemed meter size of 100mm.

In some cases, drinking water top-up may not be individually metered. In these cases, our draft decision is that the non-residential retail service charge for drinking water top-up should be based on a **deemed** meter size of 100mm.

Sydney Water and Hunter Water may avoid charging based on a deemed meter size by requiring wholesale customers to individually meter drinking water top-up for any new schemes. There may also be an incentive for wholesale customers to meter drinking water top-up where the deemed meter size is greater than their drinking water connections to the recycled water system.

6.3 Stakeholder impacts of this pricing approach

We highlight below indicative bill impacts to wholesale customers that would result from our draft decisions.

Drinking water for recycled water top-up only

Under our draft decisions, schemes that purchase drinking water purely for the purpose of topping up recycled water systems would pay retail non-residential prices. That is:

- a water usage price at the same rate per kL as other retail customers in either Sydney Water or Hunter Water's network, and
- a water service charge based on the applicable non-residential retail price for the metered connection of the recycled water system – this would be the same retail charge applicable to other non-residential retail customers in either Sydney Water or Hunter Water's network.

For example, if a new scheme purchased 20,000 kL of water per year to top up its recycled water system, and had a metered connection of 100mm to Sydney Water's network, then it would pay about $42,249 in 2016-17 to Sydney Water. If it were connected to Hunter Water's network, it would pay about $45,754 in the same period to Hunter Water. These bills are based on our 2016 retail price determinations for Sydney Water and Hunter Water.

Drinking water for both on-selling to end-use customers and recycled water top-up

We present in tables below example bill impacts for three indicative wholesale schemes with simplified assumptions to highlight the general outcome under our draft decision for new schemes that undertake both on-selling water services and purchase drinking water to top up recycled water systems. It shows that under our draft decision, the wholesale bill to customers would generally be lower than if the non-residential prices were applied. This is mainly driven by the on-selling water component of the bill as previously explained in Chapter 5.

Table 6.3 below shows that for an inner city development (with 2,000 residential end-use customers), where drinking water is purchased from Hunter Water to top up a recycled water system and on-sold to end-users, the wholesale bill under our draft decisions would be about $1.6 million (over 2016-17 to 2019-20 in net present value terms). This comprises $1.55 million for on-selling water and $0.01 million for drinking water top up (including the deemed 100mm service charge). This compares with $1.7 million, over the same period, if we were to set prices based on non-residential retail prices.[75]

For a wholesale customer of Sydney Water, the bill for the same scenario would be $1.7 million (for retail minus retail and reticulation contestable services), which is higher than the wholesale bill of $1.6 million if it were set using non-residential prices.

We also provide similar indicative impacts for a small greenfield low density development and a large greenfield low density development in Table 6.4 and Table 6.5, respectively.

[75] We have applied consistent assumptions in the amount of drinking water supplied (ie, total drinking water of 219,000 kL per year for both top-up and on-selling) when calculating the wholesale customers' bill under non-residential prices and IPART's draft decisions for the inner city development scheme. For the other schemes we have applied consistent assumptions but at different amounts to reflect the different number of end-use customers (see notes to each table for further information).

Table 6.3 Drinking water top-up and on-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Inner city high density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Inner city high density development (2,000 end-use customers)	Wholesale customers' bill**:** non-residential retail prices	$1,550	$1,732
	Wholesale customers' bill: IPART draft decision	**$1,671**	**$1,645**
	Comprises:		
	On-selling water	*$1,586*	*$1,552*
	Drinking water top-up (including 100mm service charge)	*$86*	*$93*
	Difference in bill (IPART draft less non-residential retail price)	+$121	-$87

Note: We have applied simplified assumptions purely for illustrative purposes. Eg, average end-use customer water consumptions of 160kL per year (of which 65% is drinking water and 10% of the remaining recycled water is drinking water top-up – only these components have been incorporated above), and a 150mm meter and two 80mm meter connection to Sydney Water or Hunter Water (for the non-residential retail bill calculations). We have assumed 0.02km of reticulation for this inner high density development. The above analysis is also over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 6.4 Drinking water top-up and on-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Small greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Small greenfield low density development (2,000 end-use customers)	Wholesale customers' bill: non-residential retail prices	$1,753	$1,951
	Wholesale customers' bill: IPART draft decision[a]	**$1,413**	**$1,410**
	Comprises:		
	On-selling water	*$1,273*	*$1,257*
	Drinking water top-up (including 100mm service charge)	*$140*	*$154*
	Difference in bill (IPART draft less non-residential retail price)	-$340	-$541

a The wholesale bills under our draft decisions are lower for this indicative scheme because we have assumed 30km of reticulation compared with the first indicative scheme of 0.02km - hence under retail minus 'retail and reticulation' we have lower prices in this scheme.

Note: We have applied simplified assumptions purely for illustrative purposes. Eg average end-use customer water consumptions of 160kL per year to 220kL per year (of which 50% to 65% is drinking water and 10% of the remaining recycled water is drinking water top-up – only these components have been incorporated above), and a single 250mm meter connection to Sydney Water or Hunter Water (for the non-residential retail bill calculation). We have assumed 30km of reticulation for this small greenfield indicative scheme. The above analysis is also over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

Table 6.5 Drinking water top-up and on-selling water: retail & reticulation contestable services - Indicative revenue/bill impacts over 2016-17 to 2019-20 (NPV $'000s, $2016-17) – Large greenfield low density development

Indicative scheme	Revenue/bill impact	Wholesale provider Sydney Water	Wholesale provider Hunter Water
Large greenfield low density development (10,000 end-use customers)	Wholesale customers' bill**:** non-residential retail prices	$8,657	$9,698
	Wholesale customers' bill: IPART draft decision	**$7,073**	**$7,075**
	Comprises:		
	On-selling water	*$6,388*	*$6,308*
	Drinking water top-up (including 100mm service charge)	*$685*	*$767*
	Difference in bill (IPART draft less non-residential retail price)	-$1,584	-$2,623

Note: We have applied simplified assumptions purely for illustrative purposes. Eg, average end-use customer water consumptions of 160 kL per year to 220 kL per year (of which 50% to 65% is drinking water and 10% of the remaining recycled water is drinking water top-up – only these components have been incorporated above), and a single 350mm meter connection to Sydney Water or Hunter Water (for the non-residential retail bill calculation). We have assumed 150km of reticulation for this large greenfield indicative scheme. The above analysis is also over the period 2016-17 to 2019-20 for indicative purposes (despite the proposed determination period being from 1 March 2017 to 30 June 2021).

Source: IPART analysis.

7 Pricing approach for recycled water scheme waste disposal

Some wholesale customers buy sewerage services from Sydney Water or Hunter Water to dispose of waste from their recycled water plants. Where the wholesale customer also provides a sewerage service to end-use customers, its own reticulation network takes raw sewerage from its end-use sewerage customers to its recycled water plant. Alternatively, the wholesale customer may obtain raw product for recycling from sewer mining or stormwater harvesting. The recycled water plant transforms this product into recycled water and concentrated sewerage or sludge. The concentrated sewerage or sludge may then be discharged into Sydney Water's or Hunter Water's sewerage network.

We have considered what pricing approach is most appropriate for wholesale recycled water plant waste disposal services. We took into account the nature of the service, particularly whether the wholesale service is on-sold to end-users or an input to a service sold to end-use customers. We also had regard to stakeholders' comments in response to our Discussion Paper.

The sections below summarise our draft decision, and then discuss our analysis in more detail.

7.1 Summary of draft decision on pricing recycled water plant waste disposal services

Draft decision

11 We have decided that waste from recycled water plants should be subject to non-residential retail prices (including trade waste charges, where applicable) for sewerage services.

Our draft decision reflects our current views that:

- Wholesale customers primarily use sewerage services provided by Sydney Water and Hunter Water as an input to producing recycled water (ie, to dispose of waste from the production process), rather than directly on-selling these sewerage services to end-use customers. This suggests recycled water plants should be treated the same as other non-residential customers that discharge waste to Sydney Water's or Hunter Water's networks, and the non-residential retail price should apply.

- The disposal of waste from a recycled water plant may be a contestable service, as wholesale customers generally have alternative options for disposing of their recycled water waste (eg, 'bypassing' Sydney Water's or Hunter Water's sewerage network by trucking to another disposal facility). This suggests that moving to a higher retail-minus price may encourage these customers to bypass Sydney Water's or Hunter Water's network. This may not be the most efficient method of disposing of recycled water waste and supplying recycled water to end-use customers.

Our draft decision means that, where wholesale customers purchase sewerage services from Sydney Water or Hunter Water to dispose of waste from a recycled water scheme, the wholesale price would be based on:

- the wholesale customer's water meter connection size to either Sydney Water or Hunter Water's sewerage network, including applicable discharge factors
- the applicable sewerage usage charge for sewerage discharged in excess of any sewerage discharge allowances, and
- any applicable trade waste charges for the sewerage discharged.

The wholesale charge would not be based on the number of end-use customers that are being provided a sewerage service by the wholesale customer. However:

- in periods when a recycled water plant is bypassed, the wholesale customer would be treated as conducting a direct on-selling sewerage service, and
- where a recycled water plant only treats sewage from some end-use customers within a wholesale scheme, the wholesale customer would be treated as conducting on-selling sewerage services for those customers whose sewage is not treated by the recycled water plant.

Tables 7.1 and 7.2 below show the prices that would apply for recycled water plant waste disposal services from Sydney Water and Hunter Water (respectively). Wholesale customers would also incur trade waste charges as set out in the prevailing Sydney Water and Hunter Water retail price determinations and Appendix F.

Table 7.1 Wholesale sewerage charges for recycled water plant waste disposal services from Sydney Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge[a]				
20mm	555.26	555.26	555.26	555.26
25mm	867.59	867.59	867.59	867.59
32mm	1,421.45	1,421.45	1,421.45	1,421.45
40mm	2,221.02	2,221.02	2,221.02	2,221.02
50mm	3,470.35	3,470.35	3,470.35	3,470.35
80mm	8,884.09	8,884.09	8,884.09	8,884.09
100mm	13,881.39	13,881.39	13,881.39	13,881.39
150mm	31,233.13	31,233.13	31,233.13	31,233.13
200mm	55,525.57	55,525.57	55,525.57	55,525.57
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge				
Deemed usage charge	167.15	167.15	167.15	167.15
Sewerage usage charge				
Below discharge allowance	0.00	0.00	0.00	0.00
Above discharge allowance	1.11	1.11	1.11	1.11

a Discharge factors will apply, which will reduce the meter connection charge.

Note: Prices for 2020-21 are expected to be determined in June 2020

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

Table 7.2 Wholesale sewerage charges for recycled water plant waste disposal services from Hunter Water ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge[a]				
20mm	1,135.05	956,59	841.05	718.97
25mm	1,773.51	1,494.66	1,314.14	1,123.39
32mm	2,905.72	2,448.86	2,153.10	1,840.55
40mm	4,540.18	3,826.34	3,364.21	2,875.87
50mm	7,094.04	5,978.67	5,256.59	4,493.55
80mm	18,160.74	15,305.38	13,456.85	11,503.47
100mm	28,376.16	23,914.65	21,026.33	17,974.17
150mm	63,846.35	53,807.97	47,309.26	40,441.88
200mm	113,504.62	95,658.60	84,105.34	71,896.66
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge				
Deemed usage charge	45.23	56.95	68.68	80.40
Sewerage usage charge				
Below discharge allowance[a]	0.00	0.00	0.00	0.00
Above discharge allowance[a]	0.67	0.67	0.67	0.67
Environmental improvement charge				
Environmental improvement charge	38.87	38.87	38.87	38.87

[a] Discharge factors will apply, which will reduce the meter connection charge.

Note: If a wholesale customer only has a single 20mm meter they would receive a lower meter connection charge. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016.

7.2 The disposal of recycled waste is an input to the recycled water production process

In general, about 99% of raw sewerage is water.[76] Recycled water plants reclaim some of this water from the sewerage. As a result, a recycled water plant operated by a wholesale customer would generally discharge a different product into Sydney Water or Hunter Water's sewerage network than the raw product collected from the wholesale customer's end-use sewerage customers.

This means the sewerage service provided by Hunter Water or Sydney Water to treat waste from a recycled water plant can be seen as an input to the production of recycled water, rather than a service that is simply on-sold to end-use customers. Non-residential customers, such as restaurants and factories, need a

[76] Sydney Water, *Recycled water treatment process*, fact sheet, accessed on 28 July 2016, https://www.sydneywater.com.au/web/groups/publicwebcontent/documents/document/zgrf/mdq1/~edisp/dd_045708.pdf.

sewerage service to discharge waste from their operations. Similarly, a recycled water plant needs a sewerage service to discharge waste from its operations.

A recycled water system can source raw product from sewerage services, sewer mining, stormwater harvesting or a combination of these sources. Where a recycled water scheme obtains raw product from sewer mining or stormwater harvesting, these schemes extract raw sewerage from sewer mains or stormwater from stormwater mains, treat the raw product and dispose of a concentrated waste product. They do not provide any end-use customers with a sewerage service.

As such, recycled waste disposal by sewer mining and stormwater harvesting schemes cannot be classified as on-selling. Rather, it is an input to the recycled water system, and a retail-minus price would not be appropriate.

Similarly, if the raw product is sourced from sewerage services it is also an input to recycled water production. Treating recycled water waste consistently (regardless of whether it is sourced from sewerage services, sewer mining, stormwater harvesting or a combination) also means that Sydney Water and Hunter Water would not need to identify the original source of the waste product to levy charges.

Based on the view that the disposal of recycled water waste is an input to the recycled water production process, the appropriate pricing approach would be a non-residential price. Under our retail price determinations, we set a three-part tariff for non-residential sewerage customers:

- a fixed service charge (including a deemed usage component)
- a usage charge, and
- trade waste charges (where applicable).[77]

A recycled water plant's charges would be the same as any other non-residential customer with the same connection size, discharge volume, and pollutant characteristics. These charges would be simple to apply. Sydney Water and Hunter Water would calculate the connection size, discharge volume and pollutant load and apply IPART's retail price determinations.[78]

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77 Trade waste charges typically apply to waste that is stronger than domestic strength effluent. For example, domestic effluent is assumed 230mg/L of biological oxygen demand, a trade waste charge applies for every mg/L above this level. There are maximum acceptance standards, above which strength the charge is doubled. IPART, *Sydney Water Corporation, Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016,* Determination, June 2016, p 40.

78 IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016*, Determination No. 4, June 2016; and IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016*, Determination No. 5, June 2016.

City of Sydney supported non-residential pricing of these services in its submission to the Discussion Paper.[79]

We acknowledge that there are other views in relation to the nature of the service provided to wholesale customers, and it could be argued that a retail-minus approach is more appropriate (see Box 7.1).

Box 7.1 Arguments for a retail-minus approach

An alternative view is that recycled wastewater disposal is a form of on-selling because a wholesale customer uses the wholesale service provider's sewerage network to deliver sewerage services to its end-use customers. This puts the wholesale customer in direct competition with the wholesale service provider to provide sewerage services upstream (ie, the collection and disposal of sewerage from residential and non-residential customers).

Between selling the sewerage service to end-use customers and buying a sewerage service from the wholesale service provider, the wholesale customer extracts water from the raw sewerage as part of the operation of a recycled water scheme. It can be argued that this 'transformation' does not result in Sydney Water or Hunter Water avoiding any costs, as the wholesale customer discharges a similar amount of pollutants into Sydney Water's or Hunter Water's network (potentially at a higher concentration).

Under this view of the service provided, a retail-minus pricing approach may be more appropriate. This is because Sydney Water and Hunter Water are bound to postage stamp pricing (explained in Chapter 2) in providing these upstream services. The wholesale customer is effectively on-selling a sewerage service that could only have been provided by Sydney Water or Hunter Water at the retail postage stamp price. Under this approach, the reasonably efficient competitor's costs (for calculating the minus) would likely be restricted to retail, reticulation, and some minor treatment costs.

7.3 Recycled waste disposal may be a contestable service

The disposal of waste from a recycled water plant may be a contestable service, as recycled water plants may not need to discharge waste into Sydney Water's or Hunter Water's sewerage networks. In the outer suburbs of Sydney and Newcastle, wholesale customers are developing schemes that do not discharge waste from their recycled water plants to Sydney Water or Hunter Water's sewerage network. These schemes dispose of their waste onsite or transport their waste to another location.[80]

79 City of Sydney submission to IPART Discussion Paper, May 2016, p 2.

80 For example, in the Sydney Water area, Flow Systems will not have any interconnections from its Box Hill scheme to other sewerage infrastructure and waste will be disposed by a waste management contractor. Similarly, in the Hunter Water area, the Huntlee scheme will not have any interconnections to other infrastructure and will discharge waste to a tanker truck for disposal by a waste management contractor. IPART, *Box Hill Water Network Operator's Licence Public Application*, September 2015, Version 2, pp. 44-45. IPART, *Huntlee Water Network Operator's Licence Application form*, 28 May 2014, p 43.

