



Department of  
Primary Industries  
Water

## DPI Water submission to IPART

For prices from 1 July 2016 – on behalf of the  
Water Administration Ministerial Corporation

Published by the NSW Department of Primary Industries, Water

*DPI Water pricing submission to IPART*

First published 11 September 2015

**More information**

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# Chief Executive Officer's declaration

In accordance with the Guidelines for Water Agency Pricing Submissions, November 2014 (the Guide), of the Independent Pricing and Regulatory Tribunal of New South Wales, I declare that:

- a) the information provided in our pricing proposal submitted on 11 September is the best available information of the financial and operational affairs of the Department of Primary Industries – Water and has been checked in accordance with section 2.17 of the Guide; and
- b) there are no circumstances of which I am aware that would render any particulars included in the information provided to be misleading or inaccurate.

Certified by the Chief Executive Officer:

**Gavin Hanlon**  
**Deputy Director General**  
**Department of Primary Industries – Water**  
11 September 2015

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# 1 Executive summary

This document is the Department of Primary Industries – Water’s (DPI Water) submission to the Independent Pricing and Regulatory Tribunal (IPART) for its review of prices for the Water Administration Ministerial Corporation (WAMC)<sup>1</sup>. It describes how DPI Water has administered water planning and management services during the current determination period and how it proposes to do so in the future. It also outlines the proposed prices, to recover water users’ share of the costs of providing its monopoly services, during the next pricing determination period.

DPI Water was formerly known as the Office of Water. Its name was changed to DPI Water on 1 July 2015. DPI Water is part of the Department of Industry, Skills and Regional Development.

Please note that table numbers in this submission may not add up to the total stated due to the rounding of figures.

## 1.1 Introduction

DPI Water is committed to providing prudent, efficient and effective monopoly services to its customers and to the NSW community. It has worked to improve all of its activities during the current determination period and will continue to seek efficiencies and advancements to its services in the future.

DPI Water has consulted stakeholders and provided customers with opportunities to give their feedback on the activities during the current determination period, and the proposed new activity structure. This has included face-to-face meetings, newsletters, fact sheets, a questionnaire to a sample of customers, writing to all water access licence holders in NSW, and information on the DPI Water website.

DPI Water is proposing prices that continue a glide path towards full cost recovery. In addition to this, it will be seeking price increases in line with CPI for the future determination. This is outlined in detail in this submission, along with proposed efficiencies and savings that will benefit customers.

## 1.2 DPI Water overview

DPI Water is part of the NSW Department of Primary Industries. It provides government monopoly water planning and management services for NSW. By providing these services DPI Water aims to ensure available water is shared according to the agreed water sharing rules, the integrity of water rights are protected, and water resources are managed in a way that is sustainable in the long term for both water users and water dependent ecosystems.

Under the National Water Initiative (NWI) agreed in 2004 by the Council of Australian Governments (COAG), the state and territory governments made commitments to best practice water pricing. This included the recovery from water users of a share of the cost of the management of water. Water management pricing aims to secure sufficient revenue to allow efficient delivery of the required services, under the principle of impactor or user pays. It also aims to achieve pricing transparency in this cost recovery for water planning and management.

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<sup>1</sup> The Water Administration Ministerial Corporation (WAMC) is a corporation constituted under section 371 of the Water Management Act 2000. WAMC is the government entity responsible for the functions required for water planning and management in NSW. An instrument dated 1 November 2011 delegates the delivery of most of WAMC’s services to DPI Water. All of WAMC’s functions are referred to as DPI Water’s functions in this submission.

DPI Water has three types of charges: water management charges, water consent transaction fees, and charges for water take<sup>2</sup> measurement services. DPI Water allocates costs according to the pricing water source, which is a combination of water type (regulated river, unregulated river and groundwater) and the location (valley or area) of the water type.

In 2013 the NSW Government commissioned an independent bulk water review to investigate the potential for governance and functional reforms that could result in improved service delivery and better outcomes for customers.

Stage one of the NSW Bulk Water Reforms created WaterNSW through the merger of the State Water Corporation and the Sydney Catchment Authority. Implementation of further reforms, as announced by the Minister for Lands and Water on 3 July 2015, is subject to further consideration but is expected to result in substantial realignment of the functions currently delivered by DPI Water and WaterNSW.

In advance of implementing these reforms DPI Water has prepared cost forecasts on a business as usual basis, but with a 'plug out/plug in' approach. It is proposed to IPART that funding of any functions that are transferred be managed through service agreements between DPI Water and WaterNSW, until prices can be adjusted in the next price determination for WaterNSW. This approach has been discussed and agreed with WaterNSW.

Careful consideration has been given to ensuring the planning and costing undertaken for DPI Water's preparation of this pricing submission took this into account.

### 1.3 Length of determination

DPI Water proposes that the price determination period should be for four years from 1 July 2016 to 30 June 2020. This would provide a period of price stability for water access licence holders and align the subsequent pricing period for WAMC with that of WaterNSW. Any future reforms in the delivery of water services for NSW will benefit from this alignment, and the resulting ability to transition to new pricing arrangements at the same time.

