



Independent Pricing and Regulatory Tribunal
New South Wales

WaterNSW

Annual Review of regulated charges for 2018-19

Draft Report
Water

April 2018

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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 14 May 2018

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

You can also send comments by mail to:

WaterNSW Annual Review of regulatory charges

Independent Pricing and Regulatory Tribunal

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1 Executive Summary

1.1 Introduction

The Independent Pricing and Regulatory Tribunal (IPART, or 'we') is undertaking an Annual Review of the maximum prices that WaterNSW can charge its customers in the Murray Darling Basin (MDB) and the Fish River Water Supply Scheme (FRWS) for its rural bulk water services for the 2018-19 financial year. This is required under the Water Charge (Infrastructure) Rules 2010 (WCIR).¹

WaterNSW delivers bulk water to irrigators and other licence holders on regulated rivers across NSW.² WaterNSW operates 42 large dams and weirs and delivery infrastructure such as pipelines, to deliver water to around 6,300 customers.

This is the first Annual Review within the current four-year determination of WaterNSW's regulated charges for its rural bulk water services (the 2017 Determination³). The 2017 Determination set maximum prices for WaterNSW's rural bulk water services from 1 July 2017 to 30 June 2021. The 2017 Determination included three broad categories of prices:

- ▼ **Bulk water charges** – annual charges to recover customers' share of the efficient costs of delivering WaterNSW's rural bulk water services. These are levied as a two-part tariff, comprising:
 - fixed entitlement charges - \$ per megalitre (ML) of licensed entitlement⁴, and
 - variable usage charges - \$ per ML of water used (extracted from the river).
- ▼ **Murray Darling Basin Authority (MDBA) and Barwon-Dumaresq Border Rivers Commission (BRC) charges** – which we set for licence holders in the Murray and Murrumbidgee (MDBA) and Border (BRC) valleys to recover the costs of services delivered by the MDBA and BRC. These are also levied as a two-part tariff, comprising entitlement and usage charges.
- ▼ **Miscellaneous charges** – which include a range of charges for meter services and other miscellaneous activities.

This Annual Review relates to WaterNSW's bulk water charges and the MDBA and BRC charges. It provides an opportunity to update these charges for year two of the 2017 Determination period, 2018-19.

As required under the WCIR, IPART must not approve any price variations to the 2017 Determination for 2018-19 except to the extent, if any, that it is **reasonably necessary** to make variations to those charges having regard to changes in demand or consumption forecasts set out in WaterNSW's application, and price stability. Reviewing other elements

¹ Water Charge (Infrastructure) Rules 2010 made under s 92 of the Water Act 2007 (Cth).

² The difference between unregulated and regulated rivers is that regulated rivers are controlled by a major storage or dam to supply water.

³ IPART, *WaterNSW Prices for rural bulk water services from 1 July 2017*, June 2017.

⁴ Or, for customers in the FRWS: Minimum Annual Quantity (MAQ).

of our 2017 Determination, such as prudent and efficient costs and tariff structures, are not within scope of this Annual Review.

This report sets out IPART's draft decision on WaterNSW's regulated charges to its customers in the MDB and FRWS for 2018-19, and explains how we reached these decisions. As outlined below, we also seek stakeholder feedback on specific questions.

1.2 Our draft decision is to maintain regulated charges in 2018-19

Our draft decision is to maintain the regulated charges for 2018-19 as set under the 2017 Determination. Although WaterNSW's pricing application requested a variation of regulated charges for 2018-19, our view is that it is not reasonably necessary to make variations to the regulated charges set out in the 2017 Determination, having regard to changes in demand set out in WaterNSW's application and pricing stability.

Specifically, we consider that changes in demand (ie, changes in usage volumes, water allocation ratios and entitlement volumes) are not of sufficient scale to justify a price change, which would in turn involve a reduction in price stability. This draft decision was made in light of consideration of the following key factors:

- ▼ the expected variation in WaterNSW's revenue from what was allowed in the 2017 Determination and WaterNSW's revenue volatility risk associated with demand volatility
- ▼ whether updated demand data provides evidence of a sustained shift in demand and if so, the size of that shift, and
- ▼ whether there is a case to reduce price stability in order to respond to changes in demand.

We found that:

- ▼ Revenue variation, measured as the difference between WaterNSW's forecast revenue for 2018-19 using 2017 Determination prices compared to updated prices (to reflect updated forecast sales volumes), was small.
- ▼ WaterNSW has received a revenue volatility allowance for the purpose of reducing revenue volatility risk associated with business as usual demand volatility.
- ▼ We did not find evidence to suggest that updated data reflects a sustained shift in demand.
- ▼ Maintaining price stability outweighed any benefits of updating demand forecasts.

1.3 Structure of this report

The remainder of this Report is structured as follows:

- ▼ Chapter 2 provides an overview of the regulatory framework related to the Annual Review process and outlines the approach we have taken for this review.
- ▼ Chapter 3 summarises WaterNSW's application and IPART's assessment of regulated charges using updated sales forecasts.

- ▼ Chapter 4 discusses our draft decision.
- ▼ Chapter 5 outlines our draft regulated charges for 2018-19.

1.4 List of questions for stakeholder comment

The following chapters include questions that we seek stakeholder feedback on. For convenience, these questions are also listed below. Stakeholders are also welcome to provide input on any other issues they consider relevant to our review.

Our approach to calculating updated charges

- | | | |
|---|---|----|
| 1 | Do you agree with our proposal to amend the approach to updating charges for rural customers in the FRWS to align with the approach used in the 2017 Determination? | 17 |
| 2 | Do you agree with our approach of calculating charges using entitlement volumes from the latest actual full year of data rather than the most recently available year to date data (while remaining open to considering year to date data if there is a material change)? | 20 |

Whether it is reasonably necessary to update 2018-19 charges

- | | | |
|---|---|----|
| 3 | Do you agree with our framework for considering whether it is reasonably necessary to vary charges, having regard to: | 26 |
| | – whether varying charges is necessary to mitigate WaterNSW's revenue volatility risk | 26 |
| | – whether updated usage volumes, water allocation ratios and/or entitlement volumes are likely to reflect a sustained shift in demand, and the size of any such change, and | 26 |
| | – the potential impact on customer bills and price stability. | 26 |
| 4 | Are there any other factors we should consider, relative to the constraints of the WCIR? | 26 |

Our draft decision to not update 2018-19 charges

- | | | |
|---|---|----|
| 5 | Do you agree with our view that it is not reasonably necessary to vary charges from those set in the 2017 Determination, having regard to changes in demand or consumption forecasts and price stability? | 27 |
|---|---|----|

2 Overview of the regulatory framework and our approach

Under the WCIR, we are required to undertake annual reviews of WaterNSW's bulk water regulated charges in the MDB and FRWS. Irrigation corporations and districts (ICD) discounts and miscellaneous charges⁵ are not within scope of this Annual Review.

We have assessed WaterNSW's proposed charges for 2018-19 in its pricing application in accordance with the relevant rules outlined in the WCIR and against the initially-determined regulated charges in the 2017 Determination, using updated forecast and estimate data submitted as part of WaterNSW's application.

Appendix C of IPART's 2017 Final Report on the *Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021* (2017 Final Report) set out IPART's intended approach to varying charges for the purposes of the Annual Review process. In essence, Appendix C stated that regulated charges could vary as usage, entitlement and allocation values change year on year. However, the approach set out in Appendix C of the 2017 Final Report for updating FRWS regulated charges is inconsistent with the approach used in the 2017 Determination. We do not consider that Appendix C of the 2017 Final Report provides an appropriate method for varying charges. We have amended the approach to be consistent with the approach used in the 2017 Determination and this is set out in Appendix D of this Draft Report.

2.1 Regulatory framework

This review provides us with the opportunity to review regulated charges for WaterNSW's monopoly rural bulk water services set under the WaterNSW 2017 Determination to apply over the 2018-19 financial year.

The prices for WaterNSW's bulk water services supplied in the MDB valleys and to rural customers in the FRWS are regulated under:

- ▼ the *Water Act 2007* (Cth)
- ▼ the WCIR made under section 92 of the *Water Act 2007*, and
- ▼ the ACCC's Pricing Principles for price approvals and determinations under the Water Charge Infrastructure Rules 2010 of July 2011 (Pricing Principles).

IPART is accredited by the Australian Competition and Consumer Commission (ACCC) under Part 9 of the WCIR to determine or approve WaterNSW's regulated charges from 1 June 2016.

⁵ Miscellaneous charges include: meter service charges, water reading and assessment charge, trade processing charge, environmental gauging station charge, meter accuracy testing charges, Fish River connection and disconnection charges and credit card payment fee.

The WCIR sets out a two-stage process for approving or determining the regulated charges for WaterNSW.

The **first stage** is the approval or determination of regulated charges for a four-year regulatory period. This was completed by IPART in June 2017 (the 2017 Determination) and applies from 1 July 2017 to 30 June 2021.

The **second stage** is the Annual Review, undertaken after the first year of the regulatory period set under the first stage and for each subsequent year within the regulatory period. WaterNSW is required to submit to IPART an application for approval or determination of its regulated charges for 2018-19. IPART must then approve WaterNSW's application or otherwise determine WaterNSW's regulated charges, in accordance with the Annual Review process set out in the WCIR.

This is the first Annual Review of WaterNSW's charges for the current regulatory period. The WCIR provides that IPART must not approve any regulated charges for 2018-19 except to the extent, if any, that it is **reasonably necessary to make variations to those charges, having regard to changes in demand or consumption forecasts** set out in WaterNSW's application (in this case including updated usage volumes, entitlement volumes and water allocation ratios), **and price stability**.

2.2 This Annual Review applies to all nine MDB valleys and rural FRWS customers

The Annual Review applies to nine MDB valleys and rural customers in the FRWS. These valleys and customers are:

- ▼ Border (including BRC charges)
- ▼ Gwydir
- ▼ Namoi
- ▼ Peel
- ▼ Lachlan
- ▼ Macquarie
- ▼ Murray (including MDBA charges)
- ▼ Murrumbidgee (including MDBA charges)
- ▼ Lowbidgee
- ▼ FRWS rural customers:
 - Major customer (raw)
 - Minor customers (filtered and raw)

The Annual Review does not affect WaterNSW's North Coast, South Coast and Hunter customers, as these valleys are not subject to the WCIR.

2.3 IPART's review process and timetable for final decision

IPART must either approve or determine WaterNSW's regulated charges within three months of receiving WaterNSW's pricing application. The timeframe may be extended by one month at a time, provided IPART informs WaterNSW why it has been unable to make its decision during the required timeframe. If IPART requests further information from WaterNSW during the review, any day in which this information request remains unfilled extends IPART's three month period for this review.

In making our draft decisions we have considered WaterNSW's application, which was received in March 2018. We have also had regard to the relevant factors set out in Division 3 of Part 6 of the WCIR.