This is 'bypass' - where a competitor (wholesale customer) can avoid the natural monopoly elements of the incumbent utility (Sydney Water or Hunter Water). In some cases, bypass can be an efficient response to efficient prices, creating effective competition. However, bypass can also be a rational response to prices that are too high, which may lead to inefficient solutions to disposing of waste from recycled water plants.

With opportunities for bypass, a wholesale customer could be faced with the decision, for example, to use Sydney Water's or Hunter Water's sewerage network to dispose of recycled water waste or to tanker waste to another treatment and disposal site. We understand that, to date, all inner city schemes, such as Barangaroo South and Central Park, have opted to use Sydney Water's sewerage network to dispose of waste.[81] Where the costs of bypass are greater than the costs of discharging waste into the network, bypass is an inefficient servicing solution.

Moving existing schemes from the status quo which, in several cases, we understand to be non-residential trade waste charges, to a retail-minus pricing approach may provide an incentive to bypass. IPART does not have data to assess the extent to which there would be a risk of inefficient bypass. However, we note it as a potential risk.

Given there is competition for services and potential for inefficient bypass, we consider prices should be cost-reflective. The non-residential retail price (which includes location based trade waste charges) is broadly cost reflective for concentrated waste products.

7.4 Stakeholder impacts of this pricing approach

Under our draft decisions, schemes subject to our determinations would face non-residential retail prices for the waste they discharge from their recycled water plants to Sydney Water's or Hunter Water's networks. We have not provided indicative bill impacts because of the potential variability in applicable trade waste charges (which can vary according to the strength of the discharges and the discharge location).

[81] There are no inner city schemes in Newcastle.

8 Facilitation costs

In our Discussion Paper we considered that the customer receiving a wholesale service should pay for the net facilitation costs that service provision creates. This would mean reflecting the prudent and efficient net facilitation costs in wholesale prices.

Facilitation costs are costs (positive) or cost savings (negative) to the wholesale service provider of servicing the wholesale customer. For example:

- a positive facilitation cost may arise if a wholesale service provider needs to upgrade or extend its water or sewerage network to provide water or sewerage services to a wholesale customer, and
- a negative facilitation cost may arise if a wholesale customer produces recycled water that allows the wholesale service provider to defer its next scheduled water supply augmentation.

Net facilitation costs would therefore represent the sum of positive and negative facilitation costs (ie, facilitation costs *less* cost savings). A positive (negative) net facilitation cost would result in higher (lower) wholesale charges.

This chapter outlines our draft decisions on facilitation costs as they relate to wholesale prices.

8.1 Summary of draft decisions on approach to facilitation costs

Our draft decisions on our approach to facilitation costs are outlined below, as well as further explanation of key elements of these decisions.

Draft decisions

12 We have decided that facilitation costs should be included in wholesale prices where they are:

- additional to what the wholesale service provider would have otherwise incurred in the absence of servicing the wholesale customer, and
- not reflected elsewhere in the wholesale price or recovered via another charging or funding mechanism of the wholesale service provider.

13 We have decided not to include facilitation costs in the draft system-wide wholesale prices and therefore would only consider them in scheme-specific determinations.

14 We have decided that facilitation costs should:

- reflect the status of water and sewerage developer charges
- include positive (costs) and negative costs (cost savings), where appropriate
- exclude initial transaction costs, and
- exclude ongoing administration costs, except where they are material.

8.2 Facilitation costs should be additional costs and not be reflected elsewhere in the wholesale price or other charges

In order to be included in wholesale prices, facilitation costs should be additional to what the wholesale service provider would have otherwise incurred in the absence of servicing the wholesale customer.

Further, the wholesale price should not double-count costs. Facilitation costs should not be reflected elsewhere in the wholesale price (or recovered via another charging mechanism or funding source of the wholesale service provider).

8.3 Facilitation costs should reflect the status of developer charges, include costs and savings, and exclude initial transaction costs

The sections below outline our draft decisions on the relationship between facilitation costs and developer charges, the inclusion of negative facilitation costs (or cost savings), and the treatment of transaction costs (including administration costs).

8.3.1 The relationship between facilitation costs and developer charges

Facilitation costs for the upgrade or extension of the water or sewerage network to supply wholesale customers should reflect the status of water and sewerage developer charges.

This means that under current arrangements, facilitation costs should not relate to development that would otherwise be funded by Sydney Water's or Hunter Water's retail postage stamp prices.[82] This is explained below.

The implications of developer charges for facilitation costs

Since 2008, Sydney Water and Hunter Water have not funded their growth expenditure through regulated developer charges. They fund their growth through two means:

- **retail prices** – growth expenditure approved by IPART and included in their retail prices, and
- **charging or funding arrangements with developers** – where developers fund the additional costs of servicing new development or construct the necessary water infrastructure and then gift it to Sydney Water or Hunter Water.

As outlined in Chapter 2, the ability of Sydney Water and Hunter Water to recover their additional system costs from their wider customer base through an uplift to postage stamp retail prices provides them with a competitive advantage over other competing providers (such as wholesale customers).

We maintain our position in the Discussion Paper that to remove this advantage and allow competition on a level playing field it is necessary to extend an equivalent subsidy to wholesale customers. However, this needs to be done in a way that does not create incentives for wholesale customers to operate in high-cost fringe areas (which would ultimately increase the price for all water users).

To do this, our Discussion Paper set out a methodology to allow facilitation costs to include a subsidy that relates to the wholesale service provider's own plan to service growth in the development area concerned, but reflects any timing differences between the incumbent and the wholesale customer:[83]

Facilitation costs=NPV[Augmentation costs less planned cross-subsidy of these costs]

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[82] Development that would otherwise be funded by Sydney Water or Hunter Water's retail postage stamp prices is generally referred to as 'in-sequence' ie, it is development that is identified in a wholesale provider's growth plans. 'Out-of-sequence' development refers to development not identified in a wholesale provider's growth plan. If development is 'in-sequence' then necessary growth expenditure (if deemed prudent and efficient) is included in the wholesale provider's capital expenditure and hence (the return on and of capital) is reflected in retail postage stamp prices (eg, see Sydney Water submission to IPART Discussion Paper, May 2016, p 54; Hunter Water submission to IPART Discussion Paper, May 2016, pp 15-17).

[83] IPART, *Prices for wholesale water and sewerage services – Sydney Water Corporation and Hunter Water Corporation - Discussion Paper*, April 2016, pp 35-38.

This approach would mean that the infrastructure-related facilitation costs included in the wholesale price would be:

- Zero if the augmentation would be triggered at the same time under the wholesale service provider's growth plans, because the wholesale service provider would have the ability to pay for it through an increase to the postage stamp price.
- Equal to the cost of the augmentation if the augmentation would never be triggered under the wholesale service provider's growth plans, because the wholesale service provider was not planning to augment its system for this development.

Where a development is within the wholesale service provider's growth plans, but is not planned to be developed in the immediate future, the subsidy should be reduced to reflect the fact that a cost has been brought forward in time.

In response to our Discussion Paper, Sydney Water submitted that with zero developer charges, the facilitation cost relating to augmentations that are in-sequence would not need to be paid by a developer because it is currently paid for by the broader customer base (ie, all its water and sewerage customers). Hence, it considered that zero facilitation costs would be appropriate for **in-sequence development**.[84] Hunter Water submitted that it obliges all new developers to pay for any lead infrastructure to connect and extend network assets, where necessary, for new development. As such, it considered that there was no need to adjust wholesale prices through net facilitation costs to take account of these infrastructure costs.[85]

8.3.2 Consideration of positive and negative costs

In our Discussion Paper, we recognised that the wholesale service provider could realise cost savings (or negative facilitation costs) as a result of the activities of the wholesale customer. We noted, for example, a negative facilitation cost may arise if a wholesale customer produces recycled water that allows the wholesale service provider to defer its next scheduled water supply augmentation.[86]

In response to the Discussion Paper, Sydney Water and Hunter Water argued that provision of recycled water is unlikely to result in significant cost savings.[87]

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84 Sydney Water submission to IPART Discussion Paper, May 2016, p 26.
85 Hunter Water submission to IPART Discussion Paper, May 2016, p i.
86 IPART, *Prices for wholesale water and sewerage services – Sydney Water Corporation and Hunter Water Corporation - Discussion Paper*, April 2016, p 35.
87 Sydney Water submission to IPART Discussion Paper, May 2016, p 11, Hunter Water submission to IPART Discussion Paper, May 2016, p 20.

However, we note some stakeholders have argued that recycled water schemes deliver benefits to water users through the deferral of water supply augmentation and more broadly to the community through, for example, enhancing the liveability of urban development. Liveability was also an issue raised in our recent review of Sydney Water's prices. Our explanation of how we consider liveability and other environmental issues and their impacts in our price determinations is explained in Chapter 2 of our Final Report on our 2016 Sydney Water retail price determination.[88]

We maintain our view that, in principle, negative facilitation costs should be reflected in wholesale prices. This would require a review of the benefits of recycled water schemes and the impact on wholesale providers' costs, which would allow us to determine the scale of these benefits and therefore the associated facilitation cost.

8.3.3 The treatment of transaction costs

Initial transaction costs

In our Discussion Paper, we did not specifically explore the issue of the transaction costs that Sydney Water or Hunter Water may incur in initially setting up a wholesale service arrangement with a wholesale customer. However, Hunter Water noted that these initial transactions costs (the legal and in-house resources spent preparing and finalising utility services agreements) could be considered in determining wholesale charges (as part of net facilitation costs).[89]

Our draft decision is that each party (wholesale service provider and wholesale customer) should bear its own initial transaction costs – ie, these costs should be excluded from wholesale prices. This is to ensure there are incentives for prudent and efficient contracting processes between wholesale customers and wholesale service providers. In this context, we note that initial transaction costs per wholesale servicing arrangement would be expected to decline as the number of wholesale servicing arrangements in place increases and parties gain experience with this type of contracting.

88 IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, pp 34-41.

89 Hunter Water submission to IPART Discussion Paper, May 2016, p 16. Sydney Water also discusses similar negotiation costs in its submission, Sydney Water submission to IPART Discussion Paper, May 2016, p 24.

On-going administrative costs

We note that there may be on-going administrative costs to either Sydney Water or Hunter Water in servicing wholesale customers (eg, costs associated with issuing bills to the wholesale customer and responding to enquiries) and that other industries such as gas do allow for the inclusion of certain transaction costs (such as meter readings).[90]

Where our draft decision on pricing approaches apply the non-residential retail prices (ie, for services associated with drinking water top-up for recycled water schemes and recycled water waste), on-going administrative costs would be incorporated in prices. Therefore, in these situations additional charges should not be incorporated into the wholesale charges.

Where wholesale customers are charged a retail-minus price, we would assess the prudency and efficiency of the proposed administrative costs before making any allowances. However, these costs are unlikely to be material and hence they should initially be set to zero.

8.4 Facilitation costs would be considered in scheme-specific reviews of wholesale prices

By nature, facilitation costs (negative and positive) can vary significantly by scheme both in terms of infrastructure and transaction costs. Therefore, estimating system-wide facilitation costs that are sufficiently accurate to be reflected in a price determination is not possible, noting that given the issues discussed above, positive facilitation costs are likely to be zero in many schemes. The Draft Determinations therefore do not make provision for facilitation costs in the prices.

In its assessment of system-wide retail-minus prices, NERA considered the issue of facilitation costs and their incorporation in system-wide or average prices. NERA considered both administration (or transaction) costs and infrastructure costs (associated with the bring-forward or deferral of infrastructure). NERA recommended that administration costs only be reflected in average prices. NERA did not calculate average, system-wide costs for infrastructure related facilitation costs due to a lack of data and a number of in-principle concerns.[91]

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90 In the gas industry, transactions costs such as meter reading and associated data activities (including maintenance) maybe recovered from distribution pipeline tariffs through the 'Haulage Reference Service' charges under rule 94 (4)(b)(i) of the National Gas Rules.

91 NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, p 10.

NERA's estimates of facilitation charges were based on Sydney Water's and Hunter Water's estimates of the costs incurred. NERA noted that these costs should decrease over time as Sydney Water or Hunter Water established default contracts or alternatively adopt a wholesale pricing schedule. Given this, there is a risk that setting system-wide facilitation charges based on currently available information to reflect administration costs may over-estimate the efficient costs.[92]

We have therefore not provided for facilitation costs in the prices that are included in the Draft Determinations. We consider the decision to include any facilitation costs in regulated wholesale prices should occur on a scheme-specific basis. This means that if a wholesale customer or wholesale service provider considers that the provision of a wholesale service would result in facilitation costs, they could agree how to reflect these costs in prices via an unregulated pricing agreement or seek a scheme-specific determination by IPART.

[92] NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, p 129.

9 Scheme-specific reviews and unregulated pricing agreements

As Chapter 4 discussed, our Draft Determinations include system-wide prices for new wholesale schemes in relation to the services of on-selling, drinking water top-up for recycled water schemes, and recycled water plant waste disposal. However, we recognise that there may be cases where wholesale customers or wholesale service providers do not consider the determined prices reflect a particular wholesale scheme's characteristics, or find their current unregulated agreements inappropriate. Therefore, we have also decided:

- to develop a process for a wholesale service provider or wholesale customer to request a scheme-specific price review and determination, and
- to allow the parties to opt out of the determined prices by entering into an unregulated pricing agreement.

This chapter discusses our draft decisions on the process we would use for scheme-specific reviews and determinations, and unregulated pricing agreements.

9.1 Scheme-specific price reviews

Draft decision

15 We have decided to use the process in Box 9.1 to review and determine scheme-specific prices for wholesale water and/or sewerage services.

16 We have decided not to set an interim price to apply while a scheme-specific review is being undertaken, or apply a true-up mechanism to adjust for any differences between the price before and after a scheme-specific determination is made.

We have developed a process for initiating and conducting scheme-specific price reviews and determinations, which is outlined in Box 9.1 and discussed in the sections below.

This process is broadly similar to the one outlined in the Discussion Paper, and is similar to the process we followed for the recent reviews of retail prices for Sydney Water and Hunter Water.

We note that any scheme-specific review would be undertaken subsequent to the completion of this review of wholesale prices. As such, our aim in determining scheme-specific prices would be consistent with our objectives for this price review. That is, we would aim to set prices that allow new entry to the market for end-use water and sewerage services to occur where this is efficient, to promote competition for the benefit of consumers.[93]

As Chapters 5 to 7 discussed, we have decided that different pricing approaches are appropriate for different wholesale services. Specifically:

- a retail minus reasonably efficient competitor cost price approach for on-selling wholesale water or sewerage services, and
- a non-residential retail price approach for wholesale water for drinking water top-up and wholesale sewerage services for recycled water waste.

These decisions, included in the Draft Determinations of system-wide prices, would serve as the starting point for determining prices in a scheme-specific review. We would also consider views put forward by stakeholders on whether they are appropriate for a particular scheme.

We have set out below an indicative process for such a review. IPART would use its best endeavours to complete a scheme-specific review within twelve months, and to meet the timeframes for the steps set out below.

The Tribunal or any future Tribunal may choose to modify this process or the methodology when it undertakes a scheme-specific review.

To reduce administrative costs associated with scheme-specific reviews, we may undertake reviews and determine prices for a number of schemes providing similar services at the same time.

[93] Each scheme-specific determination would be made having regard to the matters listed in section 15 of the IPART Act.

Box 9.1 Process for determining scheme-specific prices (and indicative timing)

1.	The wholesale customer or wholesale service provider writes to IPART to request a price review and determination for an existing or proposed wholesale water and/or sewerage scheme.	
2.	IPART considers the request and decides whether to undertake a review.	Within one month of receiving request.
3.	IPART initiates the review by requesting that the wholesale service provider submit a Wholesale Pricing Proposal by a specific date. This Proposal should be informed by consultation with the wholesale customer(s). IPART also advertises the price review in the relevant local newspaper.	
4.	On receipt of this Proposal, IPART prepares a summary and forms a preliminary view on the Proposal. IPART would then publish the Proposal and its preliminary view on the IPART website, and invite stakeholders to make written submissions – including wholesale customers. IPART holds a public hearing to discuss the Proposal and stakeholder submissions.	Two months after receipt of Pricing Proposal.
5.	IPART considers the Proposal and stakeholder comments, makes draft pricing decisions, and releases a draft report and determination for stakeholder comment.	Three months after submissions close.
6.	IPART considers submissions and makes final pricing decisions, and releases a final report and determination that sets out the maximum prices for each wholesale service supplied to the scheme.	Two months after submissions on Draft Report close.