### 1.4 Legislative and regulatory framework

The main responsibility of DPI Water is to administer the *Water Management Act 2000*. DPI Water exercises powers under the Act with the aim of achieving the Act's objectives. This is a complex task as water resources are highly valued and there is competition for their use. DPI Water also has responsibility to administer interstate and national commitments for the Basin Plan under the *Water Act 2007 (Commonwealth)*.

At the core of the *Water Management Act 2000* is a formal process for planning, which is designed to resolve competing interests for water at a whole-of-resource level, and provide optimal water access for human uses within sustainable limits. The plans outline how operational management activities will contribute to achieving the objectives of the *Water Management Act 2000*. These operational management activities include water consent transactions, compliance, operational water sharing and accounting, environmental water management, and works and measures.

The *Water Management Act 2000* currently covers most NSW water licences. The remainder of these licences are provided under the *Water Act 1912*, which is being phased out with the progressive commencement of water sharing plans. This will result in the *Water Management Act 2000* eventually becoming the sole legislation governing water management in NSW.

<sup>2</sup> This submission uses 'water take' in place of terms such as usage or extraction. Using the term water take is consistent with NSW and Commonwealth legislation. Water take measurement is used in place of metering to recognise there are many methods by which water take may be measured and different circumstances where water take measurement may be applied.



DPI Water meets legislative and regulatory requirements, and contributes to whole-of-government and interstate water management solutions, through improved regulation and inter-agency cooperation.

## 1.5 Performance of DPI Water during the current determination period

The current determination period commenced in 1 July 2011 and was scheduled to finish on 30 June 2014. DPI Water requested and was granted two one-year extensions to 30 June 2016. Chapters 4 and 5 provide an end of determination report for the price regulated water planning and management activities over this period.

DPI Water currently costs its services to 11 water management activity groups. It then forecasts, records and reports on costs by these activities. As most of these activities are performed on a state-wide basis, costs are initially forecast for the whole state, and then allocated to pricing water sources (a combination of water type and location) using a primary cost driver for each water management activity.

For the five years of the current determination period, DPI Water's actual operating expenditure for the price regulated water management services is \$303 million (\$2015/16). This is the same as the extended IPART forecast of \$303 million (\$2015/16) for the five years. The \$303 million operating expenditure total does not include \$55 million of NSW contributions to the Murray Darling Basin Authority (MDBA) and the Dumaresq-Barwon Border Rivers Commission (DBBRC).

DPI Water's annual operating expenditure has declined from \$68 million (\$2015/16) in 2011/12 to a forecast \$54 million in 2015/16. The user share of the five-year actual operating expenditure is \$229 million (\$2015/16), compared with an IPART allowed user share of \$226 million (\$2015/16). The overall user share of actual operating expenditure is 76 per cent (based on the user share for each activity), compared to the IPART forecast of 75 per cent of operating expenditure.

Details of DPI Water's total operating cost for water management at an activity group level for each pricing water source, and the annual actual expenditure at an activity level compared with the IPART allowed efficient cost for each of the five years, are shown in Tables 4.1 and 4.2 (in Chapter 4).

The actual water management revenue billed for the first four years of the current determination is \$164 million, compared with an IPART forecast of \$167 million. Revenue for regulated rivers was above forecast, as a result of both the volume of water take and number of minimum annual charges being above forecast. Unregulated river revenue was also above forecast, mainly as a result of an increase in the quantity of licensed share component and the volume of measured water take compared to forecast. Groundwater revenue was below forecast, as a result of measured water take being below forecast. The revenue variances are shown in Table 1.1. More detailed explanations of the variances are provided in Chapter 5.

**Table 1.1: Revenue variance between IPART forecast and actual revenue 2011/12 to 2014/15 (\$'000 15/16)**

Water type	Entitlement charge \$'000 (15/16)	Water take charge \$'000 (15/16)	Minimum annual charge \$'000 (15/16)	Revenue variance for water type \$'000 (15/16)	Percentage of revenue for water type (%)
Regulated rivers	-103	934	850	1,680	2.5%
Unregulated rivers	-521	1,123	-378	223	0.4%
Groundwater	-2,084	-3,565	885	-4,764	-11%
<b>Total</b>	<b>-2,708</b>	<b>-1,508</b>	<b>1,357</b>	<b>-2,861</b>	<b>-1.7%</b>

During the current determination period DPI Water has made many improvements to its activities. It has addressed changing technology, emerging issues such as coal seam gas exploration and mining expansion, and the return of drought in many areas of the state.

The performance and an explanation of variances, for each of the water management activities over the current determination period, are provided in Chapter 4.