We will consider all submissions received on the Draft Report and Draft Determination, prior to releasing the Final Report and Determination in June 2018, for prices to apply from 1 July 2018 to 30 June 2019.

The timetable for this review is outlined in Table 2.1 below.

Table 2.1 Review timetable

Task	Timeframe
Received pricing application from WaterNSW	12 March 2018
Released Draft Report and Draft Determination	17 April 2018
Submissions to the Draft Report close	14 May 2018
Release Final Report and Final Determination	5 June 2018

3 Reviewing charges and bill impacts

We have considered WaterNSW's application and have made a draft decision to **not** vary regulated charges from those set in the 2017 Determination. This decision is based on our assessment that it is **not reasonably necessary** to vary charges, having regard to changes in demand and consumption forecasts and price stability (Chapter 4). To inform this decision, we have undertaken analysis using 2016-17 actual water sales data. This chapter presents our analysis where we have:

- ▼ Estimated indicative regulatory charges for 2018-19 using the updated water sales volumes.
- ▼ Compared WaterNSW's proposed regulatory charges to our indicative regulatory charges.
- ▼ Estimated the bill impacts for customers using these indicative charges.

3.1 WaterNSW's pricing application

WaterNSW's pricing application complies with the form and content requirements of Rule 34 (2) of the WCIR and includes:

- ▼ WaterNSW's forecast of demand for, or consumption of, infrastructure services for the year 2018-19
- ▼ WaterNSW's estimate of demand or consumption during 2017-18
- ▼ information on how the forecast and estimate were calculated, and
- ▼ proposed variations to regulated charges for 2018-19, relative to those listed in the 2017 Determination.

WaterNSW's application sought IPART's approval of its regulated charges determined in accordance with the WCIR, in respect of the second year of the 2017 Determination (ie, 2018-19). WaterNSW's application can be accessed on our website.

WaterNSW's proposed regulated charges for 2018-19 differ from the 2017 Determination and reflect changes in forecast sales volumes (ie, forecast usage volumes, entitlement volumes and water allocation ratios). The changes in forecast sales volumes for 2018-19 reflect the addition of actual usage volumes in 2016-17 and updated entitlement volumes for year-to-date February 2018.

WaterNSW has calculated its proposed updated charges in line with the approach we set out in Appendix C of our Final Report accompanying the 2017 Determination.⁶

The charges proposed by WaterNSW are shown in Tables 3.1 to 3.3 below.

⁶ IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, p 221.

Table 3.1 WaterNSW's pricing application bulk water prices (\$2016-17)

Valley	2017 Determination (\$/ML)	Annual review (\$/ML)	Change (%)
High Security entitlement charge			
Border	5.33	5.07	-4.9
Gwydir	11.08	11.04	-0.4
Namoi	17.08	16.72	-2.1
Peel	41.57	41.56	0.0
Lachlan	15.38	14.87	-3.3
Macquarie	13.51	13.33	-1.3
Murray	1.54	1.54	0.0
Murrumbidgee	2.95	2.95	0.0
Lowbidgee	N/A	N/A	N/A
General Security entitlement charge			
Border	1.98	1.98	0.0
Gwydir	3.48	3.48	0.0
Namoi	7.96	7.96	0.0
Peel	4.02	4.13	2.7
Lachlan	2.73	2.78	1.8
Macquarie	2.85	2.86	0.4
Murray	0.75	0.75	0.0
Murrumbidgee	1.11	1.11	0.0
Lowbidgee	0.78	0.78	0.0
Usage charges			
Border	5.44	5.33	-2.0
Gwydir	11.87	12.02	1.3
Namoi	19.98	19.90	-0.4
Peel	18.36	17.99	-2.0
Lachlan	19.04	20.16	5.9
Macquarie	13.78	14.10	2.3
Murray	1.91	1.95	2.1
Murrumbidgee	3.31	3.39	2.4
Lowbidgee	N/A	N/A	N/A

Source: WaterNSW submission to IPART annual price review, March 2018, p 10; IPART, *Prices for rural bulk water services for WaterNSW – Determination*, June 2017.

Table 3.2 WaterNSW's pricing application MDBA/BRC prices (\$2016-17)

Valley	2017 Determination (\$/ML)	Annual review (\$/ML)	Change (%)
High Security entitlement charge			
Border	4.61	4.39	-4.8
Murray	7.27	7.27	0.0
Murrumbidgee	1.61	1.61	0.0
General Security entitlement charge			
Border	1.71	1.71	0.0
Murray	3.56	3.56	0.0
Murrumbidgee	0.61	0.61	0.0
Usage charges			
Border	0.78	0.77	-1.3
Murray	1.50	1.53	2.0
Murrumbidgee	0.30	0.31	3.3

Source: WaterNSW submission to IPART annual price review, March 2018, p 11; IPART, *Prices for rural bulk water services for WaterNSW – Determination*, June 2017.

Table 3.3 WaterNSW's pricing application FRWS prices (\$2016-17)

Valley	2017 Determination (\$/kL)	Annual review (\$/kL)	Change (%)
Access charges			
Raw water - major customers	0.39	0.39	0.0
Raw water - minor customers	0.39	0.39	0.0
Filtered water - minor customers	0.76	0.73	-3.9
Usage < MAQ charges			
Raw water - major customers	0.24	0.25	4.2
Raw water - minor customers	0.24	0.25	4.2

Valley	2017 Determination (\$/kL)	Annual review (\$/kL)	Change (%)
Filtered water - minor customers	0.46	0.44	-4.3
Usage > MAQ charges			
Raw water - major customers	0.63	0.63	0.0
Raw water - minor customers	0.63	0.63	0.0
Filtered water - minor customers	1.22	1.35	10.7

Source: WaterNSW submission to IPART annual price review, March 2018, p 11; IPART, *Prices for rural bulk water services for WaterNSW – Determination*, June 2017.

As outlined in Chapter 2, the WCIR require that before IPART can vary a regulated charge in the 2017 Determination through the Annual Review process, consideration must be given as to whether any changes are **reasonably necessary, having regard to changes in demand and consumption forecasts and price stability**.

WaterNSW's application considers changes in demand and consumption forecasts and price stability.

WaterNSW submits that updating regulated charges to reflect updated forecast sales volumes is reasonably necessary because the updated forecast of usage volumes (calculated as the 20-year rolling historical average) is more indicative of recent water usage patterns, provides a hedge against revenue volatility risk and could avoid price shocks to customers from a sudden change in charges at the next price determination.⁷

WaterNSW suggests that updating prices to reflect updated forecast sales volumes is consistent with price stability. It analysed the change in bills between 2017-18 and 2018-19 that would occur if prices were updated. It estimated that customers would experience a bill increase of between 0.5% for HS entitlement holders in the Macquarie and Gwydir valleys and up to 5.1% for GS entitlement holders in the Lachlan valley, and that this would have a relatively minor effect on customers (in real terms).

3.2 We have made adjustments to WaterNSW's proposed regulatory charges, to calculate what prices would be if they were updated

We made adjustments to WaterNSW's proposed regulatory charges to reconcile these with the approach we undertook in the 2017 Determination. We made these adjustments to calculate what prices would be if they were updated from the 2017 Determination to reflect updated forecast sales volumes. The adjustments are:

- ▼ The usage charge > the MAQ for the FRWS, which we calculated as the sum of the MAQ fixed charge and the usage charge < the MAQ. This would reduce the updated charge for filtered water minor customers to \$1.29/kL compared with \$1.35/kL in WaterNSW's pricing application. While our approach is consistent with the 2017 Determination, it is different to the approach outlined in Appendix C of our 2017 Final Report.⁸
- ▼ The usage charge < the MAQ for FRWS, which we have calculated consistent with the 2017 Determination as set out in Section 3.4 below. This would increase the usage charge < the MAQ for filtered water minor customers to \$0.55/kL compared with \$0.44/kL in WaterNSW's application.

⁷ WaterNSW submission to IPART annual price review, March 2018, p 12.

⁸ IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, p 225.

- ▼ While WaterNSW has used a rounded reliability ratio as an input to the high security premium, we have used the unrounded figure. This would have a small effect on the fixed (entitlement) charges for the MDB valleys.
- ▼ We have used the 2016-17 actual entitlement volumes rather than the February 2018 year to date entitlement volumes.

We discuss our approach to updating charges in the Annual Review in Section 3.4. This includes revised formulas for charges in the FRWS compared with Appendix C of the 2017 Final Report.

Our calculation of what WaterNSW's 2018-19 regulated charges would be if they were updated from the 2017 Determination to reflect updated forecasts sales volumes (what we refer to as 'indicative prices') is presented in Tables 3.4 to 3.6 below.

These charges are in 2016-17 dollars, to allow comparability with the charges set under the 2017 Determination.

Table 3.4 Comparison between WaterNSW's proposed charges and IPART's indicative charges for WaterNSW bulk water prices in 2018-19 (\$2016-17) (\$/ML)

Valley	WaterNSW proposed charges	Indicative charges	Difference (%)
High Security entitlement charge			
Border	5.07	5.08	0.2
Gwydir	11.04	11.04	0.0
Namoi	16.72	16.76	0.2
Peel	41.56	41.40	-0.4
Lachlan	14.87	14.87	0.0
Macquarie	13.33	13.33	0.0
Murray	1.54	1.54	0.0
Murrumbidgee	2.95	2.95	0.0
Lowbidgee	N/A	N/A	N/A
General Security entitlement charge			
Border	1.98	1.98	0.0
Gwydir	3.48	3.48	0.0
Namoi	7.96	7.97	0.1
Peel	4.13	4.11	-0.5
Lachlan	2.78	2.78	0.0
Macquarie	2.86	2.86	0.0
Murray	0.75	0.75	0.0
Murrumbidgee	1.11	1.11	0.0
Lowbidgee	0.78	0.78	0.0
Usage charges			
Border	5.33	5.33	0.0
Gwydir	12.02	12.02	0.0
Namoi	19.90	19.90	0.0
Peel	17.99	17.99	0.0
Lachlan	20.16	20.16	0.0
Macquarie	14.10	14.10	0.0
Murray	1.95	1.95	0.0
Murrumbidgee	3.39	3.39	-0.3
Lowbidgee	N/A	N/A	N/A

Source: WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

Table 3.5 Comparison between WaterNSW’s proposed charges and IPART’s indicative charges for MDBA/BRC prices in 2018-19 (\$2016-17) (\$/ML)

Valley	WaterNSW proposed charges	Indicative charges	Difference (%)
High Security entitlement charge			
Border	4.39	4.39	0.0
Murray	7.27	7.27	0.0
Murrumbidgee	1.61	1.61	0.0
General Security entitlement charge			
Border	1.71	1.71	0.0
Murray	3.56	3.56	0.0
Murrumbidgee	0.61	0.61	0.0
Usage charges			
Border	0.77	0.77	0.0
Murray	1.53	1.53	0.0
Murrumbidgee	0.31	0.31	0.0

Source: WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

Table 3.6 Comparison between WaterNSW’s proposed charges and IPART’s indicative charges for Fish River Water Supply Scheme rural prices in 2018-19 (\$2016-17) (\$/kL)

Valley	WaterNSW proposed charges	Indicative charges	Difference (%)
Access charges			
Raw water - major customers	0.39	0.39	0.0
Raw water - minor customers	0.39	0.39	0.0
Filtered water - minor customers	0.73	0.73	0.0
Usage < MAQ charges			
Raw water - major customers	0.25	0.24	-4.0
Raw water - minor customers	0.25	0.24	-4.0
Filtered water - minor customers	0.44	0.55	25.0
Usage > MAQ charges			
Raw water - major customers	0.63	0.63	0.0
Raw water - minor customers	0.63	0.63	0.0
Filtered water - minor customers	1.35	1.29	-4.4

Source: WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

3.3 Customer bill impacts

In reaching our draft decision to not update regulated charges in 2018-19, we considered the likely effect of the updated prices on WaterNSW’s High Security (HS) and General Security (GS) customers, compared with the charges set for 2018-19 under the 2017 Determination.