9.1.1 A scheme-specific review could be requested by the wholesale service provider or wholesale customer or initiated by IPART

IPART may issue guidance on the information that must be included in a request for a scheme-specific review (such as the parties involved, a description of the wholesale service and the reason(s) a scheme-specific review is being requested). IPART would take such information into account when deciding whether:

- to proceed with a scheme-specific review
- to leave unchanged any existing, IPART-determined price that applies to the scheme, or
- to defer setting a price for that wholesale scheme until some later time.

IPART may also initiate a review without a request from either party, as the wholesale services concerned are 'government monopoly services' supplied by Sydney Water and Hunter Water. IPART has a standing reference to investigate and make reports on the determination of pricing for such services under the IPART Act.[94] Although we would not expect to initiate a scheme-specific review as common practice, we may do so in certain circumstances – for example, if information provided by a third party gave us reason to believe the wholesale service provider was overcharging a wholesale customer.

9.1.2 Wholesale service provider would need to propose wholesale prices for the scheme

The wholesale service provider would be required to submit a Wholesale Pricing Proposal within a specified timeframe.[95] The timeframe would depend on the complexity of the scheme, but indicatively could range from one to three months.

A key part of the development of the Wholesale Pricing Proposal would be consultation with the (existing or prospective) wholesale customer. The Proposal would need to include information on the outcomes of the consultation and how these were incorporated into the Proposal. The purpose of this consultation would be to ensure the Proposal that is submitted to IPART clearly outlines the areas of agreement and disagreement between the service provider and the customer. This would help to identify the issues on which there is little agreement, which could inform IPART's approach to the review. A high quality pricing proposal that is based on meaningful consultation between the parties (ie, wholesale service provider and wholesale customer) would help to reduce the costs associated with the review and may reduce the timeframe for the review. It would also provide an opportunity for some initial negotiation between the parties before IPART is involved.

The benefits of meaningful engagement by both parties in the preparation of the Wholesale Pricing Proposal before it is submitted to IPART would be particularly important in relation to the consideration of net facilitation costs. To the extent that a service provider and wholesale customer agree on the proposed net facilitation costs, this would assist in reducing the cost and timeframe for a review.

In addition, the Proposal would also need to include information on:

- the existing arrangements for the supply of the services concerned, and the prices charged for them (to the extent that there are any)
- the proposed prices, and the rationale and key assumptions behind them

94 Under Section 11 of the IPART Act.

95 We would also send the wholesale service provider a Submission Information Pack that outlines what it should include in the Proposal and our timetable for the review.

- how the wholesale customer's input has been considered and has influenced the proposal
- the infrastructure and operating requirements to provide end-users with retail services from the wholesale service provided
- the net facilitation costs the wholesale provider would incur in supplying the wholesale services concerned
- the wholesale service provider's relevant growth plans, and
- the proposed arrangements to transition from the existing to proposed prices (if applicable).

We consider the wholesale service provider should be responsible for the preparation of the Wholesale Pricing Proposal, regardless of whether they requested the review, as they would be required to charge the prices to be set as part of the review.

9.1.3 IPART would conduct public consultation, and consider the Proposal and stakeholder submissions to make draft decisions

Once we received the Wholesale Pricing Proposal, we would conduct a review and make our decisions using a similar process to the one we use for Sydney Water and Hunter Water's retail price reviews. We would:

- Conduct public consultation by publishing the Proposal on our website and inviting submissions; advertising the price review in the relevant local paper and holding a public hearing.
- Assess the Proposal, including reviewing the wholesale service provider's proposed costs and prices, and considering the information provided in submissions from other stakeholders.
- Make draft decisions and release a draft report and determination, and invite stakeholder submissions.
- Consider stakeholder submissions before making our final decisions and releasing a final report and determination.

This review process would help to ensure transparency in the calculation of prices for wholesale services, as well as provide sufficient opportunities for the wholesale service provider, wholesale customer and other stakeholders to provide input.

In its submission to our Discussion Paper, Permeate Partners did not believe public consultation would be necessary for scheme-specific reviews other than for very large schemes.[96] We note that in determining maximum prices, we are required to give notice in a newspaper and hold a public hearing.[97] However, the level and nature of this consultation could be scaled to reflect the size of a scheme and/or the scope of the price review.

9.1.4 Timeframe for completing a review would depend on scheme complexity

The overall time to complete a scheme-specific review would depend on the complexity of the scheme. We expect that once a review is initiated, it would take a maximum of 12 months to complete. However, it could take significantly less time, especially if the wholesale service provider is already servicing a similar scheme and the Wholesale Pricing Proposal reflects meaningful engagement from both the service provider and the wholesale customer, which enables the review to be appropriately targeted.

IPART does not backdate its determinations. Therefore, for new schemes, the wholesale service provider or wholesale customer would need to have requested a scheme-specific review well before the scheme becomes operational if scheme-specific regulated prices are to be determined before any wholesale services are supplied. Alternatively, they would need to reach a temporary pricing agreement to apply until the review is completed and prices determined.

9.1.5 Period of a scheme-specific determination would be set as part of the review

The length of the period a scheme-specific determination will apply would be decided by IPART, taking account of views from stakeholders, as part of the review. It is expected that a proposed determination length would be included in the Wholesale Pricing Proposal, including whether this is an issue on which there is agreement between the wholesale service provider and wholesale customer. In deciding on the length, we would consider, similar to our retail price determinations:

- the confidence we can place in the cost forecasts
- the risk of significant changes to the scheme
- the need for price flexibility and incentives to increase efficiency and encourage efficient entry, and
- the need for regulatory certainty and financial stability.

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96 Permeate Partners submission to IPART Discussion Paper, May 2016, p 7.
97 Under section 13(2) and section 21 of the IPART Act.

In the Discussion Paper, we proposed that determinations for scheme-specific reviews could be open-ended. However, we recognised that changes in the industry or government policy may make it necessary to replace a determination. Sydney Water and Permeate Partners both suggested that as the market is still emerging there should be an initial determination period of five years, with scope to increase the period to 10 years in subsequent determinations.[98]

9.1.6 IPART would not set interim prices while a scheme-specific determination is made

In the Discussion Paper, we raised the possibility of setting an interim price while a scheme-specific determination is made. We suggested that the interim price could be either the determined system-wide prices, or non-residential retail prices.

Under our draft decision to set system-wide prices for some wholesale services, there would be a prevailing price determination that applies to new schemes.[99] This would effectively be the interim price for these schemes until a scheme-specific determination is in place. For schemes subject to existing contractual arrangements that are seeking a scheme-specific review, their interim price would effectively be the existing price (as per the existing agreement).

As discussed above, we expect the maximum length for a scheme-specific price review would be 12 months, and could be shorter. New wholesale schemes should have sufficiently long lead times that participants may seek a scheme-specific review in advance of a scheme becoming operational and the wholesale service being provided.

9.1.7 IPART would not apply a true-up mechanism

In the Discussion Paper, we flagged that we may apply a true-up mechanism to adjust for any difference between the scheme-specific and interim prices. We have decided not to apply a true-up mechanism, as we have decided not to set an interim price which would provide the basis for the operation of a true-up mechanism. In addition, it could increase regulatory uncertainty for wholesale customers by compounding the impact of a price determination, particularly where there were significant price impacts.

Sydney Water was the only stakeholder that supported the use of a true-up mechanism. It considered the true-up was important to parties recovering costs if the interim price is too high or low, and to incentivise parties to engage in good faith in the interim period, as well as to conclude negotiations.[100]

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98 Sydney Water submission to IPART Discussion Paper, May 2016, p 41, and Permeate Partners submission to IPART Discussion Paper, May 2016, p 6.

99 Unless the parties had agreed to 'opt-out' and have an unregulated agreement.

100 Sydney Water submission to IPART Discussion Paper, May 2016, p 37.

Permeate Partners commented that the quantum of the issue may not justify an additional framework for reconciliation.[101]

Wholesale customers may find the true-up risk too high and be deterred from entering the market. Also, the concern that parties would strategically protract negotiations is not significant under our draft decisions, as we can ensure the timeliness of a determination once the review is initiated.

9.2 Unregulated pricing agreements

Draft decision

17 We have decided to allow wholesale service providers and wholesale customers to opt-out of IPART's determined wholesale water and sewerage prices by voluntarily entering into unregulated pricing agreements.

In the 2016 retail price determinations for Sydney Water and Hunter Water, we allowed for unregulated pricing agreements with large customers where both parties agreed to 'opt-out' of the prices in the retail determinations. We restricted unregulated pricing agreements to large non-residential retail customers that have annualised water consumption greater than 7.3 ML.[102]

We consider it is reasonable to make the same option of unregulated pricing agreements available for our wholesale price determinations. Wholesale customers are relatively large customers, and should be able to judge whether it is in their interest to enter an unregulated pricing agreement. We do not propose to limit the option of unregulated pricing agreements to wholesale customers with a certain annualised water consumption (ie, the option would be available to all wholesale customers).

As Chapter 4 outlined, in cases where there are existing agreements in place for services regulated under our system-wide Draft Determinations, these agreements would remain in place.

There is evidence to suggest that unregulated agreements can work in wholesale pricing. Existing wholesale customers have utility service agreements with Sydney Water and/or Hunter Water that set their prices (where they are not covered by the retail determination).

101 Permeate Partners submission to IPART Discussion Paper, p 7.

102 IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, pp 44-48; and *Review of prices for Hunter Water Corporation- From 1 July 2016 to 30 June 2020 – Final Report*, June 2016, pp 23-28.

In response to the Discussion Paper, a number of stakeholders supported providing the option to enter into unregulated pricing agreements. These included Permeate Partners and WSAA.[103]

Some stakeholders supported unregulated agreements in principle but noted caution was required. For example, the Institute for Sustainable Futures noted that in negotiating these agreements, the wholesale service provider would have a significant information advantage.[104] Central Coast Council submitted that IPART should set the price for local government water utilities as, in a local government context, external influences may distort the process.[105]

Sydney Water opposed these agreements because it would result in a loss of safeguards under the current regulatory framework and leave an efficient business at risk of not being able to recover its long-term costs. We do not agree with this view because unregulated agreements are optional for both parties (meaning that both parties would have to choose to give up their regulatory protections). We consider the risk to customers, Sydney Water, and the regulatory regime from allowing unregulated pricing agreements is low. We have previously addressed Sydney Water's concerns in more detail as part of our Sydney Water retail price review.[106]

To ensure that the regulated cost base and regulated prices continue to reflect the efficient costs of providing regulated services in the future, IPART would require Sydney Water or Hunter Water 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.

[103] Permeate Partners submission to IPART Discussion Paper, May 2016, p 5; Water Services Association of Australia submission to IPART Discussion Paper, May 2016, p 16.

[104] Institute for Sustainable Futures submission to IPART Discussion Paper, May 2016, pp 9-10.

[105] Central Coast Council submission to IPART Discussion Paper, May 2016, pp 1-2.

[106] IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, pp 46-47.

10 Implications of pricing decisions

This chapter outlines the implications of our pricing decisions on certain matters we must have regard to under section 15 of the IPART Act. These include:

- the cost of providing the services concerned,
- the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services,
- the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government,
- the need to promote competition,
- the effect on general price inflation over the medium term, and
- the environment.

We discuss each of the above items below, and the remaining section 15 matters in Appendix A. We are satisfied that our Draft Determinations achieve an appropriate balance between these matters.

We note that our draft prices are based on the prices we set in our recently completed 2016 retail price reviews. Therefore, they are not a completely new set of calculated prices, and so the matters we had regard to in those reviews also apply to our draft decisions in this review.

In addition to having regard to matters listed in section 15 of the IPART Act, we are required to comply with any section 16A directions[107] that apply to Sydney Water or Hunter Water.

Currently, there are no prevailing section 16A directions for Hunter Water. For Sydney Water, the costs that these directions require us to pass through in prices were included in the 2016 review of Sydney Water's retail prices, and if the directions continue to apply, these costs will continue to be included in future reviews of retail prices. The Final Report for the review of Sydney Water's retail prices sets out how these directions were complied with. As set out in earlier chapters of this report, our determinations of wholesale prices are based, to varying extents, on the prevailing determinations of retail prices.

[107] 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.

Cost of providing the services concerned

Our draft decisions would result in prices that reasonably reflect the costs of providing the services by Sydney Water and Hunter Water. Specifically, for:

- On-selling water and sewerage services - the retail minus reasonably efficient competitor cost approach reflects the average costs of a retail water or sewerage service, less the efficient costs for a (reasonably efficient) business to provide that retail service from the wholesale services purchased (further detail is provided in Chapter 5).
- Drinking water top-up – the non-residential retail price is a reasonable proxy for the cost of service because it is based on delivering an identical service to non-residential retail customers who also seek the purchase of drinking water for use in recycled water plants (further detail is provided in Chapter 6).
- Waste from recycled water plants – the non-residential retail prices (including trade waste charges) is a reasonable proxy for the cost of service because it is based on delivering an identical service to non-residential retail customers who also seek sewerage services (further detail is provided in Chapter 7).

Protection of consumers from abuses of monopoly power

Setting maximum wholesale prices that reflect the cost of providing the services purchased protects wholesale customers from abuses of monopoly power. That is, Sydney Water and Hunter Water would be unable to set prices that exceed our maximum prices to deter reasonably efficient entry.

Appropriate rate of return and dividends

We have decided that the appropriate rate of return to apply to retail minus reasonably efficient competitor cost pricing should be equal to the rate of return applied in our retail price reviews. That is, the appropriate rate of return which is the same for both Sydney Water and Hunter Water (further detail is provided in Chapter 5 and Appendix E). The draft prices for other services are the prevailing retail prices set in the 2016 Determinations where the appropriate rate of return and dividend was considered.[108]

Need to promote competition

Our draft decisions would promote competition, for example, by:

- focusing on identifying those services where there is competition for end-use customers
- providing information to potential new entrants to the market to inform their decisions on entry, and

[108] Refer to our Final Reports for the recently completed review of retail prices for Sydney Water and Hunter Water.

- favouring and adopting pricing approaches consistent with efficient new entry and competition.

Implications for general inflation

We note that our retail prices have a negligible effect on general inflation — about -0.006 percentage points for Sydney Water and about 0.01 percentage points for Hunter Water.[109] Therefore, given the current relatively small scale of wholesale schemes compared with Sydney Water's and Hunter Water's broader customer base, our draft decisions would not lead to a material impact on end-use retail prices, and hence they would also have a negligible effect on general inflation.

Implications for the environment

As our draft prices are based on our 2016 retail prices, and reflect the cost of Sydney Water and Hunter Water providing the services to customers, we do not consider that they will impact either Sydney Water or Hunter Water's ability to undertake their regulatory responsibilities, including complying with Environment Protection Authority (EPA) licence requirements.

Further information on our approach to considering environmental matters in price reviews is outlined in our Final Report for our 2016 retail review of Sydney Water's prices. Chapter 2 of the Sydney Water Final Report includes a section on 'liveability', which explains our general approach to addressing environmental matters by allowing regulated entities to recover, through prices, the efficient costs of meeting environmental regulatory requirements.[110]

Impact on the consolidated fund

Under section 16 of the IPART Act, if IPART determines to increase the maximum price for a government monopoly service or determines a methodology that would or might increase the maximum price for a government monopoly service, IPART is required to report on the likely annual cost 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.

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[109] IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, p 237; IPART, *Review of prices for Hunter Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, pp 169-170.

[110] IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, pp 34-41.

Our financial modelling in the 2016 retail price reviews was based on a tax rate of 30% for pre-tax profit and dividend payments at 70% of after-tax profit.[111] Therefore, 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.

Given that our draft decisions are based on our retail prices, we also expect a similar impact – ie, 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.

111 IPART, *Review of prices for Sydney Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, p 237; IPART, *Review of prices for Hunter Water Corporation – From 1 July 2016 to 30 June 2020 – Final Report,* June 2016, p 169.

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 Consideration of section 15 matters by IPART

Section 15(1)	Outline of IPART's assessment
a) The cost of providing the services	The retail minus reasonably efficient competitor cost approach reflects the average costs of a retail water or sewerage service, less any efficient costs for a (reasonably efficient) business to provide that retail service from the wholesale services purchased. The non-residential retail prices for drinking water top up and waste disposal from recycled water plants are a reasonable proxy for the cost of service. This is because they are based on delivering an identical service to non-residential customers. See Chapters 5,6 and 7.
b) The protection of consumers from abuses of monopoly power	Regulated wholesale prices will protect customers from abuses of monopoly power. It should also assist competitive entry which may reduce monopoly power. See Chapter 5.
c) The appropriate rate of return and dividends	We have applied a rate of return to retail minus reasonably efficient competitor cost pricing equal to the rate of return applied in our retail price reviews. That is, the appropriate rate of return is the same for both Sydney Water and Hunter Water. See our Final Reports on retail prices for Sydney Water and Hunter Water.
d) The effect on general price inflation	Our draft decisions would have a negligible impact on general price inflation. See Chapter 11.
e) The need for greater efficiency in the supply of services	Through enhancing the potential for efficient entry and competition, our draft decisions will enhance efficiency in the supply of services over time. See Chapters 5,6 & 7.
f) Ecologically sustainable development	Our pricing approach is consistent with the maintenance of ecologically sustainable development and environmental protection, as regulated prices provide sufficient revenue to Sydney Water and Hunter Water to allow them to recover the efficient costs of complying with their environmental regulatory requirements.
g) The impact on borrowing, capital and dividend requirements	The impact on borrowing, capital and dividend requirements from our decisions would be negligible given the relatively small scale of entry compared with Sydney Water and Hunter Water's existing operations. However, if there is a material financial impact we will consider any necessary adjustments at either the next Sydney Water or Hunter Water price review or wholesale pricing review.
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	Our draft decisions are likely to have a negligible impact on any arrangements that Sydney Water and Hunter Water have entered into for the exercise of its functions by some other person or body.
i) Need to promote competition	Our draft pricing decisions would promote competition where it is beneficial. See Chapters 5 to 8.

Section 15(1)	Outline of IPART's assessment
j) Considerations of demand management and least cost planning	Demand management and least cost planning is optimised through efficient prices. Our draft decisions to use marginal cost pricing for usage from our retail price reviews would send efficient demand management signals to customers. See Chapter 5.
k) The social impact	Our draft decisions would not lead to material adverse social impacts. In reaching our draft decisions we had regard to the costs involved in Sydney Water and Hunter Water servicing wholesale customers, and our draft decisions would allow entry where it is efficient, benefiting end-users (and also Sydney Water's and Hunter Water's broader customer base) over time.
l) Standards of quality, reliability and safety	Our draft decisions would not adversely affect the standards of quality, reliability and safety of the services concerned for both Sydney Water and Hunter Water.

B WIC Act licensed schemes

In this Appendix we outline the current WIC Act licensed schemes that may purchase services from either Sydney Water or Hunter Water. This information is shown in Table B.1 below and is based on publicly available WIC Act license applications.[112]

[112] The contractual arrangements between the WIC Act licensees and either Sydney Water or Hunter Water are confidential, and so it is not possible to confirm which of the specified services in the licence application are being purchased.

Table B.1 Details of WIC Act licensed schemes that may purchase wholesale services from Sydney Water or Hunter Water

Scheme name	Location	Licensee(s)	Proposed services purchased from HWC or SWC[a]	End use services supplied by licensed retailer[b]	Ultimate size of scheme (licences may not be granted for all of this)[c]
Barangaroo South infill housing / commercial development	Sydney (Sydney Water)	Lend Lease Recycled Water (Barangaroo South) Pty Ltd (network operator's licence and retail supplier's licence)	▾ Drinking water supply through recycled water system ▾ Sewerage service ▾ Sewer mining ▾ Disposal of excess recycled water ▾ Disposal treatment plant waste	▾ Recycled water supply ▾ Sewerage services	19 commercial, residential and hotel buildings at Barangaroo South, and future commercial and residential buildings of Barangaroo Central.
Bingara Gorge greenfield housing development	Near Picton (Sydney Water)	Veolia Water Solutions & Technologies (Australia) Pty Ltd (network operator's licence and retail supplier's licence)	▾ Drinking water supply through recycled water system	▾ Recycled water supply ▾ Sewerage services	1,165 residential lots , a golf course, school and light commercial area
Bligh Street sewer mining scheme	Sydney (Sydney Water)	Aquacell Pty Ltd (network operator's licence and retail supplier's licence)	▾ Drinking water supply through recycled water system ▾ Sewer mining ▾ Disposal treatment plant waste	▾ Recycled water supply	One commercial building
Box Hill North greenfield housing development	Box Hill (Sydney Water)	Flow Systems Operations Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water supply through recycled water system	▾ Recycled water supply ▾ Sewerage services	4,100 residential lots, a town centre, open space, a primary school and a multi-purpose community centre
Central Park infill housing / commercial	Sydney (Sydney Water)	Central Park Water Factory Pty Ltd (network operator's licence)	▾ Drinking water ▾ Drinking water supply through recycled water	▾ Drinking water supply ▾ Recycled water supply ▾ Sewerage services	Approximately 2,000 residential apartments and around 100,000 square metres of

Scheme name	Location	Licensee(s)	Proposed services purchased from HWC or SWC[a]	End use services supplied by licensed retailer[b]	Ultimate size of scheme (licences may not be granted for all of this)[c]
development		Flow Systems Pty Ltd (retail supplier's licence)	system ▾ Sewerage service ▾ Sewer mining ▾ Disposal treatment plant waste		commercial/retail space
Darling Walk sewer mining scheme	Sydney (Sydney Water)	Veolia Water Solutions & Technologies (Australia) Pty Ltd (network operator's licence and retail supplier's licence)	▾ Drinking water supply through recycled water system ▾ Sewer mining ▾ Disposal treatment plant waste	▾ Recycled water supply	One commercial building
Discovery Point infill housing / commercial development	Wolli Creek (Sydney Water)	Discovery Point Water Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water ▾ Drinking water supply through recycled water system ▾ Sewerage service ▾ Disposal of excess recycled water ▾ Disposal treatment plant waste	▾ Drinking water supply ▾ Recycled water supply ▾ Sewerage services	1,500 residential apartments and other small commercial customers across 14 buildings
Fairfield – Rosehill recycled water scheme	Fairfield (Sydney Water)	Veolia Water Australia Pty Ltd (network operator's licence) SGSP Rosehill Network Pty Ltd (network operator's licence) AquaNet Sydney Pty Ltd (retail supplier's licence)	▾ Non-potable water ▾ Drinking water supply through recycled water system ▾ Disposal treatment plant waste	▾ Recycled water supply	7 industrial customers (with expansion planned)
Green Square infill housing / commercial	Green Square (Sydney Water)	Green Square Water Pty Ltd (network operator's licence)	▾ Drinking water supply through recycled water system	▾ Recycled water supply	6,800 people (could be expanded)

Scheme name	Location	Licensee(s)	Proposed services purchased from HWC or SWC[a]	End use services supplied by licensed retailer[b]	Ultimate size of scheme (licences may not be granted for all of this)[c]
development		Flow Systems Pty Ltd (retail supplier's licence)	▾ Disposal of treatment plant waste		
Huntlee greenfield housing development	Hunter Valley (Hunter Water)	Huntlee Water Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water ▾ Drinking water supply through recycled water system	▾ Drinking water supply ▾ Recycled water supply ▾ Sewerage services	7,500 residential lots, 200 ha of municipal, retail and commercial precincts
North Cooranbong greenfield housing development	Lower Hunter (Hunter Water)	Cooranbong Water Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water ▾ Drinking water supply through recycled water system ▾ Sewerage service ▾ Disposal of excess recycled water ▾ Disposal of treatment plant waste	▾ Drinking water supply ▾ Recycled water supply ▾ Sewerage services	2,104 residential lots, one primary school, retail precinct, landscaped areas, drainage, public open space and recreation areas.
Pitt Town greenfield housing development	Near Windsor (Sydney Water)	Pitt Town Water Factory Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water top up of recycled water system	▾ Recycled water supply ▾ Sewerage services	943 residential lots
Wyee greenfield housing development	Lower Hunter (Hunter Water)	Wyee Water Pty Ltd (network operator's licence) Flow Systems Pty Ltd (retail supplier's licence)	▾ Drinking water ▾ Drinking water supply through recycled water system	▾ Drinking water supply ▾ Recycled water supply ▾ Sewerage services	1,000 residential lots
Workplace 6 sewer mining scheme	Sydney (Sydney Water)	Sydney Water – no longer operating through WIC Act licensee			

a Public version of the *Water Industry Competition Act 2006* licence application unless indicated otherwise; http://www.ipart.nsw.gov.au/Home/Industries/Water/Private_Sector_Licensing_WICA/Licence_Holders

b Relevant network operator's licence.

c Public version of the *Water Industry Competition Act 2006* licence application; http://www.ipart.nsw.gov.au/Home/Industries/Water/Private_Sector_Licensing_WICA/Licence_Holders

C Overview of wholesale pricing approaches

This Appendix provides an overview of price setting approaches or methodologies that could potentially be applied to wholesale pricing. IPART has identified the following possible approaches for calculating wholesale prices:

- non-residential prices
- marginal cost pricing
- cost of service pricing
- efficient component pricing
- retail minus avoidable cost pricing
- non-residential retail-minus, and
- efficient operator or competitor tests (including retail minus reasonably efficient competitor costs and retail minus equally efficient competitor costs).

C.1 Non-residential retail pricing

The non-residential price is the price that IPART sets for non-residential retail (ie, end-use) customers of Sydney Water and Hunter Water. The non-residential price is based on:

- water usage
- meter connection size
- discharge factors, and
- discharge allowance.

Under the non-residential price, usage is charged at its marginal cost (long-run marginal cost for water[113] and short-run marginal cost for sewerage[114]). Given that water utilities typically exhibit increasing returns to scale, the usage charges do not recover all of the utility's costs.

[113] Sydney Water's water usage charge from 1 July 2016 was set with reference to the long-run marginal cost. It was set higher than the long-run marginal cost of water. IPART, *Review of prices for Sydney Water Corporation, From 1 July to 30 June 2020,* Final Report, June 2016, pp 288-298.

[114] According to IPART's pricing principles as established in our 2012 *Review of Price Structures for Metropolitan Water Utilities,* the sewerage usage charge should be based on short-run marginal cost. However, in practice this has not been implemented for Sydney Water where the usage charge has been maintained in its transition to short-run marginal cost as we agreed to reconsider sewerage pricing before making our next Sydney Water Determination.

As a result, IPART includes a service charge to ensure Sydney Water and Hunter Water recover their total costs. For non-residential prices this is based on the water meter connection size and the estimated sewerage connection size, with charges set relative to non-residential customer capacity (eg, if one non-residential customer has a water or sewerage connection with twice the capacity of another non-residential customer, its service charge should be twice the amount of the other non-residential customer's service charge).

Usage by residential and mixed properties is also charged based on its marginal cost for water. However, unlike non-residential service charges, residential and mixed properties' service charges are not based on the water meter connection size and the estimated sewerage connection size, but rather a fixed service charge is applied.

C.2 Marginal cost pricing

Marginal cost pricing would charge only for usage, at its marginal cost.

To implement a socially efficient allocation the price paid by the consumer of an additional unit of water or sewerage should be equal to the marginal cost of producing that unit.

Given that the supply of water and sewerage exhibit increasing returns to scale, a wide application of this would leave the firm with insufficient revenue to cover its costs, and in the long-run the firm would not be viable.

IPART currently applies this approach (implicitly) to a regulated utility's sales of drinking water top-up water to its ring-fenced recycled water businesses. In our financial model, we deduct the value of drinking water top-up from the regulated utility's ring-fenced recycled water business (such as Rouse Hill and Thornton North) from target revenue at its market price (ie, long-run marginal cost based usage charge). However, no deduction is made for meter connection sizes. In our regulatory model, we consider that ring-fenced recycled water businesses are effectively separate businesses from those providing conventional water and sewerage services.

C.3 Cost of service pricing

Cost of service pricing refers to bottom up or cost plus pricing methods. These methods attempt to calculate the cost of providing a wholesale service to a wholesale customer. This approach creates cost-reflective prices.

However, cost of service prices will be higher in high cost areas and lower in low cost areas. This is incompatible with postage stamp pricing, whereby Sydney Water and Hunter Water charge the same retail price across their entire areas of operation, as it provides opportunities for inefficient cherry picking in low cost areas, and can deter efficient new entry in high cost areas.

C.4 Efficient component pricing rule

Under the efficient component pricing rule (ECPR) or Baumol-Willig rule, access should be priced at:

$$\text{Access/wholesale price} = \text{incumbent's retail price} - \text{incumbent's avoided cost}$$

The avoided costs include not only the direct costs but also the opportunity costs. The ECPR is the foundation of 'retail-minus' approaches and is the same as the retail-minus avoided cost approaches outlined in our Issues Papers and Discussion Paper.

The avoided costs are similar to the long-run incremental costs in that they can be considered the differences between total costs where a retail service is provided compared to total costs where only a wholesale service is provided.

The ECPR has been used in a number of contexts for wholesale and access pricing. A variant of the ECPR, retail minus avoided retail costs, has been used for wholesale telecommunications services in Australia.

C.4.1 Ofwat's ARROW costs were based on the ECPR

The Water Services Regulation Authority of England and Wales (Ofwat) operates an access regime. The governing legislation required that access prices be fixed in accordance with the 'costs principle'. This was implemented using the 'ARROW' costs or retail price minus costs that were avoidable, reducible or recoverable in some other way plus any costs of dealing with the access seeker.[115] This is a variant of the ECPR.

The *Water Act 2014* (UK) included provisions to remove the costs principle from legislation. The costs principle has been cited as creating an inefficient barrier to competition.

C.5 Retail minus avoidable costs

Retail minus avoidable cost is a variant of the ECPR. The underlying assumption of avoidable costs is that in the long-run there will be more avoided costs than immediately realised. Typically, an avoidable cost approach works on the assumption that once a service is contestable, the incumbent has an opportunity to never provide that service again. There are a number of ways to calculate avoidable costs.

[115] OFWAT, *Future access pricing in the water sector, A discussion paper,* 2013, p 5.

C.5.1 Long-run incremental costs (a pure approach)

The long-run incremental cost calculation of avoidable cost would estimate the incumbent's costs in two scenarios where:

1. the incumbent continues to provide the contestable service, and
2. the incumbent ceases to provide the contestable service.

The difference in the incumbent's costs in these two scenarios are the avoidable costs (assuming that the costs of not providing the service are less than the cost of providing the service). This approach is forward looking and does not consider the existing assets of the firm (ie, the sunk costs).

C.5.2 Average costs (a simpler approach)

A simpler approach of calculating the avoidable cost is to estimate the average costs of the contestable service. This approach is relatively easy to calculate, and does not rely on estimates of future costs (including customer numbers).

This approach assumes that the average cost is similar to the marginal cost. This is typically not realistic in the water industry where increasing returns to scale are prevalent.

This approach would consider the existing assets of the firm (ie, sunk costs) as a proxy for what could be avoidable in the future. It would not include corporate overheads and common firm costs as they would continue to be incurred.

C.6 Non-residential retail-minus

Non-residential retail-minus approach is a variant of the ECPR. In this approach the retail price would be based on a meter-based non-residential service charge and usage charges.

C.7 Efficient operator or competitor tests

The efficient competitor tests are a form of margin squeeze test. Efficient competitor tests assess whether an efficient competitor to a vertically integrated business could be charged a given wholesale price and deliver the same end product to consumers. Where an efficient competitor, based on the relevant benchmark, could not sustainably pay the wholesale price for the input and charge the vertically integrated business retail price a margin squeeze has occurred.

There are two common benchmarks used in efficient competitor tests:

- **Equally/as efficient operator –** this benchmark is based on the vertically integrated business's own operations between the wholesale service and the retail service. This benchmark sets the margin to allow businesses that are as, or more, efficient than the vertically integrated business to enter the market.
- **Reasonably efficient operator –** this benchmark is based on a business operating between the wholesale service and the retail service without the same access to economies of scale and scope as the vertically integrated business. This benchmark typically requires a higher margin to allow entry of efficient firms of a smaller scale.[116]

The efficient competitor tests have typically been implemented on a long-run incremental costs basis. However, they could equally be implemented on a building block or average costs basis.

While these approaches are a test of whether a margin squeeze is occurring, they could be modified to create an approach to wholesale pricing – as outlined below.

C.7.1 Retail minus reasonably efficient competitor costs

The retail minus reasonably efficient competitor costs is a hybrid of two approaches:

- the ECPR, and
- the reasonably efficient competitor test for margin squeeze.

C.7.2 Retail minus equally efficient competitor costs

The retail minus equally efficient competitor costs is a hybrid of two approaches:

- the ECPR, and
- the equally efficient competitor test for margin squeeze.

[116] The reasonably efficient operator margin would not require a higher margin in all circumstances. In particular, where there are decreasing or constant returns to scale for a particular business or project. This may be the case for some sewerage services in inland catchments, where relatively small catchments are the most efficient option due to environmental regulations.

D Calculating the 'retail' in retail-minus

We calculated retail charges for water on-selling and sewerage on-selling by calculating the sum of end-use customers retail charges based on the prevailing Sydney Water or Hunter Water determination (depending where the wholesale customer operates). We decided that retail-minus charges should be levied on the wholesale customer on an on-going basis.

The sections below include information needed to calculate the retail component of retail minus reasonably efficient competitor wholesale charges.