The bill impacts are presented in nominal dollar impacts – ie, bill impacts including inflation forecasts.⁹

For the MDB valleys, our analysis of bill impacts is based on:

- ▼ HS entitlement holders at 100% of usage, and
- ▼ GS entitlement holders at 60% of usage.¹⁰

⁹ We have used an inflation forecast of 2.5% for 2018-19, this is convert the prices set in \$2016-17 to 2018-19.

¹⁰ These variables are based on the bill impact approach undertaken in the 2017 WaterNSW Final Report. IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, pp. 183-184.

For both HS and GS entitlements, customers are broken down into three categories:

- ▼ small customers with 100ML of entitlements
- ▼ medium customers with 500ML of entitlements, and
- ▼ large customers with 1,000ML of entitlements.

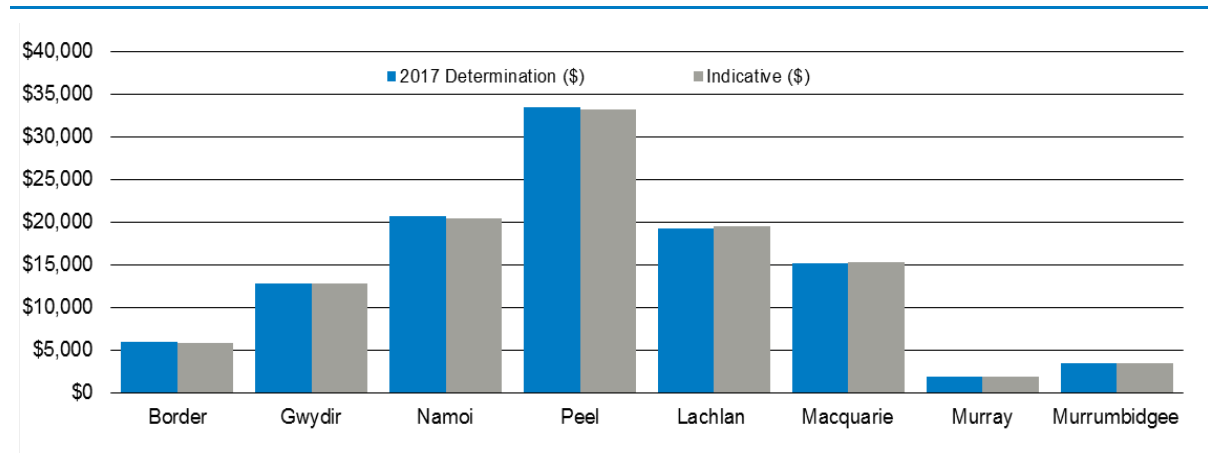
The figures below show the average of the three categories, with the breakdown of bill impacts for each category in **Appendix C**.

The analysis shows that HS entitlement holders would, on average, expect small bill increases except in the Border, Namoi and Peel Valleys, which would expect a decrease in bills (see Figure 3.1). A similar outcome would be expected for GS entitlement holders with, on average, increases in all bills except for the Border, Peel and Namoi Valleys (Figure 3.3). This is excluding MDBA and BRC prices.

For the MDBA and BRC charges, on average, HS entitlement holders in the Border Valley would expect a decrease in bills while customers in the Murray and Murrumbidgee valleys would expect a small increase in bills if prices were updated (see Figure 3.2).

The figures below present the average expected bills for customers based on a) charges set in the 2017 Determination, and b) indicative updated charges based on updated demand data, presented in section 3.2 above.

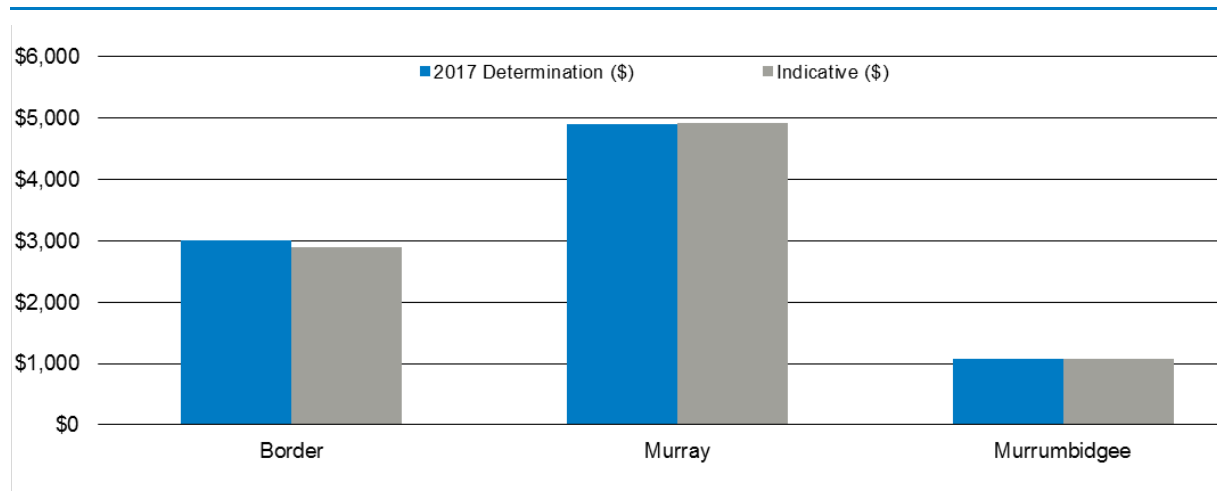
Figure 3.1 Average expected bills for high security customers: indicative bulk water charges if they were updated compared to bulk water charges set in the 2017 Determination for 2018-19 (\$2018-19)



Note: The indicative bill impact in the figures above are the average of small, medium and large customers. Excludes BRC and MDBA payments. Lowbidgee is excluded as there are only supplementary entitlements in the valley.

Data source: IPART analysis; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

Figure 3.3 Average expected bills for high security customers: indicative MDBA/BRC charges if they were updated compared to MDBA/BRC charges set in the 2017 Determination for 2018-19 (\$2018-19)

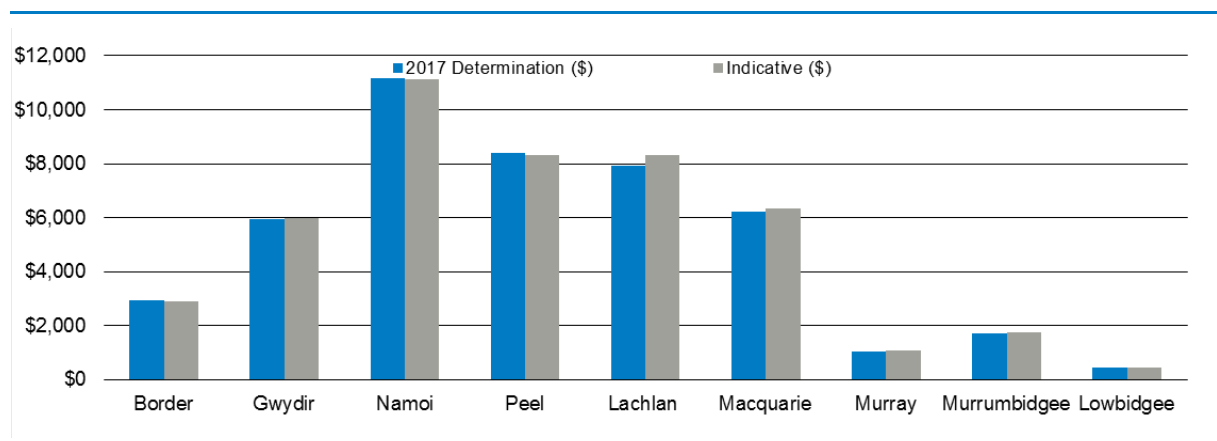


Note: The indicative bill impact in the figures above are the average of small, medium and large customers.

Data source: IPART analysis; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

Figure 3.1 shows that if charges were updated, HS entitlement holders would, on average expect small bill increases ranging from 0.46% in the Gwydir Valley to 1.77% in the Lachlan Valley – except in the Border, Namoi and Peel Valleys, which would expect a decrease in bills of 3.28%, 1.08% and 0.91% respectively. Figure 3.2 shows the reduction in average bills in the Border Valley would be further compounded by an expected decrease of 4.25% in BRC charges for HS entitlement holders.