D.1 Calculating retail component of retail minus reasonably efficient competitor wholesale charges for water on-selling

D.1.1 Sydney Water

Sydney Water's water charges are a two-part tariff with a uniform usage charge.

The retail component would be calculated as:

- the Sydney Water retail usage charge multiplied by all water taken by the wholesale customer at the wholesale connection point, plus
- the sum of the water supply service charges for end use customers based on their meter connection to the wholesale customer and Sydney Water's water supply service charges. Every residential customer property within a mixed multi-premises is deemed to have a 20mm meter connection.

Sydney Water's retail charges for water services are shown below in Table D.1.

Table D.1 Sydney Water's retail charges for water services ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge ($/kL)[a]				
Water usage charge	2.00	2.00	2.00	2.00
SDP uplift	0.12	0.12	0.12	0.12
Meter connection charge ($/meter)[b]				
20mm	89.95	89.95	89.95	89.95
25mm	140.55	140.55	140.55	140.55
32mm	230.28	230.28	230.28	230.28
40mm	359.82	359.82	359.82	359.82
50mm	562.22	562.22	562.22	562.22
80mm	1,439.27	1,439.27	1,439.27	1,439.27
100mm	2,248.86	2,248.86	2,248.86	2,248.86
150mm	5,059.94	5,059.94	5,059.94	5,059.94
200mm	8,995.44	8,995.44	8,995.44	8,995.44
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			

a When the Sydney Desalination Plant (SDP) is operating this usage charge is the sum of the water usage charge and the SDP uplift.

b In 2017-18, 2018-19 and 2019-20 the meter connection charge will vary by the SDP service charge pass-through and the Shoalhaven transfer pass-through.

Note: Meter connection charges will be altered by the SDP pass through in 2017-18, 2018-19 and 2019-20. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016, pp 16-17.

A worked example of calculating water retail charge is included in Box D.1 below.

Box D.1 Water retail charges in Sydney

A wholesale customer purchases 10,000kL of drinking water and provides water to 50 houses and 10 businesses with individual 32mm water meters.

In 2016-17, the retail component of the retail-minus charge is the sum of the following:

- usage charges: 10,000 x $2.00 = $20,000
- 20mm meter connection charges: 50 x $89.95 = $4,497.50
- 32mm meter connection charges: 10 x $230.28 = $2,302.80

The total retail component of the retail-minus charge is $26,800.30.

Below we outline how the following special property types are to be treated for the purpose of calculating the retail component of water retail minus reasonably efficient competitor cost charges:

- Joint services:
  - each residential joint service customer directly connected to the wholesale customer is to be treated as a single metered residential property
  - each non-residential joint services customer (other than non-residential multi-premise joint water supply property) directly connected to the wholesale customer is to be treated as a single metered non-residential property
  - each joint water service customer (other than non-residential multi-premise joint water supply property) that is not directly connected to the wholesale customer is to be treated as a property with a single 20mm meter connection, and
  - non-residential multi-premise joint water supply property (ie, where there are only multi-premise non-residential customers in the joint service arrangement) are to be treated together as a single metered non-residential customer.
- Dual occupancies:
  - each dual occupancy serviced by more than one common meter or individually metered is to be treated as a single metered residential property, or
  - where two dual occupancies on the same premises are serviced by one meter they are together to be treated as a single metered residential property.
- Individually metered properties within a multi-premises are to be treated as individually metered properties.
- Metered standpipes are to be treated as metered non-residential properties.
- Boarding houses:
  - with 10 rooms or fewer are to be treated as a single residential property, or
  - with more than 10 rooms are to be treated a non-residential property.
- Unmetered properties are to be treated as a metered residential property with annual water usage of 180 kL.

Further detail on how to apply Sydney Water's retail charges is included in our determination of Sydney Water's prices, which is available on our website www.ipart.nsw.gov.au.

Impact of the operation of the Sydney Desalination Plant on wholesale prices

When the Sydney Desalination Plant (SDP) is operating this usage charge is the sum of the water usage charge and the SDP uplift. This will increase the usage charge while SDP operates.

We also include a SDP pass-through to service charges. This pass-through recovers differences between SDP costs incurred and revenue from:

- 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 to reflect any changes in SDP's efficient costs and the application of the energy and efficiency adjustment mechanisms
- network electricity costs, which are treated as a pass through in SDP's determination, and
- any forecast error in our estimate of the water usage charge adjustment.

The SDP pass-through formula for the 2016 determination period is shown below, and the variables are shown in Table D.2.

$$\Delta\text{Water service charge}_t^{SDP} = \frac{\frac{\alpha_{t-1}-\varepsilon_{t-1}}{\mu_{t-1}}-\beta_{t-1}-(\gamma_{t-1}\times\sigma_{t-1})}{\rho_t}\times\frac{\pi^2}{400}\times\mu_t\times(1+\theta_t)$$

Table D.2 Variables in SDP service charge pass-through formula ($2016-17)

Where t =	2016-17	2017-18	2018-19	2019-20
β_t	$193,975,820	$193,975,820	$193,975,820	n/a
γ_t	$62.68	$62.88	$62.75	n/a
θ_t	n/a	0.059	0.059	0.059
μ_t	1	$1+\Delta CPI_1$	$1+\Delta CPI_2$	$1+\Delta CPI_3$
ρ_t	n/a	2,025,7847	2,051,057	2,076,809

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, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016, pp 12-13.

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

We note that in any financial year, a 1 July price change will pass through the following for the previous financial year:

- approximately 10 months of SDP's actual costs, and
- Sydney Water's forecast of SDP's costs for approximately two months of the relevant period.

Impact of the operation of the Shoalhaven transfer system

In our 2016 Determination we included a cost pass-through mechanism to pass-through the costs incurred by operating the Shoalhaven transfer system. We set Sydney Water's revenue requirement on the basis that there would be no Shoalhaven transfers for the whole 2016 determination period to not double count these costs.

The Shoalhaven transfer cost pass-through formula for the 2016 determination period is shown below, and the variables are shown in Table D.3.

$$\Delta\text{Water service charge}_t^{\text{Shoalhaven}} = \frac{\omega_{t-1}}{\rho_t} \times \frac{\pi^2}{400} \times \frac{\mu_t}{\mu_{t-1}} \times (1+\theta_t)$$

Table D.3 Variables in Shoalhaven transfer service charge pass-through formula

Where t =	2016-17	2017-18	2018-19	2019-20
θ_t	n/a	0.059	0.059	0.059
μ_t	1	$1+\Delta CPI_1$	$1+\Delta CPI_2$	$1+\Delta CPI_3$
ρ_t	n/a	2,025,784	2,051,057	2,076,809

Note: Customer Numbers, ρ_t, are calculated by IPART based on Sydney Water's pricing proposal and our analysis.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016, pp 14-15.

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 Final Report for WaterNSW), 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)

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

D.1.2 Hunter Water

Hunter Water's water charges are a two-part tariff. The retail component of water retail minus reasonably efficient competitor cost charges usage charges are to be calculated on the standard usage charge.[117]

The retail component would be calculated as:

- the Hunter Water retail usage charge multiplied by all water taken by the wholesale customer at the wholesale connection point, plus
- the sum of the water supply service charges for end use customers based on their meter connection to the wholesale customer and Hunter Water's water supply service charges. In Hunter Water a distinct water supply charge applies to:
  - metered residential properties
  - metered non-residential properties serviced by a single individual meter of 20mm
  - residential properties within a multi-premises serviced by one or more common meters and
  - non-residential properties within a mixed multi premises serviced by one or more common meters.

Hunter Water's retail charges for water services are shown below in Table D.4.

[117] For customers that consume in excess of 50,000kLand are located in particular zones of Hunter Water's area of operation, there are location-based water usage charges. These do not apply for the purposes of the wholesale price determination for Hunter Water.

Table D.4 Hunter Water's retail charges for water services ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Water usage charge ($/kL)				
Water usage charge	2.25	2.25	2.25	2.25
Water supply service charge ($/meter)				
Residential[a]	25.69	50.07	72.06	95.17
20mm[a]	30.17	54.97	75.43	95.17
25mm	47.13	85.88	117.85	148.71
32mm	77.23	140.72	193.10	243.64
40mm	120.67	219.86	301.71	380.69
50mm	188.55	343.54	471.43	594.82
80mm	482.67	879.45	1,206.85	1,522.74
100mm	754.18	1,374.13	1,885.70	2,379.28
150mm	1,696.91	3,091.81	4,242.83	5,353.39
200mm	3,016.71	5,496.54	7,542.80	9,517.14
Other meter sizes ($/meter)	$\frac{(\text{meter size})^2 \times 20\text{mm water supply service charge}}{400}$			

[a] If a wholesale customer only has a single 20mm meter they would receive the lower water supply service charge.

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination, June 2016, pp 12-13.A worked example of calculating water retail charge is included in Box D.2 below.

Box D.2 Water retail charges in the Hunter

A wholesale customer purchases 10,000kL of drinking water and provides water to 50 houses and 10 businesses with individual 32mm water meters.

In 2016-17, the retail component of the retail-minus charge is the sum of the following:

- usage charges: 10,000 x $2.25 = $22,500
- 20mm meter connection charges: 50 x $25.69 = $1,284.50
- 32mm meter connection charges: 10 x $77.23 = $772.30

The total retail component of the retail-minus charge is $24,556.80.

Below we outline how the following special property types are to be treated for the purpose of calculating the retail component of water retail minus reasonably efficient competitor cost charges:

- Joint services:
  - each non-residential joint service customer, in an entirely non-residential joint-service, is to be treated as a single non-residential property within a non-residential multi-premises

  - each residential joint service customer, in an entirely residential joint-service, is to be treated as a single residential property within a multi-premises, or
  - each joint service customer, in a mixed joint-service, is to be treated as a single residential property within a multi-premises.
- Dual occupancies:
  - each dual occupancy serviced by more than on common meter or individually metered is to be treated as a single metered residential property, or
  - where two dual occupancies on the same premises are serviced by one meter they are together to be treated as a single metered residential property.
- Individually metered properties within a multi-premises are to be treated as individually metered properties.
- Metered standpipes are to be treated as metered non-residential properties.
- Boarding houses:
  - with 10 rooms or fewer are to be treated as a single residential property, or
  - with more than 10 rooms are to be treated a non-residential property.
- Unmetered properties are to be treated as a metered residential property with annual water usage of 180 kL.

Further detail on how to apply Hunter Water's retail charges is included in our determination of Hunter Water's prices, which is available on our website www.ipart.nsw.gov.au.

D.2 Calculating retail component of retail minus reasonably efficient competitor wholesale charges for sewerage on-selling

Calculating retail sewerage charges requires the consideration of discharge factors and whether trade waste charges apply.

D.2.1 Sydney Water

Sydney Water's sewerage charges are a two-part tariff with a uniform usage charge that applies to non-residential customers when their discharge exceeds the discharge allowance. Trade waste charges apply to non-residential customers that discharge high strength or corrosive waste or require certain services.

The retail component will be calculated as:

- the number of residential customers and non-residential customers (where common metered non-residential are counted as a single non-residential customer and each non-residential property within a mixed multi-premise property are counted as a single residential customer) multiplied by the deemed usage charge, plus
- the number of residential customers and non-residential properties within a mixed multi-premise property multiplied by the 20mm meter connection charge multiplied by a deemed 75% discharge factor, plus
- the sum of non-residential customer's (except non-residential properties within a mixed multi-premise property) meter connection charge based on their water meter connection to the wholesale customer multiplied by that customer's discharge factor, plus
- the sum of each non-residential customer's (except non-residential properties within a mixed multi premise property) chargeable sewage discharge which is, for each non-residential customer, the greater of its water usage multiplied by its discharge factor minus the discharge allowance or zero, plus
- the sum of any applicable trade waste charges.

Sydney Water's retail charges for sewerage services are shown below in Table D.5, and its trade waste charges are shown in Appendix F.

Table D.5 Sydney Water's retail charges for sewerage services ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge ($/meter)[a]				
20mm	555.26	555.26	555.26	555.26
25mm	867.59	867.59	867.59	867.59
32mm	1,421.45	1,421.45	1,421.45	1,421.45
40mm	2,221.02	2,221.02	2,221.02	2,221.02
50mm	3,470.35	3,470.35	3,470.35	3,470.35
80mm	8,884.09	8,884.09	8,884.09	8,884.09
100mm	13,881.39	13,881.39	13,881.39	13,881.39
150mm	31,233.13	31,233.13	31,233.13	31,233.13
200mm	55,525.57	55,525.57	55,525.57	55,525.57
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge ($)				
Deemed usage charge	167.15	167.15	167.15	167.15
Sewerage usage charge ($/kL)				
Below discharge allowance	0.00	0.00	0.00	0.00
Above discharge allowance	1.11	1.11	1.11	1.11

a Discharge factors will apply, which will reduce the meter connection charge.

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016, pp 24-25.

The discharge allowance is:

- in 2016-17 – 0.685 kL per day
- in 2017-18 – 0.548 kL per day
- in 2018-19 – 0.411 kL per day, and
- in 2019-20 – 0.410 kL per day.

A worked example of calculating sewerage retail charge is included in Box D.3 below.

Box D.3 Sewerage retail charges in Sydney

A wholesale customer supplied sewerage services to 50 houses and 10 businesses with individual 32mm water meters, each business purchases 500kL of water and has an 80% discharge factor.

In 2016-17, the retail component of the retail-minus charge is the sum of the following:

- residential meter connection charge: 50 x $555.26 x 0.75 = $20,822.25
- residential deemed usage: 50 x $167.15 = $8,357.50
- 32mm meter connection charges: 10 x $1,421.45 x 80%= $11,371.60
- business deemed usage: 10 x $167.15 = $1,671.50
- business usage charge: 10 x (500 x 80% - 0.685 x 365) x $1.11 = $1,664.72

The total retail component of the retail-minus charge is $43,872.58.

Below we outline how the following special property types are to be treated for the purpose of calculating the retail component of sewerage retail minus reasonably efficient competitor cost charges:

- Joint services:
  - each residential joint service customer directly connected to the wholesale customer is to be treated as a single metered residential property
  - each non-residential joint services customer (other than non-residential multi-premise joint supply property) directly connected to the wholesale customer is to be treated as a single metered non-residential property
  - each joint service customer (other than non-residential multi-premise joint supply property) that is not directly connected to the wholesale customer is to be treated as a property with a single 20mm meter connection, and
  - non-residential multi-premise joint supply property (ie, where there are only multi-premise non-residential customers in the joint service arrangement) are to be treated together as a single metered non-residential customer.

- Dual occupancies:
  - each dual occupancy serviced by more than on common meter or individually metered is to be treated as a single metered residential property, or
  - where two dual occupancies on the same premises are serviced by one meter they are together to be treated as a single metered residential property
- Individually metered properties within a multi-premises are to be treated as individually metered properties.
- Boarding houses:
  - with 10 rooms or fewer are to be treated as a single residential property, or
  - with more than 10 rooms are to be treated a non-residential property.

Further detail on how to apply Sydney Water's retail charges is included in our determination of Sydney Water's prices, which is available on our website www.ipart.nsw.gov.au.

D.2.2 Hunter Water

Hunter Water's sewerage charges are a two-part tariff with a uniform usage charge that applies to non-residential customers when their discharge exceeds the discharge allowance. Trade waste charges apply to non-residential customers that discharge high strength or corrosive waste or require certain services.

The retail component will be calculated as:

- the number of residential customers and non-residential customers (where common metered non-residential are counted as a single non-residential customer and each non-residential property within a mixed multi premise property are counted as a single residential customer) multiplied by the environmental improvement charge, plus
- the number of residential properties within a multi-premises and non-residential properties within a mixed multi premises serviced by one or more common meters multiplied by the apartment meter connection charge multiplied by the a deemed 75% discharge factor plus the deemed usage charge for apartments, plus
- the number of residential properties not within a multi-premises and metered non-residential properties serviced by a single individual 20mm meter multiplied by the house meter connection charge multiplied by the a deemed 75% discharge factor plus the deemed usage charge for houses, plus
- the number of remaining non-residential properties multiplied by the deemed usage charge for non-residential customers, plus

- the sum of remaining non-residential customer's meter connection charge based on their water meter connection to the wholesale customer multiplied by that customer's discharge factor, plus
- the sum of each non-residential customer's (except non-residential properties within a mixed multi premise property that are not individually metered) chargeable sewage discharge which is, for each non-residential customer, the greater of its water usage multiplied by its discharge factor minus the discharge allowance or zero, plus
- the sum of any applicable trade waste charges.

Hunter Water's retail charges for sewerage services are shown below in Table D.6, and its trade waste charges are shown in Appendix F.