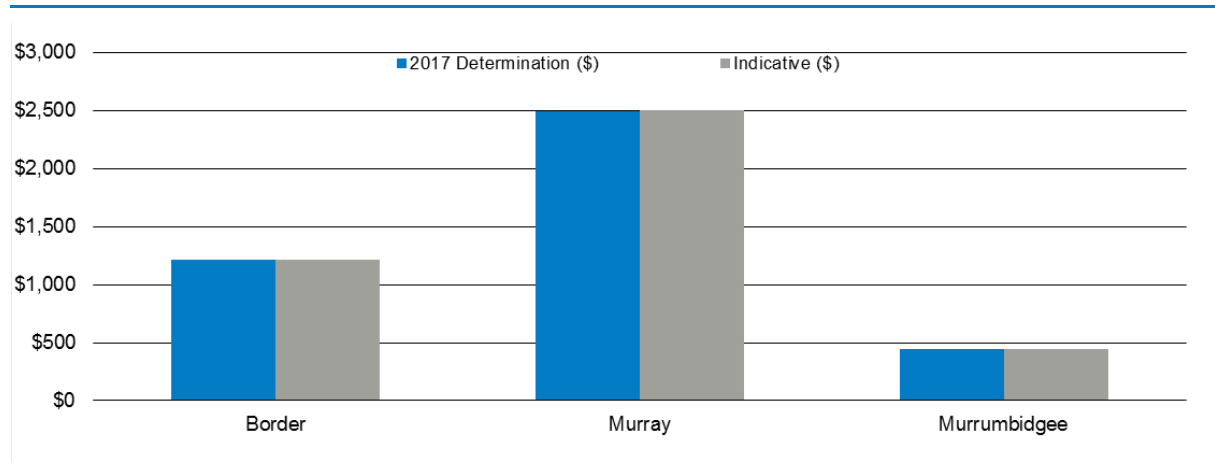
Figure 3.4 Average expected bills for general security customers: indicative bulk water charges if they were updated compared to bulk water charges set in the 2017 Determination for 2018-19 (\$2018-19)



Note: The indicative bill impact in the figures above are the average of small, medium and large customers. Excludes BRC and MDBA payments. For the Lowbidgee valley customers only own supplementary entitlements, analysis of bills is based on the valley as a whole (ie, 747,000 ML of entitlements and forecast usage at 57,261)

Data source: IPART analysis; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

Figure 3.5 Average expected bills for general security customers: indicative MDBA/BRC charges if they were updated compared to MDBA/BRC charges set in the 2017 Determination for 2018-19 (\$2018-19)

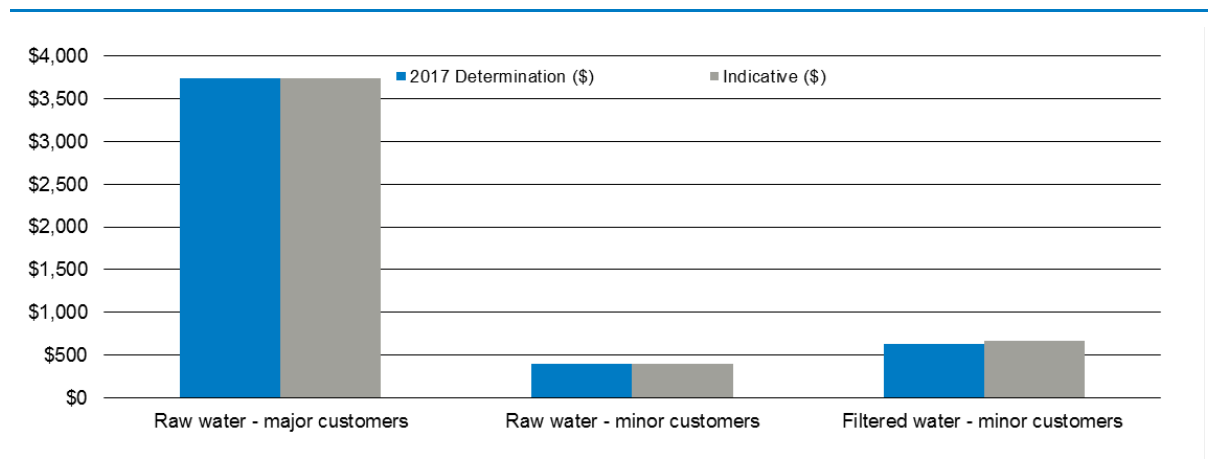


Note: The indicative bill impact in the figures above are the average of small, medium and large customers.

Data source: IPART analysis; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

Figures 3.3 and 3.4 shows that updating charges would increase average GS customer bills, except for the Border, Peel and Namoi valleys. The bill increases would range from 0.81% in the Gwydir Valley to 5.18% in the Lachlan Valley, which would be the largest bill increase overall. Average bills in the Lowbidgee Valley would not change. The decrease in the average bill for the Border Valley of 1.20% would be further compounded by a decrease in the BRC charges of 0.26%. The increase in the Murray and Murrumbidgee Valleys of 1.21% and 1.48% would be compounded by a small increase in bills from MDBA charges in these valleys of 0.39% and 1.45%, respectively.

Figure 3.6 Expected bills for rural customers in the FRWS: indicative charges if they were updated compared to charges set in 2017 Determination for 2018-19 (\$2018-19)



Data source: IPART analysis; WaterNSW submission to IPART annual price review (data submitted in IPART model), March 2018.

Figure 3.5 shows that for the FRWS, updating charges in 2018-19 would increase average customer bills for filtered water minor customers by 5.47%. The effect on raw water customers is estimated to be nil.

3.4 Our approach for calculating charges for the Annual Review

Appendix C in the WaterNSW 2017 Final Report outlined our approach to updating regulatory charges in the Annual Review. This approach applied specifically to the Annual Reviews and did not affect the 2017 Determination.

We have calculated indicative usage and fixed charges in the MDB in accordance with the approach set out in Appendix C of our 2017 Final Report.¹¹ In general, this approach divides the share of the notional revenue requirement for each valley by the updated forecasts for water sales (for the variable charge) and entitlement volumes (for the fixed charge). Our method for forecasting water sales and entitlement volumes is explained in more detail in section 3.5.

However, the method set out in Appendix C of our 2017 Final Report did not distinguish between the two usage charges for customers in the FRWS. That is, the 'usage charge up to the Minimum Annual Quantity (MAQ)' and the 'usage charge in excess of the MAQ'. As such, Appendix C was not consistent with the method used to set charges in the 2017 Determination for the FRWS. Specifically, in our 2017 Determination, these two charges were set in such a way that the 'usage charge in excess of the MAQ' was equal to the sum of the 'access charge' and the 'usage charge up to the MAQ'. However, the approach to updating these charges outlined in Appendix C of our 2017 Final Report can result in a usage charge in excess of the MAQ that does not equal the sum of the MAQ access charge and the usage charge up to the MAQ. For this review and going forward, we propose to calculate FRWS charges consistent with the approach we used to set charges in the 2017 Determination. The formulas for this are set out in Box 3.1 below.

¹¹ IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, p 223.

Box 3.1 Proposed formulas for charges for FRWS customers

Customers of the Fish River Water Supply Scheme (FRWS) pay water charges in three parts:

- ▼ an access charge (the Minimum Annual Quantity (MAQ)) paid per kL of the customer's MAQ entitlement
- ▼ a charge for each kL of water usage that is less than or equal to the customers MAQ entitlement (in kL), and
- ▼ a charge for each kL of water usage that is greater than the customers MAQ.

We set the above charges for the FRWS in our 2017 Determination. At each Annual Review we consider whether to update these charges based on updated usage data (we use the most recently available full-year historical data).

When calculating updated charges we vary each charge by the amount so that the Notional Revenue Requirement (NRR) can be achieved given updated usage data.

FRWS charges are different for each water class (filtered or raw) and each customer category within each water class (minor and major customers).

The formulae that we have used to estimate the charges for each component of the FRWS for an Annual Review are described below.

$$Charge_{ix}^{MAQ\ entitlement} = \frac{Revenue_{ix}^{MAQ}}{MAQ\ level_{ix}} \quad (1)$$

$$Charge_{ix}^{usage \leq MAQ} = \frac{Revenue_{ix}^{usage \leq MAQ}}{Min(Usage_{ix}, MAQ\ level_{ix})} \quad (2)$$

$$Charge_{ix}^{usage > MAQ} = Charge_{ix}^{MAQ\ access} + Charge_{ix}^{usage \leq MAQ} \quad (3)$$

Where in formula (2), $Revenue_{ix}^{usage \leq MAQ}$ is set out in formula (4) below:

$$Revenue_{ix}^{usage \leq MAQ} = Revenue_{ix}^{total} - Revenue_{ix}^{MAQ} - Calculated\ revenue_{ix}^{usage > MAQ} \quad (4)$$

Where in formula (4) $Calculated\ revenue_{ix}^{usage > MAQ}$ is set out in formula (5) below:

$$Calculated\ revenue_{ix}^{usage > MAQ} = Max(0, Usage_{ix} - MAQ\ level_{ix}) \times Charge_{ix}^{usage > MAQ} \quad (5)$$

Table 3.7 Description of terms used in Box 3.1

Term	Definition
Formula 1	
$Charge_{ix}^{MAQ\ entitlement}$	The MAQ entitlement charge per kL of entitlement for customer category <i>i</i> purchasing water class <i>x</i> .
$Revenue_{ix}^{MAQ}$	The required revenue to be collected from MAQ charges for customer category <i>i</i> purchasing water class <i>x</i> .
$MAQ\ level_{ix}$	The historical annual kL of MAQ entitlement by customer category <i>i</i> purchasing water class <i>x</i> .
Formula 2	
$Charge_{ix}^{usage \leq MAQ}$	The charge for each unit of water usage under or equal to the MAQ level for customer category <i>i</i> purchasing water class <i>x</i> .
$Revenue_{ix}^{usage \leq MAQ}$	The required revenue to be collected from usage charges for customer category <i>i</i> purchasing water class <i>x</i> .
$Usage_{ix}$	The amount of the historical water usage for customer category <i>i</i> purchasing water class <i>x</i> .
Formula 3	
$Charge_{ix}^{usage > MAQ}$	The charge for each unit of water that is used after crossing the MAQ threshold for customer category <i>i</i> purchasing water class <i>x</i> .
Formula 4	
$Revenue_{ix}^{total}$	The total required revenue to be collected from charges for customer category <i>i</i> purchasing water class <i>x</i> .
$Calculated\ revenue_{ix}^{usage > MAQ}$	The revenue collected from charging for usage in excess of the MAQ (at the value calculated in Formula 3) for customer category <i>i</i> purchasing water class <i>x</i> .

IPART seeks comments on the following

- 1 Do you agree with our proposal to amend the approach to updating charges for rural customers in the FRWS to align with the approach used in the 2017 Determination?

3.5 Updated forecasts

Based on WaterNSW's updated actual sales data for 2016-17, we have updated forecasts for the following:

- ▼ water sales volumes
- ▼ HS and GS entitlement volumes, and
- ▼ HS and GS water allocation ratios.

3.5.1 Updated data for usage volumes to estimate water sales for 2018-19

Forecast usage volumes are used to calculate the variable charge for all MDB and Fish River customers. That is, in general terms, variable charges for each valley are calculated by dividing the target revenue to be recovered from variable charges by forecast usage volumes.

In the 2017 Determination, we generally forecast usage volumes as the 20-year historical average of usage volumes for each valley (ie, forecast usage for each year of the determination period was calculated as the annual average of usage volumes from 1996-97 to 2015-16). Updated forecast usage volumes are calculated by rolling forward the 20-year historical average – ie, using data from 1997-98 to 2016-17 to forecast usage for 2018-19. These updated forecasts can then be used to update variable prices.

The updated 20-year rolling averages of annual historical usage volumes are shown in Table 3.8 below.

Table 3.8 Usage Volumes (ML)

Valley	2016-17 (actual full year data)	2017 Determination (20 year historical average 1996-97 to 2015-16)	2018-19 Annual Review (20 year historical average 1997-98 to 2016-17)
Border	232,303	148,174	151,299
Gwydir	332,713	262,135	259,040
Namoi	213,598	164,799	165,531
Peel	10,366	11,496	11,732
Lachlan	206,758	206,001	194,539
Macquarie	232,194	259,099	253,261
Murray	1,877,179	1,557,396	1,521,877
Murrumbidgee	1,902,516	1,736,133	1,694,482
Lowbidgee ¹²	59,350	N/A	N/A
Fish River Water Supply Scheme			
Major Customer (raw) ¹³	1,540	1,541	1,541
Minor customers (filtered)	66	116	110
Minor customers (raw)	71	50	50

Source: WaterNSW Information Update, April 2017; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

¹² We do not forecast usage volumes for the Lowbidgee Valley as the tariff structure is set as 100 : 0 fixed : variable.

¹³ To forecast usage volumes of the Major Customer (raw) (Energy Australia), we used a 16-year rolling average in the 2017 Determination due to limited data availability. We also decided at the time that as new data is created it would be added onto the average until it reaches a 20-year rolling average. For the annual review, we have used a 17-year rolling average. In this case, the impact of the first historical data point 'rolling off' is not relevant.

3.5.2 Updated data for entitlement volumes to estimate forecast entitlement volumes for 2018-19

WaterNSW's customers hold water access entitlements in all valleys (except for Fish River). These are generally HS and GS entitlements, with the exception of Lowbidgee which has supplementary entitlements. Water access entitlements give customers access to a share of the water resource of a water resource plan area.

Forecast entitlement volumes are used to calculate the fixed (HS and GS entitlement) charges in the MDB valleys. In the 2017 Determination, we forecast entitlement volumes for each year of the determination period by using the latest available full year entitlement volume data. This was entitlement volumes for 2015-16.

WaterNSW has provided 2016-17 actual entitlement volumes and year to date (YTD) entitlement volumes as of February 2018. In its pricing application, WaterNSW used the February 2018 YTD entitlement volumes to vary charges, consistent with the ACCC approach in the 2015-17 and 2016-17 Annual Reviews.

However, as there is no major difference between 2016-17 full year entitlement volumes and February 2018 YTD entitlement volumes and to maintain consistency with our approach of using 2016-17 full year using volumes, we have used 2016-17 full year entitlement volumes to calculate what prices would be if they were updated as part of this Annual Review (ie, the indicative prices listed in section 3.2 above).

In comparing February YTD to 2016-17 actual entitlement volumes, there are minor differences in the Namoi and Peel valleys for GS entitlement volumes and the Lachlan and Murray valleys for HS entitlement volumes. These small differences do not affect our decision to leave prices unchanged. In future reviews, we will consider using latest available YTD volumes if they are substantially different to full year actual volumes.

The table below shows entitlement volumes for 2015-16 (ie, used to calculate charges in the 2017 Determination), 2016-17 and year-to-date volumes as of February 2018.

Table 3.9 GS Entitlement volumes (ML)

Valley	2015-16	2016-17	Year-To-Date February 2018
Border	263,238	263,218	263,218
Gwydir	509,665	509,665	509,665
Namoi	256,212	256,212	256,529
Peel	30,428	30,428	29,635
Lachlan	633,166	633,166	633,166
Macquarie	632,466	632,466	632,466
Murray	2,083,271	2,083,271	2,083,271
Murrumbidgee	2,267,963	2,267,963	2,267,963
Lowbidgee	747,000	747,000	747,000

Note: Lowbidgee entitlement volumes are supplementary entitlements.

Source: WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

Table 3.10 HS Entitlement volumes (ML)

Valley	2015-16	2016-17	Year-To-Date February 2018
Border	3,121	3,141	3,141
Gwydir	26,920	26,920	26,920
Namoi	8,866	8,866	8,866
Peel	17,367	17,367	17,367
Lachlan	57,304	57,301	57,302
Macquarie	42,712	42,688	42,688
Murray	263,603	263,590	263,555
Murrumbidgee	438,328	438,328	438,328

Source: WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018.

IPART seeks comments on the following

- 2 Do you agree with our approach of calculating charges using entitlement volumes from the latest actual full year of data rather than the most recently available year to date data (while remaining open to considering year to date data if there is a material change)?

3.5.3 Updated data to forecast the High Security Premium for 2018-19

The HS Entitlement fixed charge is levied on high security entitlement holders for each valley and incorporates a High Security Premium (HSP) to reflect the greater security (ie, priority in water allocations) and reliability of water supply enjoyed by HS entitlement holders relative to general security entitlement holders.

$$\text{High security entitlement fixed charge} = \text{general security charge} \times \text{HSP}$$

HS and GS water allocation rates are inputs in the HSP and can be updated through the Annual Review via the reliability ratio.

$$\text{HSP} = \text{Security Factor} \times \text{Reliability Ratio}^{14}$$

The reliability ratio is the ratio of the 20-year rolling average allocation rate of HS entitlements to the 20-year rolling average allocation rate of GS entitlements. The 20-year rolling average data is consistent with the data used to calculate the 20-year rolling average usage volumes (for usage forecasts). The updated HSP is calculated by updating the 20-year rolling average used in the 2017 Determination with water allocation ratios for GS and HS entitlement holders for 2016-17, the updated 20-year average being historical data from 1997-98 to 2016-17 (rather than the data used in the 2017 Determination of 1996-97 to 2015-16). The data used to update the reliability ratio is shown below in Table 3.11 for HS entitlement holders and Table 3.12 for GS entitlement holders.

¹⁴ The Reliability Ratio is fixed over the 2017 Determination period. This reflects the relative security of supply between HS and GS entitlements. The Reliability Ratios are based on data from each valley's respective Water Sharing Plan (WSP) and from secondary sources if no WSP is in place.

Table 3.11 HS entitlement holders water allocation ratios

Valley	2016-17	2017 Determination Average (year 1 – 20)	Updated Forecast Average (year 2 – 21)
Border	100%	100%	100%
Gwydir	100%	100%	100%
Namoi	100%	100%	100%
Peel	100%	98%	98%
Lachlan	100%	83%	83%
Macquarie	100%	100%	100%
Murray	100%	95%	95%
Murrumbidgee	100%	97%	97%

Source: WaterNSW Information Update, April 2017; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

Table 3.12 GS entitlement holders water allocation ratios

Valley	2016-17	2017 Determination Average (year 1 – 20)	Updated Forecast Average (year 2 – 21)
Border	112%	46%	49%
Gwydir	79%	44%	44%
Namoi	124%	58%	59%
Peel	100%	62%	64%
Lachlan	138%	37%	38%
Macquarie	100%	40%	40%
Murray	100%	61%	61%
Murrumbidgee	100%	62%	62%

Source: WaterNSW Information Update, April 2017; WaterNSW submission to IPART annual price review (data input and submitted in IPART model), March 2018; IPART analysis.

3.6 FRWS MAQs and customer numbers

In the FRWS, customers have a MAQ rather than a licensed entitlement.¹⁵ The fixed charge is based on the customer's MAQ. The MAQs are specified in the water sharing arrangements for the FRWS. The share of the water resource assigned to specific customers is specified in Schedule 3 of WaterNSW's Water Management Licence for the Fish River Scheme. The MAQs are analogous to entitlements in other valleys.

Table 3.13 compares the MAQ megalitres and customers used in the 2017 Determination and the updated figures in WaterNSW's submission.

¹⁵ The MAQ is the Supply Availability in Number of Shares under no restrictions in Schedule 3.

Table 3.13 Minimum annual quantities (MAQ)

	MAQ 2017 Determination	MAQ Updated	Customers 2017 Determination	Customers Updated
Raw water major customer (ML)	8,184	8,184	1	1
Raw water minor customers (kL)	200	200	83	83
Filtered water minor customers (kL)	200	200	216	224

Source: WaterNSW submission to IPART annual price review, March 2018, p 7; IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, pp 110-111.

The updated MAQs are unchanged from those used in the 2017 Determination. WaterNSW's pricing application indicates that the number of filtered water minor customers has increased from 216 to 224. Updating 2018-19 prices for this update in customer numbers would reduce the fixed charge for filtered water minor customers by \$0.03 (\$2016-17) compared with 2018-19 prices in the 2017 Determination.

4 Draft decision to not vary regulated charges for 2018-19

This Chapter discusses our draft decision to not vary charges set out in the 2017 Determination for 2018-19. Our decision is based on our assessment that it is not reasonably necessary to vary charges, having regard to changes in demand or consumption forecasts and price stability. In making this decision, we have considered WaterNSW's pricing application and introduced a framework we propose to adopt to assess the 'reasonably necessary' threshold required under the WCIR.

4.1 WaterNSW's pricing application

In this section, we respond to WaterNSW's assessment that it is **reasonably necessary** to update 2018-19 regulated charges relative to those listed in the 2017 Determination, **having regard to changes in demand or consumption forecasts and price stability**.

WaterNSW has judged that updating charges to reflect updated forecast sales volumes is reasonably necessary because the updated volumes are more indicative of recent water usage patterns, provide a hedge against revenue volatility risk and could avoid price shocks to customers from a sudden change in prices at the next price determination.¹⁶

We agree with WaterNSW's assessment that updated sales forecasts (calculated as the 20-year rolling average for usage volumes and water allocations and using the last available data for entitlement numbers) are more indicative of recent water usage patterns.

However, we do not agree that it is reasonably necessary to update charges (to reflect updated sales volume forecasts) to mitigate revenue volatility risk to WaterNSW. In the 2017 Determination we provided WaterNSW with a revenue volatility allowance. This was structured to allow WaterNSW to purchase a risk transfer product, which would provide insurance equal to setting WaterNSW's tariff structure at 80:20 fixed to variable (in terms of target revenue). While it is likely WaterNSW will still be exposed to some revenue volatility risk (as the ratio of its fixed to variable costs is likely to be higher than its 80:20 fixed to variable effective tariff structure); the revenue volatility allowance should significantly mitigate this risk.

Under the ACCC's methodology, charges were adjusted in the Annual Review to account for revenue volatility risk. This was done through an Unders and Overs mechanism (UOM), which would then inform the regulator of any variation in charges within the Annual Review¹⁷. However, we made the decision to replace that UOM with the revenue volatility allowance in the 2017 Determination.

¹⁶ WaterNSW submission to IPART annual price review, March 2018, pp 12-14.

¹⁷ ACCC, *WaterNSW Annual review of regulated charges for 2016-17*, May 2016, pp 7-8.

We agree that varying charges annually could avoid price shocks to customers from a sudden change in prices at the next price determination. However, this would only be true if year on year changes in usage volumes, water allocation percentages and/or entitlement volumes moved in the same direction. This would be the case if there was a sustained or structural change in the industry that affected one or more of these variables. In the absence of this, updating prices annually to reflect the 'business as usual' volatility could create unnecessary price volatility to customers. As usage volumes and water allocation ratios can be very volatile year on year, this could lead to price changes in one year moving in an opposite direction to a change in prices the previous year (ie, price changes that offset each other year to year).