Table D.6 Hunter Water's retail charges for sewerage services ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Meter connection charge ($/meter)[a]				
House meter connection charge	698.58	703.22	711.43	718.97
Apartment meter connection charge	523.93	544.99	569.14	593.15
20mm	1,135.05	956,59	841.05	718.97
25mm	1,773.51	1,494.66	1,314.14	1,123.39
32mm	2,905.72	2,448.86	2,153.10	1,840.55
40mm	4,540.18	3,826.34	3,364.21	2,875.87
50mm	7,094.04	5,978.67	5,256.59	4,493.55
80mm	18,160.74	15,305.38	13,456.85	11,503.47
100mm	28,376.16	23,914.65	21,026.33	17,974.17
150mm	63,846.35	53,807.97	47,309.26	40,441.88
200mm	113,504.62	95,658.60	84,105.34	71,896.66
Other meter sizes	$\frac{(\text{meter size})^2 \times 20\text{mm meter connection charge}}{400}$			
Deemed usage charge ($nominal)				
House deemed usage charge	80.40	80.40	80.40	80.40
Apartment deemed usage charge	60.30	62.31	64.32	66.33
Non-residential deemed usage charge	45.23	56.95	68.68	80.40
Sewerage usage charge ($nominal/kL)				
Below discharge allowance	0.00	0.00	0.00	0.00
Above discharge allowance	0.67	0.67	0.67	0.67
Environmental improvement charge ($)				
Environmental improvement charge	38.87	38.87	38.87	38.87

a Discharge factors will apply, which will reduce the meter connection charge.

Note: If a wholesale customer only has a single 20mm meter they would receive a lower meter connection charge. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART, *Hunter Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 – Determination*, June 2016, pp 24-27.

The discharge allowance is:

- in 2016-17 – 0.185 kL per day
- in 2017-18 – 0.233 kL per day
- in 2018-19 – 0.281 kL per day, and
- in 2019-20 – 0.328 kL per day.

A worked example of calculating sewerage retail charge is included in Box D.4 below.

Box D.4 Sewerage retail charges in the Hunter

A wholesale customer supplied sewerage services to 50 houses and 10 businesses with individual 32mm water meters, each business purchases 500 kL of water and has an 80% discharge factor.

In 2016-17, the retail component of the retail-minus charge is the sum of the following:

- residential meter connection charge: 50 x $698.58 x 0.75 = $26,196.75
- residential deemed usage: 50 x $80.40= $4,020
- 32mm meter connection charges: 10 x $2,905.72 x 80%= $23,245.76
- business deemed usage: 10 x $45.23 = $452.30
- business usage charge: 10 x (500 x 80% - 0.185 x 365) x $0.67 = $2,227.58

The total retail component of the retail-minus charge is $56,494.09.

Below we outline how the following special property types are to be treated for the purpose of calculating the retail component of sewerage retail minus reasonably efficient competitor cost charges:

- Joint services:
  - each non-residential joint service customer, in an entirely non-residential joint-service, is to be treated as a single non-residential property within a non-residential multi-premises
  - each residential joint service customer, in an entirely residential joint-service, is to be treated as a single residential property within a multi-premises, or
  - each joint service customer, in a mixed joint-service, is to be treated as a single residential property within a multi-premises.
- Dual occupancies:
  - each dual occupancy serviced by more than on common meter or individually metered is to be treated as a single metered residential property, or

  - where two dual occupancies on the same premises are serviced by one meter they are together to be treated as a single metered residential property.
- Individually metered properties within a multi-premises are to be treated as individually metered properties.
- Boarding houses:
  - with 10 rooms or fewer are to be treated as a single residential property, or
  - with more than 10 rooms are to be treated as a non-residential property.

Further detail on how to apply Hunter Water's retail charges is included in our determination of Hunter Water's prices, which is available on our website www.ipart.nsw.gov.au.

E Calculating reasonably efficient competitor costs

To set a retail minus reasonably efficient competitor cost price for water and sewerage on-selling we needed to calculate the reasonably efficient competitor's costs.

To do this we engaged NERA Economic Consulting (with SIPA) to develop a methodology for calculating, and to calculate, system-wide or average prices using retail minus reasonably efficient competitor's costs approach. NERA's calculation of reasonably efficient competitor costs (ie, their modelling exercise) was completed in August 2016. NERA's Final Report is available on the IPART website www.ipart.nsw.gov.au.

In September and October 2016, we further developed NERA's methodology for calculating a reasonably efficient competitor's costs. To facilitate the application of our preferred approach, we engaged Oakley Greenwood (working with Parsons Brinkerhoff) to provide engineering advice on benchmark unit rates for a reasonably efficient competitor's **retail** and **reticulation** costs. Oakley Greenwood's Final Report is available on the IPART website www.ipart.nsw.gov.au.

In this appendix, we provide:

- a high level overview of NERA's methodology for calculating the reasonably efficient competitor's costs and the resulting calculations, and
- an overview of our approach to calculating the reasonably efficient competitor's costs and the resulting calculations.

E.1 Overview of NERA's methodology

At a high-level, NERA's methodology for calculating a reasonably efficient competitor's costs is to:

1. calculate **as efficient** competitor costs based on Sydney Water and Hunter Water's 2016 price review data
2. apply an efficiency factor to Sydney Water and Hunter Water's as efficient competitor costs to generate a reasonably efficient competitor cost, and

3. divide each of the Sydney Water and Hunter Water reasonably efficient competitor costs by that utility's target revenue requirement (for the respective service), to generate minus percentages for each of these retail-minus pricing approaches.

E.1.1 Calculating as efficient competitor costs

To calculate the as efficient competitor costs for retail and reticulation (for water and sewerage), NERA applied a building block model. The main components of this building block model are explained below. Due to its negligible impact on prices, a return on working capital was omitted.

Return on assets

Under NERA's approach, assets should be valued at the depreciated optimised replacement cost (DORC). However, Sydney Water and Hunter Water did not have DORC valuations readily available. As such, NERA considered that the next best approach would be to allocate values from the existing regulatory asset base (RAB).[118] NERA relied on Sydney Water and Hunter Water's allocation of the RAB to retail and reticulation services.

The RAB was rolled forward over the 2016-20 period to include the capital expenditure deemed prudent and efficient in IPART's 2016 Sydney Water and Hunter Water retail price reviews, and depreciation (see section below).

A 4.9% post-tax weighted average cost of capital (WACC) was applied to generate an allowance for a return on the retail and reticulation assets. The 4.9% post-tax WACC is equal to the post-tax WACC applied by IPART in the 2016 Sydney Water and Hunter Water retail price reviews.

Depreciation (return of assets)

To calculate a depreciation allowance (return of assets) for the retail and reticulation assets, the straight-line depreciation method was applied (as applied by IPART in our 2016 Sydney Water and Hunter Water retail price reviews). This was calculated based on the asset lives provided by Sydney Water.[119]

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[118] NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, p 33.

[119] NERA noted that the asset lives provided by Hunter Water were not separated by asset class.

Operating expenditure

NERA's methodology included the total retail and reticulation operating expenditure allowed by IPART in our 2016 Sydney Water and Hunter Water retail price reviews. The following cost categories were included:

- direct variable costs
- direct fixed costs, and
- an allocation of common costs.[120]

NERA relied on Sydney Water and Hunter Water's allocation of common costs.

Tax allowance

An allowance for tax liabilities for retail and reticulation services was provided. However, the tax liability (and deductions) generated by assets free of charge (AFOC) was omitted.

E.1.2 Applying an efficiency factor to calculate reasonably efficient competitor costs

NERA applied an efficiency factor to transform its as efficient competitor cost estimates to reasonably efficient competitor cost estimates. NERA applied an efficiency factor of 1.5%, based on the typical continuing and catch-up efficiency factors applied by regulators to water utilities.[121]

E.1.3 Minus percentage

NERA calculated the minus as a percentage of Sydney Water's and Hunter Water's prevailing retail prices. To generate the percentage minuses, the reasonably efficient competitor costs were divided by the relevant utility's target revenue requirement for that service. For example:

- To calculate the **water retail minus** in 2017-18 for Sydney Water, NERA divided the reasonably efficient competitor's water retail costs calculated using Sydney Water's data for 2017-18 by Sydney Water's retail price determination target water revenue requirement for 2017-18.

120 NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, pp 29-35.

121 NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, p 54.

- To calculate the **sewerage retail and reticulation minus** in 2019-20 for Hunter Water, NERA divided the sum of the reasonably efficient competitor's sewerage retail and sewerage reticulation costs calculated using Hunter Water's data for 2019-20 by Hunter Water's total target sewerage revenue requirement for 2019-20.

This approach results in different minus percentages for Sydney Water and Hunter Water for water and sewerage retail and reticulation costs, in each year.

E.1.4 Reasonably efficient competitor costs calculated under NERA's methodology

NERA's report includes all of its estimated prices, which is available on our website: www.ipart.nsw.gov.au. NERA's calculated reasonably efficient competitor cost minuses (relative to retail prices) are shown in Tables E.1 and E.2 below.

Table E.1 NERA's retail minus reasonably efficient competitor cost for Sydney Water

Product	Level of service	2016-17	2017-18	2018-19	2019-20
Water	Retail	2.9%	3.1%	3.3%	3.5%
	Retail and reticulation	6.7%	7.1%	7.5%	7.9%
Sewerage	Retail	1.7%	1.8%	1.9%	2.0%
	Retail and reticulation	4.7%	4.9%	5.1%	5.2%

Source: NERA Economic Consulting, Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART, October 2016, p 10.

Table E.2 NERA's retail minus reasonably efficient competitor cost for Hunter Water

Product	Level of service	2016-17	2017-18	2018-19	2019-20
Water	Retail	4.9%	5.1%	5.2%	5.4%
	Retail and reticulation	15.5%	15.7%	15.7%	15.9%
Sewerage	Retail	5.6%	5.9%	6.0%	6.2%
	Retail and reticulation	10.2%	10.4%	10.5%	10.6%

Source: NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART*, October 2016, p 11.

NERA recommended that its prices be treated as indicative as a result of information gaps it identified. However, it recommended that if the information gaps could be resolved, the resulting retail-minus prices could be determined for both Sydney Water and Hunter Water.[122]

The identified information gaps included the following:

- Sydney Water had not segregated the component value of renewed reticulation assets from their regulatory asset base (RAB)
- Sydney Water did not separate common and direct costs
- Hunter Water included a high proportion of common costs, and
- Hunter Water did not have a preferred estimate of how to value reticulation assets in the RAB.

IPART's modelling prices using NERA's approach

Following the completion of the modelling phase of NERA's review in August 2016, we worked with Sydney Water and Hunter Water to fill the information gaps identified by NERA. These gaps were addressed to our satisfaction.

Using the updated information provided by Sydney Water and Hunter Water, we calculated reasonably efficient competitor costs using NERA's methodology. These reasonably efficient competitor costs, as minuses relative to retail prices, are shown in Tables E.3 and E.4 below.

Table E.3 Retail minus reasonably efficient competitor cost for Sydney Water using NERA's approach

Product	Level of service	2016-17	2017-18	2018-19	2019-20
Water	Retail	3.3%	3.5%	3.6%	3.7%
	Retail and reticulation	10.7%	11.0%	11.0%	11.1%
Sewerage	Retail	1.8%	1.9%	1.9%	2.0%
	Retail and reticulation	6.8%	6.9%	6.8%	6.8%

Source: IPART analysis.

Table E.4 Retail minus reasonably efficient competitor cost for Hunter Water using NERA's approach

Product	Level of service	2016-17	2017-18	2018-19	2019-20
Water	Retail	4.6%	4.6%	4.6%	4.6%
	Retail and reticulation	16.9%	17.0%	16.9%	16.8%
Sewerage	Retail	4.8%	5.0%	4.9%	4.9%
	Retail and reticulation	14.5%	14.7%	14.5%	14.3%

Source: IPART analysis.

[122] NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, p 9.

E.2 Overview of IPART's methodology

In September and October 2016, we further developed NERA's methodology for calculating reasonably efficient competitor's costs. To facilitate the application of our preferred approach, we engaged Oakley Greenwood to provide engineering advice on benchmark unit rates for a reasonably efficient competitor's **retail** and **reticulation** costs.[123]

The methodology we decided to apply in determining retail minus reasonably efficient competitor cost prices calculates the reasonably efficient competitor cost by:

- calculating an entrant's annual building block costs for a 125-year period, using new assets at entry and lifecycle operating expenditure
- calculating the annual average building block costs in net present value terms over the first 50-years following entry, and
- applying the annuitized average building block costs based on the primary cost drivers:
  - a per customer basis for **retail** functions, and
  - a per kilometre basis for **reticulation** functions.

E.2.1 Reasonably efficient competitor costs calculated under our preferred methodology

Our reasonably efficient competitor cost minuses are shown in Table E.5 below.

To generate wholesale prices, these would be subtracted from the retail bill that would face the wholesale customer's end-use customers if they were supplied services by Sydney Water or Hunter Water at IPART's determined retail prices.

Table E.5 Reasonably efficient competitor cost minuses ($2016-17)

	Annual Minus
Water	
Retail ($/customer)	69.60
Reticulation ($/kilometre)	4,227.91
Sewerage	
Retail ($/customer)	46.40
Reticulation ($/kilometre)	7,692.63

Source: IPART analysis.

[123] Oakley Greenwood's Final Report – *Calculation of Reasonably Efficient Competitor Costs* – is available on our website www.ipart.nsw.gov.au

E.2.2 Calculating annual building block costs

To calculate the annual retail and reticulation building block costs, we used data provided by Oakley Greenwood on the costs of a reasonably efficient competitor (see Box E.1). This data identifies the assets required, the asset lives and operating expenditure an entrant would incur.

Box E.1 Oakley Greenwood and Parsons Brinkerhoff's cost estimates

We engaged Oakley Greenwood (working with Parsons Brinkerhoff) to provide engineering estimates of reasonably efficient competitor costs for retail and reticulation services. Oakley Greenwood provided IPART with:

- estimated benchmark unit rates for retail and reticulation assets, and
- calculated costs for example schemes.

Oakley Greenwood estimated the non-metering retailing costs based on indicative costs to outsource retail functions. This reflects the high upfront capital costs of doing it in-house and the number of experienced outsource service providers in the market for these services (particularly for electricity).

Oakley Greenwood also provided estimates of the asset lives, capital expenditure and operating expenditures of:

- water meters
- water and sewerage reticulation of different diameters, technologies and environments
- water and sewerage pumping stations, and
- water reservoirs.

The figures were predominantly based on:

- the NSW Reference Rates Manual - Valuation of water supply, sewerage and stormwater assets, published by the Department of Primary Industries - Office of Water in 2014
- Water Supply Code of Australia
- 2013-14 Water Supply and Sewerage NSW Benchmarking Report benchmarking cost data published by the Department of Primary Industries
- Sewerage Code of Australia, and
- industry knowledge.

Source: Oakley Greenwood, WSP Parsons Brinkerhoff, *Calculation of Reasonably Efficient Competitor Costs – prepared for: Independent Pricing and Regulatory Tribunal,* October 2016.

In its review, NERA considered estimating reasonably efficient competitor costs based on engineering cost estimates. NERA terms this the engineering approach in its report.[124]

We consider using an engineering approach provides the best estimate of the costs of a reasonably efficient new entrant. In deriving these cost estimates, we have assumed the reasonably efficient firm has 10,000 retail customers.

Once we obtained capital and operating cost estimates using the engineering approach, we applied a building block model to calculate cost allowances. The main components of this building block model are included in the sections below. Our building block model automatically calculates a return on working capital.

Return on assets

In our building block calculation, we included assets based on Oakley Greenwood's engineering advice on the typical retail and reticulation assets required by a wholesale customer. We valued these assets at the cost a wholesale customer would incur in building or acquiring these assets new. This valuation is known as the modern engineering equivalent replacement asset value (MEERA).

Valuing assets at their cost to a new entrant is consistent with seeking to enable new entry to the water and sewerage market where it is efficient.

In its review, NERA[125] considered three valuation methods:

- MEERA
- DORC, and
- RAB.

We consider DORC and RAB are more appropriate when considering the costs that an incumbent would **avoid**, and for avoiding static efficiency losses. That is, they are better suited to a retail minus avoidable cost (rather than a retail minus reasonably efficient competitor cost) approach.

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[124] NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, pp 47-50.

[125] NERA noted that it considers DORC to be the most appropriate, with RAB an adequate substitute. NERA states that the use of MEERA or DORC values would result in higher asset valuations and therefore likely significantly higher minus factors. NERA Economic Consulting, *Approach to calculating average wholesale prices for Sydney Water and Hunter Water – A report for IPART,* October 2016, pp 33, 104.

The RAB[126] is the depreciated value of the assets the utility has built/purchased. A depreciated valuation may not send appropriate signals for entry (ie, an entrant would not immediately write down the assets it builds and purchases to match the incumbent's depreciated value). To compete with a depreciated valuation, entrants would need to:

- build/purchase significantly cheaper assets than the incumbent, or
- accept a lower rate of return on their assets/immediately write down asset values.