4.2 How we have assessed whether variations are reasonably necessary

Under the WCIR, after receiving an application for Annual Review of the regulated charges, IPART must either approve or determine the regulated charges for the relevant year. IPART must not approve any price variations for 2018-19 except to the extent, if any, that it is reasonably necessary to do so having regard to changes in demand or consumption forecasts set out in the application for Annual Review, and price stability.

To determine if it is reasonably necessary to vary charges, we have considered:

- ▼ whether varying charges would be necessary to mitigate WaterNSW's revenue volatility risk in 2018-19
- ▼ whether updated usage volumes, water allocation ratios and/or entitlement volumes are likely to reflect a sustained shift in demand, and the size of any such change, and
- ▼ the potential impact on customer bills and price stability.

4.3 Demand and revenue volatility

We have assessed the effectiveness of varying charges to mitigate WaterNSW's revenue volatility risk associated with business as usual demand volatility. Although WaterNSW currently has a revenue volatility allowance, it is still exposed to some revenue volatility risk (as noted above). Varying charges may reduce the risk that WaterNSW either over or under recovers the notional revenue set in the 2017 Determination.

Table 4.1 below calculates forecast revenue for 2018-19 based on two scenarios (ie, leaving charges unchanged from the 2017 Determination and updating charges) and compares it to the notional revenue requirement in the 2017 Determination for 2018-19. It shows that updating charges would allow WaterNSW to recover an amount very close to the annual notional revenue requirement for 2018-19 (assuming actual 2018-19 demand is equal to the updated 20-year average used to set prices).¹⁸ However, the under or over recovery of revenue by Valley by not updating charges is relatively small.

¹⁸ The difference between the amount that would be recovered and the notional revenue requirement is due to rounding prices.

Table 4.1 WaterNSW's forecast revenue in 2018-19 (\$2016-17)

Valley	Notional Revenue Requirement (A) (\$'000)	Forecast revenue 2017 Determination prices (B) (\$'000)	Forecast revenue indicative updated prices (C) (\$'000)	Difference between A and B (%)	Difference between A and C (%)
Border	1,345	1,361	1,344	1.2	-0.1
Gwydir	5,187	5,147	5,184	-0.8	-0.1
Namoi	5,487	5,498	5,485	0.2	0.0
Peel	1,056	1,060	1,055	0.4	-0.1
Lachlan	6,536	6,314	6,534	-3.4	0.0
Macquarie	5,953	5,869	5,949	-1.4	-0.1
Murray	4,947	4,875	4,936	-1.5	-0.2
Murrumbidgee	9,569	9,419	9,555	-1.6	-0.1
Lowbidgee	586	583	583	-0.5	-0.5
Raw water - major customers	3,582	3,561	3,561	-0.6	-0.6
Raw water - minor customers	32	32	32	-0.6	-0.6
Filtered water - minor customers	141	135	142	-4.5	0.7
TOTAL	44,420	43,853	44,359	-1.3	-0.1

Note: The differences between the figures in columns A and C is due to rounding.

Source: IPART analysis.

4.4 A sustained or structural shift in demand

Where there is a sustained or structural shift in demand (eg, a significant change in water entitlements), there may be a strong case to vary charges in the Annual Review. This could be to ensure there is no significant under or over recovery of revenue within the four-year determination period and/or to avoid price shocks when new forecast sales volumes are applied to set prices at the next price review (eg, every four years).

We have assessed on whether the water usage and entitlement data for 2016-17 reflects a sustained or structural shift in demand and/or water availability. We concluded that there is not sufficient evidence to suggest that the data for 2016-17 reflects a sustained shift in water demand or availability.

Industry changes

On 1 July 2016, a number of replacement, merged and new water sharing plans commenced. This was part of the 10 year update of water sharing plans across NSW.¹⁹ Water sharing plans set the rules for how water is allocated and provide security for the environment and water users. They provide the rules for water trading (ie, the buying and selling of water licences) and also annual water allocations. Therefore, changes to water sharing plans could lead to a structural shift in demand. Although there were small changes to the Murrumbidgee, NSW Murray and Lower Darling, Lachlan and Macquarie regulated river water sharing plans, we understand that these changes did not affect usage volumes or

¹⁹ A water sharing plan is typically in place for 10 years.

allocations of entitlement data for 2016-17, nor do we anticipate that there would be material structural changes in demand due to these changes.²⁰

4.5 Price stability

As outlined above, IPART must not vary charges for 2018-19 except to the extent that IPART considers it reasonably necessary having regard to changes in demand and price stability.

This decision can involve a trade-off or balance between the competing objectives of accuracy in forecast sales volumes used to set prices, and price stability. Adjusting prices in response to business as usual volatility in water sales would introduce greater price volatility within the four-year regulatory period (although price volatility is minimised through the use of a 20-year rolling average to calculate forecast usage volumes). We also note that all new demand data will be taken into account and reflected in prices at the next periodic (eg, four year) price review.

We recognise that if there were a consistent trend in the data within a regulatory period, updating prices during the determination period would have the potential to reduce price shocks at the next periodic price review. However, this outcome would depend on two factors. One is the effect on the 20-year rolling average from the last year 'rolling off'. This effect could outweigh the effect of the new data point being added to the 20-year rolling average.²¹ The second is that given the relatively high degree in year on year volatility in demand (particularly in some valleys), it is difficult to establish whether the most recent year of data (in this case demand data for 2016-17) would be more representative of the level of demand expected in the next year (in this case 2018-19) compared with the 20-year average used to set prices in the price determination. In this case, we do not consider there to be strong evidence to suggest that demand data for 2016-17 provides a materially better estimate of forecast demand for 2018-19 compared with the 20-year average used to set prices in the 2017 Determination.

IPART seeks comments on the following

- 3 Do you agree with our framework for considering whether it is reasonably necessary to vary charges, having regard to:
 - whether varying charges is necessary to mitigate WaterNSW's revenue volatility risk
 - whether updated usage volumes, water allocation ratios and/or entitlement volumes are likely to reflect a sustained shift in demand, and the size of any such change, and
 - the potential impact on customer bills and price stability.
- 4 Are there any other factors we should consider, relative to the constraints of the WCIR?

²⁰ NSW Government, *Replacement, merged and new water sharing plans commenced 1 July 2016*, <http://www.water.nsw.gov.au/water-management/water-sharing/replacement-merged-new>, Accessed on 11 April 2018.

²¹ In some cases updating prices can result in counter-intuitive outcomes where updating prices to account for an apparent increase in demand can result in a price increase. This situation occurs when demand in the year rolling out of the 20 year average is greater than demand in the year rolling into the 20 year average.

-
- 5 Do you agree with our view that it is not reasonably necessary to vary charges from those set in the 2017 Determination, having regard to changes in demand or consumption forecasts and price stability?

5 Charges to apply in 2018-19

Our draft decision is to leave the charges for 2018-19 unchanged (in real terms) from the charges set in the 2017 Determination.²² These prices, in real \$2016-17, are set out below. These prices would be indexed by CPI to \$2018-19, as per the formula outlined in our 2017 Determination.

5.1 Bulk water entitlement and usage charges

Table 5.1 sets out our draft decisions on bulk water entitlement and usage charges for high security and general security customers. These exclude MDBA and BRC charges, which are set out in section 5.2 below.

Table 5.1 Draft Decision: WaterNSW bulk water prices for 2018-19 (\$2016-17)

Valley	HS fixed charge (\$/ML)	GS fixed charge (\$/ML)	Usage charge (\$/ML)
Border	5.33	1.98	5.44
Gwydir	11.08	3.48	11.87
Namoi	17.08	7.96	19.98
Peel	41.57	4.02	18.36
Lachlan	15.38	2.73	19.04
Macquarie	13.51	2.85	13.78
Murray	1.54	0.75	1.91
Murrumbidgee	2.95	1.11	3.31
Lowbidgee	0.00	0.78	0.00

Note: Forecast inflation is 2.3% in 2017-18 and 2.5% in 2018-19.

Source: IPART, Prices for rural bulk water services for WaterNSW – Determination, June 2017, p 11. IPART, Review of prices for rural bulk water services for WaterNSW – Final Report, June 2017, pp 136 & 141.

5.2 MDBA and BRC entitlement and usage charges

Table 5.2 sets out our draft decisions on MDBA and BRC entitlement and usage charges.

Table 5.2 Draft Decision MDBA/BRC prices for 2018-19 (\$2016-17)

Valley	HS fixed charge (\$/ML)	GS fixed charge (\$/ML)	Usage charge (\$/ML)
Border	4.61	1.71	0.78
Murray	7.27	3.56	1.50
Murrumbidgee	1.61	0.61	0.30

Note: Forecast inflation is 2.3% in 2017-18 and 2.5% in 2018-19.

Source: IPART, Prices for rural bulk water services for WaterNSW – Determination, June 2017, p 12. IPART, Review of prices for rural bulk water services for WaterNSW – Final Report, June 2017, pp 137 & 141.

²² IPART, Prices for rural bulk water services for WaterNSW – Determination, June 2017.

5.3 Fish River Water Supply Scheme access and usage charges

Table 5.3 sets out our draft decisions on access and usage charges for raw water and filtered water customers in the FRWS.

Table 5.3 Draft Decision prices for FRWS in 2018-19 rural customers (\$2016-17)

FRWS	Access (\$/kL)	Usage < MAQ (\$/kL)	Usage > MAQ (\$/kL)
Raw water - major customers	0.39	0.24	0.63
Raw water - minor customers	0.39	0.24	0.63
Filtered water - minor customers	0.76	0.46	1.22

Note: Forecast inflation is 2.3% in 2017-18 and 2.5% in 2018-19.

Source: IPART, Prices for rural bulk water services for WaterNSW – Determination, June 2017, p 18. IPART, Review of prices for rural bulk water services for WaterNSW – Final Report, June 2017, p 147.

A Background information

A.1 WaterNSW's operating framework

WaterNSW (formerly State Water) delivers bulk water to irrigators and other licence holders on regulated rivers across NSW.²³ WaterNSW develops and maintains infrastructure and supplies raw water to rural NSW and the Greater Sydney area.

WaterNSW was formed on 1 January 2015 under the *Water NSW Act 2014* (NSW) (the Act). The Act provided for the former State Water Corporation to become WaterNSW. It also abolished the former Sydney Catchment Authority (SCA) and transferred its functions to WaterNSW.

We regulate WaterNSW's prices for its rural bulk water services, which relate primarily to storing and delivering water to entitlement holders in 13 valleys across NSW. We also regulate its meter service charges and other miscellaneous charges that are set on a fee for service basis.

A.2 2017 Determination and the Annual Review

In June 2017, IPART released its Final Determination on WaterNSW's charges for the 2017-18 to 2020-21 determination period (the 2017 Determination). This set the notional revenue requirement for each year of the determination period and set charges to recover this revenue amount. The 2017 Determination also included a framework and formulae for calculating updated charges for subsequent years of the regulatory period, as part of the Annual Review.