To generate a return on assets, we have made a draft decision to apply the same WACC that we used in our June 2016 determinations for Sydney Water and Hunter Water's retail prices (ie, a real post-tax WACC of 4.9%). That WACC reflects the efficient cost of capital for a benchmark firm operating in a competitive market and facing similar risks to the business that we are regulating.

In forming this decision we considered whether we should use a different WACC in calculating the 'reasonably efficient competitor costs', noting that the wholesale customers are likely to have a smaller scale than the incumbent utilities. However, we decided that the issue of scale was better dealt with explicitly in considering the operating and capital expenditure in establishing the 'reasonably efficient competitor costs' rather than applying an additional uplift in the WACC.[127]

We have made a draft decision that the determination period for this review of wholesale prices will be four years and four months. This means that the wholesale prices in the determination would apply eight months later than the current retail price determination period for Sydney Water and Hunter Water which commenced on 1 July 2016.[128] In the next review of retail prices for Sydney Water and Hunter Water, the regulatory WACC will be updated. This may mean that in 2020-21, the regulatory WACC used in the Sydney Water and Hunter Water's retail prices may be different from the WACC that was used to determine the minus in this year. Nevertheless, we decided that the wholesale

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126 This analysis ignores complications from the line-in-the-sand valuation, which further depreciates the value of assets compared to their replacement cost and makes them difficult to identify.

127 The WACC affects the wholesale price of water in three ways:

- the 'retail' in the 'retail minus reasonably efficient costs' – in determining the incumbent retailer's prices a key determinate of the price is the WACC. We set these prices as part of a separate review
- the 'reasonably efficient costs' in the 'retail minus reasonably efficient costs'- as part of this draft report we have set system-wide estimates unit costs for retail services and reticulation, and
- the annuity calculation as the discount rate.

We consider that it is appropriate to use a single WACC for all three purposes.

128 The determination period for the retail prices for Sydney Water and Hunter Water is 1 July 2016 to 20 June 2020.

price in this last year should be the new retail price (calculated using an updated WACC) minus the same reasonably efficient cost that applied in the other three years of the wholesale price period.

Depreciation (return of assets)

To calculate an allowance for depreciation (return of assets), we applied the straight-line depreciation method (as we did in our 2016 Sydney Water and Hunter Water retail price reviews). This was calculated based on asset lives provided by Oakley Greenwood.

Operating expenditure

We consider that operating expenditure should match the age of the assets being operated. As our approach uses an initial MEERA valuation of retail and reticulation assets and annual estimates of building block costs, we therefore decided that the operating expenditures should reflect the assets' life cycle operating costs.

In general, as assets age they become more expensive to operate.

Our approach (ie, matching asset age to its operating expenditure) is broadly consistent with our approach in retail price reviews.

As we have applied a standalone engineering cost based approach for calculating reasonably efficient competitor costs, we have not included common costs. Given that the most services can be outsourced (and our calculations assume that they are), we consider that the common costs (such as overheads) incurred by a new entrant would be relatively small.

Tax allowance

In our tax allowance we have included the tax liability (and benefits) created by assets that are typically gifted to a water utility.

Sydney Water and Hunter Water both require developers to build reticulation infrastructure. These assets are gifted to Sydney Water and Hunter Water free of charge. These assets free of charge (AFOC) create a tax liability to Sydney Water and Hunter Water, which is reflected in prices. The AFOC does not get added to Sydney Water or Hunter Water's RABs (ie, we do not provide a return on these AFOC or a depreciation allowance for them).

We consider that reticulation infrastructure should be treated symmetrically for Sydney Water/Hunter Water and the reasonably efficient competitor cost margin (ie, it should be treated as AFOC). This also reflects that wholesale customers are also typically gifted reticulation infrastructure.

Therefore, we have excluded the value of reticulation assets when calculating a return on assets and depreciation allowance for a reasonably efficient competitor (until the assets are replaced), but provided an allowance for the tax liability of these gifted assets.

E.2.3 Calculating the annuitized average cost

In our modelling, we calculate 125 years of annual reasonably efficient competitor costs for water and sewerage **retail** and **reticulation** functions. We consider that this reflects the long-run incremental costs of a reasonably efficient competitor entering the market.

Using an incremental cost approach best reflects an entrant's cost. Additionally, applying the incremental cost approach through a building block model allows consistency between how we calculate the retail and the minus (ie, they are both building block calculations).

To reflect the long-run incremental costs, we have calculated an annual net present value equivalent of these costs over a 50-year period.

Annuity calculation

A utility's cost will change each year under a building block approach, because:

- existing assets will depreciate and therefore generate a lower absolute return on assets (ie, the rate of return will be the same but the base will be smaller so the total return will be less)
- new assets will be added and require a rate of return, and
- operating expenditure will reflect the age of assets.

As such, it is unlikely there is a steady state long-run cost; although those costs may be relatively predictable for a benchmark utility (where asset ages and a replacement schedule is known).

We have decided to use an annuity that is equivalent in value in present value terms to the estimated lifecycle costs (operating, capital and tax related) – ie, the costs for each year of an asset's life. This will create a minus that will cover the benchmark costs over the annuity period.

To calculate the annuity we decided to apply a consistent discount rate to the WACC used for the return on assets. This is the real pre-tax WACC equivalent to the real post-tax WACC applied to Sydney Water and Hunter Water in our 2016 price determinations (ie, 4.9%). We use the pre-tax WACC as the cash flows being discounted include a tax allowance (ie, they are pre-tax adjusted cash flows).

There are broadly two approaches to applying an annuity:

- short-term annuities (ie, shorter than 25-years), and
- long-term annuities (ie, longer than 25-years).

For short-term annuities we would apply a 10-year or 20-year annuity based on an entrant's costs in the first 10 or 20-years. In year 11 or year 21 (respectively), we would apply a long-term annuity to reflect on-going costs. Table E.6 below shows reasonably efficient competitor costs under a 10-year and 20-year annuity approach.

Table E.6 Reasonably efficient competitor costs using short-term annuities ($2016-17)

	First period	Second period
10-year annuity		
Water – retail ($/customer)	55.92	81.80
Water – reticulation ($/kilometre)	6,832.60	2,092.31
Sewerage – retail ($/customer)	37.28	54.53
Sewerage – reticulation ($/kilometre)	14,514.54	1,935.53
20-year annuity		
Water – retail ($/customer)	63.70	85.14
Water – reticulation ($/kilometre)	4,971.04	2,421.34
Sewerage – retail ($/customer)	42.47	56.76
Sewerage – reticulation ($/kilometre)	9,896.03	2,116.35

Note: The second period annuity is from the end of the initial period out of year 120.
Source: IPART analysis.

A short-term term annuity approach could be seen to assist entry. For reticulation assets the reasonably efficient costs in the first year of operation are very high, due to the tax liability created by assets free of charge. Using a 10-year or 20-year annuity allows the entrant to recover this tax liability sooner.

However, at the end of the initial short-term annuity period, there would be a dramatic reduction in the margin. This could potentially create a perverse incentive, where wholesale customers would cease operation after the high-margin initial annuity period.

We have decided to use the long-term annuity approach. Under this approach we would only apply the minus generated by the long-term annuity, and there would not be separate prices for wholesale schemes older than the period of the annuity. Table E.7 below shows reasonably efficient competitor costs under a 30-year, 40-year, 50-year, 75-year, 100-year or 120-year annuity approach.

Table E.7 Reasonably efficient competitor costs using long-term annuities

	Reasonably efficient competitor cost	% difference to 50-year annuity
30-year annuity		
Water – retail ($/customer)	67.34	-3.25%
Water – reticulation ($/kilometre)	4,426.31	4.69%
Sewerage – retail ($/customer)	44.89	-3.25%
Sewerage – reticulation ($/kilometre)	8,538.35	10.99%
40-year annuity		
Water – retail ($/customer)	68.86	-1.06%
Water – reticulation ($/kilometre)	4,298.82	1.68%
Sewerage – retail ($/customer)	45.91	-1.06%
Sewerage – reticulation ($/kilometre)	7,968.05	3.58%
50-year annuity		
Water – retail ($/customer)	69.60	
Water – reticulation ($/kilometre)	4,227.91	
Sewerage – retail ($/customer)	46.40	
Sewerage – reticulation ($/kilometre)	7,692.63	
70-year annuity		
Water – retail ($/customer)	70.24	0.91%
Water – reticulation ($/kilometre)	4,169.62	-1.38%
Sewerage – retail ($/customer)	46.83	0.91%
Sewerage – reticulation ($/kilometre)	7,474.09	-2.84%
100-year annuity		
Water – retail ($/customer)	70.47	1.24%
Water – reticulation ($/kilometre)	4,149.58	-1.85%
Sewerage – retail ($/customer)	46.98	1.24%
Sewerage – reticulation ($/kilometre)	7,396.56	-3.85%
120-year annuity[a]		
Water – retail ($/customer)	70.50	1.29%
Water – reticulation ($/kilometre)	4,162.67	-1.54%
Sewerage – retail ($/customer)	47.00	1.29%
Sewerage – reticulation ($/kilometre)	7,429.53	-3.42%

[a] The 120-year annuity is the only one of the above where all assets are replaced.

Source: IPART analysis.

This long-term approach will avoid the potential for perverse incentives. Furthermore, as we are using a reasonably efficient competitor cost approach, there is no need to further support entry by using a short-term annuity. Reasonably efficient entrants should be able to manage their costs over an extended time period.

Given the current low rates of return and the long-life of reticulation assets, there is merit in having a long annuity period. We have therefore used an annuity period of 50-years in calculating the reasonably efficient competitor's costs.

E.2.4 Applying minuses by cost drivers

We have applied the minus based on the function's cost drivers. Based on the information we have available, we consider that the appropriate cost drivers are:

- number of customers for **retail** operating expenditure and capital costs, and
- kilometres of reticulation for **reticulation** operating expenditure and capital costs.

This is consistent with the advice provided to us by Oakley Greenwood/Parsons Brinkerhoff. This approach best reflects the reasonably efficient costs of different functions.

There are a number of other factors that will drive costs, such as topography. Customer numbers and network length are not perfectly correlated with costs, however we consider it is the best available variable. In using the variables most correlated to expenditures we make system-wide prices more reliable and reduce inefficient cherry picking opportunities.

In particular, it ensures that the margin/minus for retail and reticulation services is independent of water usage, which we do not consider to be a strong driver of these costs. Our water usage charge (the largest component of most customers' bills) is based on the long-run marginal cost (LRMC) principle. The main drivers of LRMC for water are:

- supply augmentation
- water filtration augmentation and operating expenditure, and
- other operating expenditure driven by usage, such as pumping.

We consider that retail and reticulation do not have a significant impact on the LRMC. Therefore, applying a discount to the usage charge to cover retail and reticulation costs may create an incentive to use an inefficiently large quantity of water or not to provide recycled water to end-users (as it reduces demand for drinking water).

F Trade waste prices

The maximum charge that Sydney Water may levy for each trade waste service is in Table F.1 to Table F.7.

Table F.1 Pollutant charges for Industrial Customers ($2016-17)

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	0.285 + [0.123 x (BOD mg/L) /600]	0.290 + [0.125 x (BOD mg/L) /600]	0.296 + [0.128 x (BOD mg/L) /600]	0.301 + [0.130 x (BOD mg/L) /600]
BOD – secondary and tertiary WWTPs	Per kg of mass above domestic strength	See note 1	230	1.851 + [0.123 x (BOD mg/L) /600]	1.886 + [0.125 x (BOD mg/L) /600]	1.922 + [0.128 x (BOD mg/L) /600]	1.958 + [0.130 x (BOD mg/L) /600]
Suspended solids - primary WWTPs	Per kg of mass above domestic strength	600	200	0.517	0.527	0.537	0.547
Suspended solids - secondary and tertiary WWTPs	Per kg of mass above domestic strength	600	200	1.498	1.526	1.555	1.585
Grease - primary WWTPs	Per kg of mass above domestic strength	110	50	0.467	0.475	0.484	0.494
Grease – secondary and tertiary WWTPs	Per kg of mass above domestic strength	200	50	1.431	1.458	1.485	1.514
Nitrogen[c] - secondary/ tertiary inland WWTP	Per kg of mass above domestic strength	150	50	1.697	1.729	1.762	1.795
Phosphorous[c] - secondary/ tertiary inland WWTP	Per kg of mass above domestic strength	50	10	6.085	6.200	6.318	6.438

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. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.2 Corrosive substance charges for Industrial Customers – corrosion impacted catchment ($2016-17)

Pollutant	Units	2016-17	2017-18	2018-19	2019-20
pH	Per ML of wastewater of pH <7.0[a]	64.468	65.691	66.936	68.205
Temperature	Per ML of wastewater with temperature >25°C[b]	7.138	7.273	7.411	7.551

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. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.3 Trade waste industrial agreement charges for Industrial Customers by risk index ($2016-17)

Risk level	Units	Commencement date to 30 June 2017	2016-17	2017-18	2018-19
1	Per quarter	2,024.78	2,063.17	2,102.28	2,142.13
2	Per quarter	2,024.78	2,063.17	2,102.28	2,142.13
3	Per quarter	2,024.78	2,063.17	2,102.28	2,142.13
4	Per quarter	934.60	952.32	970.37	988.77
5	Per quarter	623.43	635.25	647.29	659.56
6	Per quarter	311.72	317.62	323.65	329.78
7	Per quarter	155.86	158.81	161.82	164.89

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.4 Commercial agreement charges for Commercial Customers ($/quarter, $2016-17)

Charge	Units	2016-17	2017-18	2018-19	2019-20
Commercial agreement charges for Commercial Customers – first process	Per first process	36.57	37.26	37.97	38.69
Commercial agreement charges for Commercial Customers – each additional process	Per each additional process	12.55	12.79	13.03	13.28

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.5 Wastesafe charges for Commercial Customers ($2016-17)

Service	Units	2016-17	2017-18	2018-19	2019-20
Fixed $/ liquid waste trap charge	Per liquid waste trap	26.01	26.50	27.01	27.52
Missed service (pump-out) inspection charge for liquid waste traps – 2 kL or less	Per event	286.71	292.14	297.68	303.32
Missed service (pump-out) inspection charge for liquid waste traps – more than 2 kL	Per event	573.42	584.29	595.37	606.65

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.6 Substance charges for Commercial Customers ($2016-17)

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	2.197	2.238	2.281	2.324
Higher strength BOD food	Per kL	3.610	3.678	3.748	3.819
Automotive	Per kL	0.716	0.730	0.744	0.758
Laundry	Per kL	0.448	0.456	0.465	0.474
Lithographic	Per kL	0.345	0.351	0.358	0.365
Photographic	Per kL	Nil	Nil	Nil	Nil
Equipment hire wash	Per kL	3.273	3.335	3.398	3.463
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	11.272	11.485	11.703	11.925

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. Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

Table F.7 Trade waste ancillary charges ($2016-17)

Service	Units	2016-17	2017-18	2018-19	2019-20
Additional inspection charge	Per inspection	194.96	198.66	202.42	206.26
Trade waste application fee for Industrial Customers – standard	Per application	470.62	479.55	488.64	497.90
Trade waste application fee for Industrial Customers – non-standard	Per hour	144.17	146.90	149.69	152.52
Trade waste application fee for Industrial Customers - variation	Per application	565.83	576.56	587.49	598.63
Sale of trade waste data	Per hour	140.49	143.16	145.87	148.64

Note: Prices for 2020-21 are expected to be determined in June 2020.

Source: IPART analysis.

The maximum charge that Hunter Water may levy for each trade waste service is in Table F.8 to Table F.11.