The charges set for each year during the 2017 Determination used the most up to date data available at the time. This was actual usage volumes, entitlements and water allocation percentages up to the 2015/16 financial year. The Annual Review process allows IPART to update charges to reflect updated data for usage volumes, entitlements and water allocation ratios.

A.2.1 Revenue requirement

The notional revenue requirement represents IPART's view of the total efficient costs of providing WaterNSW's regulated services in each year of the determination period.

The 'building block' method was used in the 2017 Determination to calculate WaterNSW's notional revenue requirement. The method determines the total efficient costs by aggregating an allowance for a number of components, which reflect the businesses operations and ability to deliver its regulated services. These components include:

²³ A regulated river is one where downstream flows are regulated by a major storage or dam to supply irrigation water. Department of Primary Industries – Water, *Regulated rivers*, <http://www.water.nsw.gov.au/water-management/monitoring/regulated-rivers>, accessed March 2018.

- ▼ operating expenditure
- ▼ a return on the assets
- ▼ a return of the assets (regulatory depreciation)
- ▼ an allowance for meeting tax obligations, and
- ▼ an allowance for working capital.

For WaterNSW specifically, there are a number of additional items which are also included in the notional revenue requirement. These are:

- ▼ Murray Darling Basin Authority (MDBA) and Border Rivers Commission (BRC) costs
- ▼ a revenue volatility allowance
- ▼ costs related to the recovery of the Unders and Overs Mechanism (UOM)²⁴, and
- ▼ irrigation corporations and districts (ICD) rebates.

The notional revenue requirement is unchanged over the 4-year regulatory period and is not within the scope of the Annual Review.

Refer to **Appendix B** for the notional revenue requirement by valley.

A.2.2 Tariff structure

WaterNSW currently levies a two-part tariff for most valleys comprised of:

- ▼ A **Fixed charge** for each valley – an annual fixed charge that applies to the share component specified on each water access licence (\$ per ML of general security (GS) and high security (HS) water entitlement or unit share).
- ▼ A **Usage charge** for most valleys²⁵ – a charge based on the quantity of water recorded as taken for a water access licence in the billing period (\$ per ML of water taken or usage).

For 2018-19, most valleys maintain the 40:60 fixed to variable tariff structure with the exception of Peel valley and customers in the FRWS, who have an 80:20 fixed to variable tariff structure, and Lowbidgee which has a 100:00 tariff structure.

MDBA and BRC charges are based on an 80:20 fixed to variable tariff structure. These are levied in the Border (BRC), Murray (MDBA) and Murrumbidgee (MDBA) valleys.

²⁴ The UOM was discontinued for the 2017 Determination and replaced with the revenue volatility allowance. However, to address the existing UOM balance, IPART incorporated a UOM payback amount in prices so that the balances can be recovered over a 12-year period.

²⁵ The exception is Lowbidgee where WaterNSW only levies a fixed charge (customers hold supplementary licences that entitle them to water use only when access water is available).

B Notional revenue requirement – 2017 Determination

Table B.1 Revenue Requirement excluding MDBA/BRC Revenue (\$'000) (\$2016-17)

Valley	2017-18	2018-19	2019-20	2020-21
Border	1,344.77	1,344.77	1,344.77	1,344.77
Gwydir	5,187.19	5,187.19	5,187.19	5,187.19
Namoi	5,486.65	5,486.65	5,486.65	5,486.65
Peel	1,055.94	1,055.94	1,055.94	1,055.94
Lachlan	6,536.13	6,536.13	6,536.13	6,536.13
Macquarie	5,952.93	5,952.93	5,952.93	5,952.93
Murray	4,947.20	4,947.20	4,947.20	4,947.20
Murrumbidgee	9,568.66	9,568.66	9,568.66	9,568.66
Lowbidgee	585.59	585.59	585.59	585.59
Misc revenue				
Border	0.42	0.42	0.42	0.43
Gwydir	2.76	2.92	3.04	3.12
Namoi	2.97	3.17	3.31	3.37
Peel	0.58	0.63	0.66	0.69
Lachlan	4.39	4.65	4.86	5.05
Macquarie	3.51	3.67	3.80	3.92
Murray	3.25	3.23	3.24	3.26
Murrumbidgee	4.84	5.49	6.05	6.56
Lowbidgee	0.25	0.48	0.71	0.92

Source: IPART analysis.

Table B.2 MDBA/BRC Revenue Requirement (\$'000) (\$2016-17)

Valley	2017-18	2018-19	2019-20	2020-21
Border	580.75	580.75	580.75	580.75
Murray	11,669.02	11,669.02	11,669.02	11,669.02
Murrumbidgee	2,609.04	2,609.04	2,609.04	2,609.04

Source: IPART analysis.

Table B.3 FRWS Revenue Requirement (\$'000) (\$2016-17)

Valley	2017-18	2018-19	2019-20	2020-21
FRWS	7,769.00	7,769.00	7,769.00	7,769.00

Source: IPART analysis.

C Customer bill impacts

The tables below compare expected average customer bills in 2018-19 under two scenarios:

- ▼ If charges are unchanged from those set in the 2017 Determination, and
- ▼ If charges are updated to the indicative charges calculated for this Annual Review, to reflect updated forecast sales volumes.

The estimated bills are presented in nominal dollars (ie, including inflation forecasts).²⁶ As outlined in Chapter 3, our indicative updated charges are different to the charges proposed in WaterNSW's pricing application.

For the MDB valleys, our analysis of bills is based on:

- ▼ HS entitlement holders at 100% of usage, and
- ▼ GS entitlement holders at 60% of usage.²⁷

For both HS and GS entitlements, customers are broken down into three categories:

- ▼ small customers with 100ML of entitlements
- ▼ medium customers with 500ML of entitlements, and
- ▼ large customers with 1,000ML of entitlements.

Table C.1 Comparison of bulk water customer bills (\$2018-19) excluding MDBA/BRC charges

Valley	2017 Determination charges (\$)	Indicative updated charges (\$)	Change (%)
High Security Customers			
Small customers			
Border	1,129	1,092	-3.3
Gwydir	2,407	2,418	0.5
Namoi	3,886	3,844	-1.1
Peel	6,284	6,227	-0.9
Lachlan	3,609	3,673	1.8
Macquarie	2,862	2,876	0.5
Murray	361	365	1.1
Murrumbidgee	656	664	1.2
Lowbidgee	N/A	N/A	N/A
Medium customers			
Border	5,645	5,460	-3.3
Gwydir	12,035	12,090	0.5
Namoi	19,430	19,220	-1.1
Peel	31,420	31,135	-0.9
Lachlan	18,045	18,365	1.8
Macquarie	14,310	14,380	0.5
Murray	1,805	1,825	1.1
Murrumbidgee	3,280	3,320	1.2
Lowbidgee	N/A	N/A	N/A

²⁶ We have used an inflation forecast of 2.5%.

²⁷ These variables are based on the bill impact approach undertaken in the WaterNSW Final Report. IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, pp. 183-184.

Valley	2017 Determination charges (\$)	Indicative updated charges (\$)	Change (%)
Large customers			
Border	11,290	10,920	-3.3
Gwydir	24,070	24,180	0.5
Namoi	38,860	38,440	-1.1
Peel	62,840	62,270	-0.9
Lachlan	36,090	36,730	1.8
Macquarie	28,620	28,760	0.5
Murray	3,610	3,650	1.1
Murrumbidgee	6,560	6,640	1.2
Lowbidgee	N/A	N/A	N/A
General Security Customers			
Small customers			
Border	550	543	-1.2
Gwydir	1,112	1,121	0.8
Namoi	2,092	2,088	-0.2
Peel	1,577	1,563	-0.9
Lachlan	1,484	1,560	5.2
Macquarie	1,166	1,187	1.8
Murray	199	201	1.2
Murrumbidgee	324	329	1.5
Lowbidgee	82	82	0.0
Medium customers			
Border	2,750	2,717	-1.2
Gwydir	5,560	5,605	0.8
Namoi	10,460	10,441	-0.2
Peel	7,885	7,813	-0.9
Lachlan	7,418	7,802	5.2
Macquarie	5,830	5,934	1.8
Murray	995	1,007	1.2
Murrumbidgee	1,621	1,645	1.5
Lowbidgee	410	410	0.0
Large customers			
Border	5,500	5,434	-1.2
Gwydir	11,120	11,210	0.8
Namoi	20,920	20,882	-0.2
Peel	15,770	15,626	-0.9
Lachlan	14,836	15,604	5.2
Macquarie	11,660	11,868	1.8
Murray	1,990	2,014	1.2
Murrumbidgee	3,242	3,290	1.5
Lowbidgee	820	820	0.0
Fish River Water Supply Scheme			
Raw water - major customers	3,741	3,741	0.0
Raw water - minor customers	399	399	0.0
Filtered water - minor customers	630	665	5.5

Source: IPART analysis.

Table C.2 Comparison of MDBA/BRC customer bills (\$2018-19), excluding WaterNSW's bulk water charges

Valley	2017 Determination charges (\$)	Indicative updated charges (\$)	Change (%)
High Security Customers			
Small customers			
Border	565	541	-4.2
Murray	919	922	0.3
Murrumbidgee	200	202	1.0
Medium customers			
Border	2,825	2,705	-4.2
Murray	4,595	4,610	0.3
Murrumbidgee	1,000	1,010	1.0
Large customers			
Border	5,650	5,410	-4.2
Murray	9,190	9,220	0.3
Murrumbidgee	2,000	2,020	1.0
General Security Customers			
Small customers			
Border	228	228	-0.3
Murray	467	469	0.4
Murrumbidgee	83	84	1.5
Medium customers			
Border	1,141	1,138	-0.3
Murray	2,336	2,345	0.4
Murrumbidgee	413	419	1.5
Large customer			
Border	2,282	2,276	-0.3
Murray	4,672	4,690	0.4
Murrumbidgee	826	838	1.5

Source: IPART analysis.

D Approach to Annual Reviews

Boxes D.1, D.2 and D.3 below (and the accompany tables) present the formulas we would use to update charges in an Annual Review. These formulas were also presented in Appendix C of the 2017 Final Report for our review of WaterNSW's rural bulk water charges from 1 July 2017.

However, we have made amendments to the calculation of updated FRWS charges, which we set out in Chapter 3 (see also Box D.2 below) to align with our approach in the 2017 Determination.

Box D.1 Calculation of charges for MDB valleys, excluding Fish River Scheme

In valley i , at time t , the allowed charges are:

- a) For high-security entitlements (\$/ML of entitlement):

$$HSEC_{i,t} = \frac{HSP_{i,t} \times Share \times Rev_{i,t}^{NRR}}{(HSP_{i,t} \times EHSE_{i,t} + EGSE_{i,t})}$$

- b) For general-security entitlements (\$/ML of entitlement):

$$GSEC_{i,t} = \frac{Share \times Rev_{i,t}^{NRR}}{(HSP_{i,t} \times EHSE_{i,t} + EGSE_{i,t})}$$

- c) For usage (\$/ML):

$$UC_{i,t} = \frac{(1 - Share) \times Rev_{i,t}^{NRR}}{EWU_{i,t}}$$

The terms used in the above formulas are defined in Table D.1.