Table F.8 Hunter Water's trade wastewater agreement and inspection fees ($2016-17)

Charge	2016-17	2017-18	2018-19	2019-20
Minor Agreement				
Annual Trade Wastewater Agreement fee				
Annual Trade Wastewater Agreement fee	113.01	113.01	113.01	113.01
Administrative and inspection fees				
Establish Minor Agreement (new agreements)	138.20	138.20	138.20	138.20
Inspection fee	120.11	120.11	120.11	120.11
Existing renew / reissue	102.07	102.07	102.07	102.07
Variation to Minor Agreement fee	108.76	108.76	108.76	108.76
Moderate Agreement				
Annual Trade Wastewater Agreement fee				
Annual Trade Wastewater Agreement fee	826.13	826.13	826.13	826.13
Administrative and inspection fees				
Establish Moderate Agreement (new agreements)	490.97	490.97	490.97	490.97
Inspection fee	120.11	120.11	120.11	120.11
Existing renew / reissue	276.60	276.60	276.60	276.60
Variation to Moderate Agreement fee	108.76	108.76	108.76	108.76
Major Agreement				
Annual Trade Wastewater Agreement fee				
Annual Trade Wastewater Agreement fee	460.08	460.08	460.08	460.08
Administrative and inspection fees				
Establish Major Agreement (new agreements)	555.94	555.94	555.94	555.94
Inspection fee	120.11	120.11	120.11	120.11
Existing renew / reissue	393.21	393.21	393.21	393.21
Variation to Major Agreement fee	108.76	108.76	108.76	108.76

Charge	2016-17	2017-18	2018-19	2019-20
Tanker Agreement				
Tanker Agreement fees				
Establish Tanker Agreement	212.16	212.16	212.16	212.16
Variation to Tanker Agreement fee	108.76	108.76	108.76	108.76
Renew Tanker Agreement	135.41	135.41	135.41	135.41
Administrative fees				
Delivery processing fee (per delivery docket)	4.18	4.18	4.18	4.18

Note: For existing Minor Agreement, the cost of one inspection every 5 years is covered by the Annual Trade Wastewater Agreement fee. For existing Moderate Agreements the cost of one inspection every year is covered by the Annual Trade Wastewater Agreement fee. Additional inspections, if necessary, are charged an inspection fee for each inspection. The Annual Trade Wastewater Agreement fee also includes high-strength charges for the average discharge quality of Minor Agreement Customers and Moderate Agreement Customers. Prices for 2020-21 are expected to be determined in June 2020.

Table F.9 Hunter Water's trade wastewater high strength charges for BOD/NFR ($ per kg, $2016-17)

Wastewater treatment catchment area	2016-17	2017-18	2018-19	2019-20
Belmont	1.36	1.36	1.36	1.36
Boulder Bay	1.82	1.82	1.82	1.82
Branxton	5.05	5.05	5.05	5.05
Burwood Beach	0.76	0.76	0.76	0.76
Cessnock	1.70	1.70	1.70	1.70
Clarence Town	14.44	14.44	14.44	14.44
Dora Creek	2.01	2.01	2.01	2.01
Dungog	3.17	3.17	3.17	3.17
Edgeworth	1.33	1.33	1.33	1.33
Farley	1.30	1.30	1.30	1.30
Karuah	14.47	14.47	14.47	14.47
Kearsley	2.72	2.72	2.72	2.72
Kurri Kurri	2.92	2.92	2.92	2.92
Morpeth	1.00	1.00	1.00	1.00
Paxton	8.00	8.00	8.00	8.00
Raymond Terrace	1.99	1.99	1.99	1.99
Shortland	1.53	1.53	1.53	1.53
Tanilba Bay	3.11	3.11	3.11	3.11
Toronto	1.64	1.64	1.64	1.64

Note: Prices for 2020-21 are expected to be determined in June 2020.

Table F.10 Hunter Water's trade waste high strength incentive charges (charged where the Load Limit is exceeded) ($ per kg, $2016-17)

Wastewater treatment catchment area	2016-17	2017-18	2018-19	2019-20
Belmont	4.04	4.04	4.04	4.04
Boulder Bay	5.48	5.48	5.48	5.48
Branxton	15.14	15.14	15.14	15.14
Burwood Beach	2.27	2.27	2.27	2.27
Cessnock	5.12	5.12	5.12	5.12
Clarence Town	43.31	43.31	43.31	43.31
Dora Creek	6.03	6.03	6.03	6.03
Dungog	9.53	9.53	9.53	9.53
Edgeworth	4.00	4.00	4.00	4.00
Farley	3.91	3.91	3.91	3.91
Karuah	43.40	43.40	43.40	43.40
Kearsley	8.19	8.19	8.19	8.19
Kurri Kurri	8.73	8.73	8.73	8.73
Morpeth	3.01	3.01	3.01	3.01
Paxton	24.00	24.00	24.00	24.00
Raymond Terrace	5.95	5.95	5.95	5.95
Shortland	4.59	4.59	4.59	4.59
Tanilba Bay	9.33	9.33	9.33	9.33
Toronto	4.91	4.91	4.91	4.91

Note: These charges apply to trade waste discharged that is in excess of any Load Limit. Prices for 2020-21 are expected to be determined in June 2020.

Table F.11 Hunter Water's trade waste pollutant charges ($ per kg or $ per kL – as specified, $2016-17)

Charge	2016-17	2017-18	2018-19	2019-20
Pollutant charges – Major Agreement Customers and Tanker Agreement Customers				
Heavy Metal – Burwood Beach Wastewater Treatment Works Catchment ($ per kg)	23.70	23.70	23.70	23.70
Heavy Metal – All other catchments ($ per kg)	39.09	39.09	39.09	39.09
Phosphorus (concentrations >11 mg/L) ($ per kg)	2.74	2.74	2.74	2.74
Sulphate ($ per kg)[a]	[{$0.16x ($SO_4$/2000)}/kg]	[{$0.16x ($SO_4$/2000)}/kg]	[{$0.16x ($SO_4$/2000)}/kg]	[{$0.16x ($SO_4$/2000)}/kg]
Pollutant charges – Tanker Agreement Customers only				
Portable Toilet Effluent ($ per kL)	13.86	13.86	13.86	13.86
Septic Waste ($ per kL)	5.46	5.46	5.46	5.46
High Strength Waste volume charge ($ per kL)[b]	3.53	3.53	3.53	3.53

[a] Based on the acceptance standard of 2000 milligrams per litre.

[b] Tankered high strength waste is also charged a load charge. The load charge is the high strength charge in Table 20 for the relevant wastewater treatment catchment area to which the waste is delivered.

Note: Prices for 2020-21 are expected to be determined in June 2020.

G Stakeholder impact assumptions

In order to assess the impacts of different wholesale pricing approaches, we applied our draft decisions to three indicative wholesale schemes to provide potential bill impacts. The three indicative schemes are based on simplified assumptions and do not represent any specific scheme.

In our impact analysis, we are not aiming to undertake a financial viability assessment of a wholesale scheme under our draft decisions. In order to do this we would need to understand all the costs and revenues associated with a scheme. We would also need to make assumptions about how a wholesale customer operating a scheme would respond to changes in the wholesale prices (eg, would a cost increase be absorbed or passed on to end-use customers). This would be a commercial decision that a wholesale customer would make.

Rather, we are aiming to provide an indication of the revenue implications eg, the difference between:

- the expected revenue that wholesale customers could receive from end-use customers (if for example, IPART 2016 determined retail prices were applied), and
- the bill that wholesale customers could receive from either Sydney Water or Hunter Water under our draft pricing approaches.

We highlight below the main assumptions underpinning our three indicative schemes.

- Indicative scheme 1: Inner city high density development (at full capacity)
  - We have assumed 2,000 multi-premise residential properties only with average water consumption of 160 kL per year for each multi-premise; a 150mm and two 80mm meter size wholesale connections to either Sydney Water or Hunter Water's network; 0.02km of reticulation for both water and sewerage; and a 75% discharge factor for residential customers and a 78% discharge factor for non-residential customers.
- Indicative scheme 2: Small greenfield low density development (at full capacity)
  - We have assumed about 1,500 free-standing residential properties (with average water consumption of about 220 kL per year for each home), 400 multi-premise property (with average water consumption of about

160 kL per year) and 100 non-residential properties (with average water consumption of 220 kL per year); a single 250mm size wholesale connection to either Sydney Water or Hunter Water's network; 30km of reticulation for water and 20km of reticulation for sewerage; and a 75% discharge factor for residential customers and a 78% discharge factor for non-residential customers.

- Indicative scheme 3: Large greenfield low density development (at full capacity)
  - We have assumed 8,000 free-standing residential properties (with average water consumption of about 220 kL per year for each home), 1,500 multi-premise properties (with average water consumption of about 160 kL per year) and about 500 non-residential properties (with average water consumption of 220 kL per year); a single 350mm size wholesale connection to either Sydney Water or Hunter Water's network; 150km of reticulation for water and 100km of reticulation for sewerage; and a 75% discharge factor for residential customers and a 78% discharge factor for non-residential customers.

We sought information from current wholesale customers to inform our impact analysis. The information that we received has been incorporated in the above assumptions.

Glossary

2016 retail pricing reviews for Sydney Water and Hunter Water	Review of prices for Sydney Water Corporation from 1 July 2016 and Review of prices for Hunter Water Corporation 1 July 2016
ACCC	Australian Consumer and Competition Commission
Administrative burden	The costs incurred by wholesale service providers in complying with our Determination.
Allocative efficiency	A situation where resources are assigned to the consumers who value them most highly. Where resources are assigned by a market, cost-reflective pricing is usually necessary and sufficient to achieve it.
Area of operations	For Sydney Water, means the area of operations referred to in section 10 of the Sydney Water Act. For Hunter Water, means the area of operations referred to in section 16 of the Hunter Water Act.
Augmentation	The upgrade or construction of a water supply or sewerage service asset to increase system capacity.
Augmentation costs	The costs associated with an augmentation.

Barrier to entry	Anything that makes it difficult for an efficient new firm to compete with the incumbents in a market. Barriers could take the form of legal, regulatory or administrative impediments, or cost advantages to the incumbents arising from scale economies or sunk costs.
Contestable service(s)	The service the wholesale customer is providing (or seeking to provide) to retail customers 'upstream' or 'downstream' of the wholesale services it has purchased from the incumbent utility. That is, the service between the wholesale connection point and the end-user (retail) customers.
Cost of service pricing	The setting of wholesale prices to reflect the actual costs of providing a particular good or service to a particular customer.
Default price	The price that is to be charged for wholesale services when no scheme-specific price can be charged.
Depreciated replacement cost of assets	The cost of replacing an asset less depreciation.
Depreciation	The reduction in value of an asset over a period. Value may reduce through wear and tear or obsolescence. Depreciation charges are recognised as a cost of doing business. They permit the investor to recover the principal value of the investment over time.
Determination period	Price limits (maximum prices) set by IPART for a given period.

Developer charge	Upfront charges from utilities paid by developers to recover part of the infrastructure costs incurred in servicing new developments. They can be charged as developer charges by Sydney Water and Hunter Water in accordance with IPART, *Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wyong Shire Council, Developer Charges from 1 October 2000*, Determination no 9, 2000, and, IPART, *Recycled Water Developer Charges*, Determination no 8, 2006. They can be charged by WIC licensees as relevant costs related to the grant of certificate of compliance under Part 3, Division 2, Section 24AE of the *Water Industry Competition (General) Regulation 2008*.
Development Servicing Plans	Plans that include the calculation of developer charges and sufficient information to scrutinise the inputs to the calculation, as set out in in accordance with IPART, *Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wyong Shire Council, Developer Charges from 1 October 2000*, Determination no 9, 2000, and, IPART, *Recycled Water Developer Charges*, Determination no 8, 2006.
Dominant market position	A situation where a firm has the power to set prices above cost without risk of losing market share.
DORC	Depreciated optimised replacement cost
Dynamic efficiency	A situation where investment decisions lead to optimal levels and types of output over the long term.
Efficient entry	Participation of new firms in a market that leads to prices reflecting least cost supply and dynamic efficiency.

End-users	Retail residential and non-residential customers that purchase water supply and/or sewerage services for purposes other than on-supply.
Facilitation costs	The additional costs incurred (positive facilitation costs) or saved (negative facilitation costs) by a wholesale service provider to supply a wholesale customer.
Government agencies	Any public or local authority which supplies services to the public or any part of the public, and includes a government department, state owned corporation, water supply authority or public utility undertaking which supplies such services, as defined in Section 3 of the IPART Act.
Government monopoly services	A service supplied by a government agency and declared by the regulations or the Minister to be a government monopoly service, as defined in Section 4 of the IPART Act.
Hunter Water	Hunter Water Corporation as established by the Hunter Water Act.
Hunter Water Act	*Hunter Water Act 1991*
Incumbent utility	In this report, Sydney Water or Hunter Water, and not other established utilities (such as existing wholesale customers).
Independent utilities	In this report, a utility that is not a wholesale service provider or a wholesale customer.

Infrastructure services	The storage, conveyance or reticulation of water or sewerage by means of water industry infrastructure, and includes the provision of connections between any such infrastructure and the infrastructure of the person for whom water or sewerage is stored, conveyed or reticulated, but: a) does not include the storage of water behind a dam wall, and b) does not include: (i) the filtering, treating or processing of water or sewerage, or (ii) the use of a production process, or (iii) the use of intellectual property, or (iv) the supply of goods (including the supply of water or sewage), except to the extent to which it is a subsidiary but inseparable aspect of the storage, conveyance or reticulation of water or sewerage. As defined in the Dictionary to the WIC Act.
IPART	The Independent Pricing and Regulatory Tribunal of New South Wales
IPART Act	*Independent Pricing and Regulatory Tribunal Act 1992*
Level playing field	In this report, a situation where Sydney Water, Hunter Water, and other low-cost utilities have an equal chance of succeeding.
Line-in-the-sand valuation	The valuation of the regulatory asset bases for Sydney Water and Hunter Water based on prevailing prices in 2000.
Local Government Act	*Local Government Act 1993* (NSW)
Marginal cost	The additional cost of producing an extra unit of a good or service.

MEERA	Modern engineering equivalent replacement asset value
Methodology	A determined method for Wholesale Service Providers to fix the maximum price of a product or service.
Minus component	In a retail-minus charge, the part of the charge that is subtracted from the retail-revenue. In our preferred methodology this is based on reasonably efficient competitor costs.
Monopoly power	The power to set prices above cost without risk of losing market share.
Monopoly supplier	The only supplier to a market.
Net facilitation costs	The additional costs incurred by a wholesale service provider to supply services to a wholesale customer less any cost savings to the wholesale service provider as a result of the wholesale customer's activities.
New entrant	In this report, a wholesale customer of an incumbent supplier.
Non-residential charge	The charges applied under the prevailing Sydney Water and Hunter Water Retail Price Determinations to non-residential customers.
NPV	Net present value
NSW	New South Wales
Order	*Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997*
Operating licence	The prevailing operating licences that apply for Sydney Water and Hunter Water.

Postage stamp pricing policy	The Government policy that requires Sydney Water and Hunter Water to charge most customers in their area of operations the same ongoing water and sewerage prices – regardless of differences in the cost to supply them due to their location and other site-specific factors.
Price cap	A determined fixed maximum price.
Productive efficiency	A situation where an organisation's output is maximised for a given cost or that cost is minimised for a given output.
Rateable land	The meaning given to that term under the Local Government Act.
Reasonably efficient competitor	A benchmark firm that is efficient given its scale, but may lack some scale economies enjoyed by the incumbent utility in servicing retail customers. This approach recognises that it may be unrealistic for a new entrant to immediately achieve scale economies.
Recycled water	Water that has been treated to enable its use for certain industrial, commercial and/or household applications, but is not intended to meet the standards for drinking water required by the National Health and Medical Research Council's Australian Drinking Water Guidelines.
Regulatory asset base	The assets on which regulated firms like Sydney Water and Hunter Water are permitted to earn a return on and of capital in their regulated prices.
Retail component	In a retail-minus charge, the retail revenue that the wholesale service provider would generate from those customers, if it were their retail service provider.
Retail Service Provider	The utility that provides water supply and/or sewerage services to end-users.

Retail services	Water supply and/or sewerage services to end-users.
Retail-minus	An approach to price setting where the wholesale price is based on the end-user or retail price corresponding to the retail services, with a discount (or minus).
Return on assets	The earnings before interest and taxation generated by a business's assets.
Scheme-specific	Tailored to an individual scheme based on its individual characteristics.
Services Sydney	Services Sydney Pty Limited
Standalone system	In this report, a scheme that is not connected in any way to a wholesale service provider or a wholesale customer.
Sydney Water	Sydney Water Corporation as established by the Sydney Water Act.
Sydney Water Act	*Sydney Water Act 1994*
Third-party access	Where the owner of infrastructure allows a third-party to transport its goods using that infrastructure, as set out in the WIC Act access regime.
Trade waste charges	Charges applied to trade waste in the prevailing Sydney Water and Hunter Water Determinations.
Unregulated agreements	Private agreements between Wholesale Service Providers and Wholesale Customers outside of our Determination of wholesale prices.
Voluntary access undertaking	A document, provided voluntarily, that sets out the service provider's arrangements for the provision of third-party access to its infrastructure services, as set out in Division 5, Part 3 of the WIC Act.

Wholesale connection point	The point where a wholesale service is received by a wholesale customer. For the purpose of calculating reasonably efficient competitor costs, it excludes any infrastructure built to connect a development to the wholesale service provider's network.
Wholesale customer	See discussion in Chapter 3.
Wholesale scheme	The system operated by a wholesale customer that supplies retail services to end-users.
Wholesale service provider	Sydney Water and/or Hunter Water
Wholesale services	See discussion in Chapter 3.
WIC Act	*Water Industry Competition Act 2006*
WIC Act access regime	The access regime included in Part 3 of the WIC Act.
Wider customer base	Sydney Water's and Hunter Water's retail customers.