Source: ACCC, *Final Decision on State Water Pricing Application: 2014-15 – 2016-17*, June 2014, pp 68-69, and IPART analysis.

Table D.1 Description of terms used in formulas for calculation of charges for MDB valleys, excluding Fish River Scheme

Definitions	
i	Valley: Border, Gwydir, Namoi, Peel, Lachlan, Macquarie, Murray, and Murrumbidgee.
t	Year: 2018-19, 2019-20, and 2020-21.
$HSP_{i,t}$	High security premium for valley i , in year t , calculated as set out below.
$Share$	The share of entitlement charges in WaterNSW's tariff structure for valley i .
$Rev_{i,t}^{NRR}$	The component of the (nominal) notional revenue requirement to be recovered from WaterNSW customers (ie, customer share of NRR) for valley i , in year t , given by the Building Block Model at the start of the regulatory period.
$EHSE_{i,t}$	The expected number of high-security entitlements issued for valley i , in year t .
$EGSE_{i,t}$	The expected number of general-security entitlements issued for valley i , in year t .
$EWU_{i,t}$	The expected water usage for valley i , in year t , based on a 20-year moving average of past water usage.
$HSEC_{i,t}$	High security entitlement charge for valley i , in year t .
$GSEC_{i,t}$	General security entitlement charge for valley i , in year t .
$UC_{i,t}$	Usage charge for valley i , in year t .

Source: ACCC, *Final Decision on State Water Pricing Application: 2014-15 – 2016-17*, June 2014, pp 68-69; IPART analysis.

The high security premium for valley i , in year t , $HSP_{i,t}$, is the product of the Security Factor $SF_{i,t}$, and the Reliability Ratio $RR_{i,t}$:

$$HSP_{i,t} = SF_{i,t} \times RR_{i,t}$$

The Security Factor for a valley, $SF_{i,t}$, is given in Table D.2 below.

Table D.2 Security Factors for each valley

Valley	Security Factor
Border	1.25
Gwydir	1.40
Namoi	1.25
Peel	6.54
Lachlan	2.50
Macquarie	1.88
Murray	1.31
Murrumbidgee	1.69

Source: IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, p 224.

Box D.2 Proposed formulas for charges for FRWS customers

Customers of the Fish River Water Supply Scheme (FRWS) pay water charges in three parts:

- ▼ an access charge (the Minimum Annual Quantity (MAQ)) paid per kL of the customer's MAQ entitlement
- ▼ a charge for each kL of water usage that is less than or equal to the customers MAQ entitlement (in kL), and
- ▼ a charge for each kL of water usage that is greater than the customers MAQ.

We set the above charges for the FRWS in our 2017 Determination. At each Annual Review we consider whether to update these charges based on updated usage data (we use the most recently available full-year historical data).

When calculating updated charges we vary each charge by the amount so that the Notional Revenue Requirement (NRR) can be achieved given updated usage data.

FRWS charges are different for each water class (filtered or raw) and each customer category within each water class (minor and major customers).

The formulae that we have used to estimate the charges for each component of the FRWS for an Annual Review are described below.

$$Charge_{ix}^{MAQ\ entitlement} = \frac{Revenue_{ix}^{MAQ}}{MAQ\ level_{ix}} \quad (1)$$

$$Charge_{ix}^{usage \leq MAQ} = \frac{Revenue_{ix}^{*usage \leq MAQ}}{Min(Usage_{ix}, MAQ\ level_{ix})} \quad (2)$$

$$Charge_{ix}^{usage > MAQ} = Charge_{ix}^{MAQ\ access} + Charge_{ix}^{usage \leq MAQ} \quad (3)$$

Where in formula (2), $Revenue_{ix}^{*usage \leq MAQ}$ is set out in formula (4) below:

$$Revenue_{ix}^{*usage \leq MAQ} = Revenue_{ix}^{total} - Revenue_{ix}^{MAQ} - Calculated\ revenue_{ix}^{usage > MAQ} \quad (4)$$

Where in formula (4) $Calculated\ revenue_{ix}^{usage > MAQ}$ is set out in formula (5) below:

$$Calculated\ revenue_{ix}^{usage > MAQ} = Max(0, Usage_{ix} - MAQ\ level_{ix}) \times Charge_{ix}^{usage > MAQ} \quad (5)$$

Table D.3 Description of terms used in Box D.2

Term	Definition
Formula 1	
$Charge_{ix}^{MAQ\ entitlement}$	The MAQ entitlement charge per kL of entitlement for customer category <i>i</i> purchasing water class <i>x</i> .
$Revenue_{ix}^{MAQ}$	The required revenue to be collected from MAQ charges for customer category <i>i</i> purchasing water class <i>x</i> .
$MAQ\ level_{ix}$	The historical annual kL of MAQ entitlement by customer category <i>i</i> purchasing water class <i>x</i> .
Formula 2	
$Charge_{ix}^{usage \leq MAQ}$	The charge for each unit of water usage under or equal to the MAQ level for customer category <i>i</i> purchasing water class <i>x</i> .
$Revenue_{ix}^{* usage \leq MAQ}$	The required revenue to be collected from usage charges for customer category <i>i</i> purchasing water class <i>x</i> .
$Usage_{ix}$	The amount of the historical water usage for customer category <i>i</i> purchasing water class <i>x</i> .
Formula 3	
$Charge_{ix}^{usage > MAQ}$	The charge for each unit of water that is used after crossing the MAQ threshold for customer category <i>i</i> purchasing water class <i>x</i> .
Formula 4	
$Revenue_{ix}^{total}$	The total required revenue to be collected from charges for customer category <i>i</i> purchasing water class <i>x</i> .
$Calculated\ revenue_{ix}^{usage > MAQ}$	The revenue collected from charging for usage in excess of the MAQ (at the value calculated in Formula 3) for customer category <i>i</i> purchasing water class <i>x</i> .

Box D.3 Calculation of MDBA and BRC charges

In valley i , at time t , the allowed charges are:

- a) For high-security entitlements (\$/ML of entitlement):

$$HSEC_{i,t}^{AC} = \frac{HSP_{i,t} \times Share \times Rev_{i,t}^{AC}}{(HSP_{i,t} \times EHSE_{i,t} + EGSE_{i,t})}$$

- b) For general-security entitlements (\$/ML of entitlement):

$$GSEC_{i,t}^{AC} = \frac{Share \times Rev_{i,t}^{AC}}{(HSP_{i,t} \times EHSE_{i,t} + EGSE_{i,t})}$$

- c) For usage (\$/ML):

$$UC_{i,t}^{AC} = \frac{(1 - Share) \times Rev_{i,t}^{AC}}{EWU_{i,t}}$$

The terms used in the above formulas are defined in Table D.4.

Source: ACCC, *Final Decision on State Water Pricing Application: 2014-15 – 2016-17*, June 2014, pp 75-77; IPART analysis.

Table D.4 Description of terms used in formulas for calculation of MDBA and BRC charges

Definitions	
i	Valley: Border, Murray, and Murrumbidgee.
t	Year: 2018-19, 2019-20, and 2020-21.
$HSP_{i,t}$	High Security Premium for valley i , in year t , calculated as set out below.
$Share$	The share of entitlement charges in WaterNSW's MDBA/BRC tariff structure for valley i .
$Rev_{i,t}^{AC}$	The MDBA/BRC component of the (nominal) notional revenue requirement to be recovered from WaterNSW customers (ie, customer share of NRR) for valley i , in year t , given by the Building Block Model at the start of the regulatory period.
$EHSE_{i,t}$	The expected number of high-security entitlements issued for valley i , in year t .
$EGSE_{i,t}$	The expected number of general-security entitlements issued for valley i , in year t .
$EWU_{i,t}$	The expected water usage for valley i , in year t , based on a 20-year moving average of past water usage.
$HSEC_{i,t}^{AC}$	High security entitlement charge for valley i , in year t .
$GSEC_{i,t}^{AC}$	General security entitlement charge for valley i , in year t .
$UC_{i,t}^{AC}$	Usage charge for valley i , in year t .

Source: ACCC, *Final Decision on State Water Pricing Application: 2014-15 – 2016-17*, June 2014, pp 75-77; IPART analysis.

The high security premium for valley i , in year t , $HSP_{i,t}$ is the product of the Security Factor SF_i , and the Reliability Ratio $RR_{i,t}$:

$$HSP_{i,t} = SF_{i,t} \times RR_{i,t}$$

The Security Factor for a valley, SF_i , is given in Table D.5 below.

Table D.5 Security Factors for each valley

Valley	Security Factor
Border	1.25
Murray	1.31
Murrumbidgee	1.69

Source: IPART, *Review of prices for rural bulk water services for WaterNSW – Final Report*, June 2017, p 228.

Glossary

2017 Determination	Our pricing Determination for WaterNSW Rural prices applying from 1 July 2017 to 30 June 2021
2017 determination period	The period commencing 1 July 2017 and running to 30 June 2021
ACCC	Australian Consumer and Competition Commission
ACCC's Pricing Principles	<i>Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, July 2011</i>
Annual revenue requirement	The notional revenue requirement in each year of the determination period
BRC	Border Rivers Commission
CPI	Consumer Price Index
DPI Water	Department of Primary Industries Water (formerly the NSW Office of Water)
FRWS	Fish River Water Supply Scheme
GS	General security
GL	Gigalitre
Greater Sydney area	Water catchments that service WaterNSW storages including the Blue Mountains, Shoalhaven, Warragamba, Upper Nepean and Woronora catchments
HS	High security
HSP	High security premium
ICD	Irrigation corporations and districts
IPART	Independent Pricing and Regulatory Tribunal of NSW

IPART Act	<i>Independent Pricing and Regulatory Tribunal Act 1992 (NSW)</i>
kL	Kilolitre
MDB	Murray Darling Basin
MDBA	Murray Darling Basin Authority
MAQ	Minimum Annual Quantity
ML	Megalitre
NRR	Notional revenue requirement. Revenue requirement set by IPART that represents the efficient costs of providing WaterNSW's regulated monopoly services
NSW	New South Wales
RTP	Risk transfer product
SCA	Sydney Catchment Authority (now part of WaterNSW)
Target revenue	The revenue WaterNSW generates from charges set by IPART for that year
UOM	Unders and overs mechanism
Water Act	<i>Water Act 2007 (Cth)</i>
WCIR	<i>Water Charge (Infrastructure) Rules 2010</i> made under s 92 of the <i>Water Act 2007 (Cth)</i>