## **1.6 Proposed activities for the future determination period**

DPI Water's future activity structure has been refined to improve the definition, accountability, recording and reporting of water planning and management services. The service obligations for each of the future activities are set out in Appendix D to this submission. The future activities will be referenced with a W-code in place of the C-code in the current determination, to make clear whether the activities being referred to are current or future. The 11 C-code activity groups containing 36 activities in the current determination have been reduced to 10 W-code activity groups containing 33 activities in the future activity structure.

The future W-code activities are grouped into the same activity groups as the C-code activities, with one exception. C04, analytical services for water quality programs, will no longer exist as a separate activity group. C04 contained a single activity, water quality analysis. This will be incorporated as a sub-activity into three other activities – W01-03, surface water quality monitoring, W01-04, surface water algal monitoring, and W02-02, groundwater quality monitoring. The future activity structure, its mapping to the current activities, and the proposed standards of service for each activity are set out in Chapter 6.

## **1.7 Approach to prices for this determination**

The revenue needs for DPI Water's price regulated water planning and management activities include the following:

- Water management services – revenue needs recovered through charges levied on a water licence.
- Water consent transaction services – revenue needs recovered through fees for the issue, trade and amendment of water access licences, water allocations and water approvals.
- Water take measurement services – revenue needs recovered through charges for meter reading or alternative water take measurement, government owned meter service and ancillary charges.

### **1.7.1 Future operating costs for water planning and management activities**

A summary of the forecast operating costs for water planning and management activities for the four years of the future determination is provided in Table 1.2.

**Table 1.2: Future operating costs for water planning and management activities (\$'000 2015/16)**

	2016/17	2017/18	2018/19	2019/20	Total
<b>Price regulated services</b>					
Water management services	52,193	52,035	51,066	49,428	204,722
Water consent transaction services	2,071	2,071	2,071	2,071	8,284
Water take measurement services	1,125	1,278	1,245	1,245	4,883
<b>Other services</b>					
Costs funded by Commonwealth Government grants	26,869	10,529	8,639	7,416	53,453
Costs recovered via fee for service	12,645	12,641	12,659	12,565	50,420
<b>Total operating costs of water planning and management activities</b>	<b>96,903</b>	<b>78,554</b>	<b>75,680</b>	<b>72,725</b>	<b>321,762</b>

DPI Water is proposing an efficient level of operating costs for its water management services across the proposed price period, which delivers the appropriate level of service for its monopoly service activities.

An efficiency saving of 1.5 per cent per annum has been built into the total forecast operating costs for the years 2017/18, 2018/19 and 2019/20. DPI Water also proposes an efficiency factor on the 2016/17 cost forecasts equal to the inflation adjustment from 2015/16 to 2016/17. That is, the costs included in this submission as \$2015/16 will also be the nominal costs as \$2016/17.

### 1.7.2 Revenue needs – water management

The user and the government revenue needs for each building block, for the four-year period 1 July 2016 to 30 June 2020, are shown in Table 1.3.

**Table 1.3: User and government revenue need by building block (\$'000 2015/16)**

Revenue need building block	Total	Government share	User share	User share as % of total
Water management services operating costs	204,722	50,204	154,518	75%
NSW Government contribution to MDBA*	37,105	16,529	20,576	55%
NSW Government contribution to DBBRC*	1,466	466	1,000	68%
Depreciation on the regulatory asset base	4,435	1,132	3,303	74%
Rate of return on the regulatory asset base	2,026	432	1,594	79%
Working capital	429	106	323	75%
Taxation	-	-	-	-
<b>Total</b>	<b>250,183</b>	<b>68,689</b>	<b>181,314</b>	<b>72%</b>

\* The overall user shares of MDBA and DBBRC costs differ as the respective portfolios of projects attract differing cost share factors.

## Allocation of revenue needs to pricing water sources

DPI Water forecasts, records and reports costs by each water management activity it performs. The costs are then allocated to pricing water sources using a cost driver for each water management activity. The principle of using cost drivers was accepted by IPART for the current pricing determination.

In DPI Water's preparation of forecast costs and revenue needs for the next determination period, cost drivers were reviewed to ensure their appropriateness for allocation of costs for the revised W-code activities. As a result of this review, 10 of the 33 W-code activities have the same cost driver as the current C-code activities. The remainder, which include eight new activities, have new or revised cost drivers.

The complete revised set of cost drivers for the W-code activities, with the rationale for the cost driver, is included at Appendix E. This appendix includes the cost driver for the C-code equivalent to the new activity alongside each of the new cost drivers, and a summary assessment of the change and the reason for the change. Examples of how cost drivers have been reviewed for this submission are provided in Chapter 7.

A smoothed annual revenue need for each pricing water source has been calculated. The total smoothed annual user share of revenue needs for water management is \$45.36 million (\$2015/16). Table 1.4 shows the smoothed annual user share revenue needs for each pricing water source. These have been used to calculate the proposed water management prices in this submission.

**Table 1.4: Smoothed annual user share of revenue needs by pricing water source (\$2015/16 \$'000s)**

Pricing water source	Regulated rivers	Unregulated rivers	Groundwater
01. Border	932	–	–
02. Gwydir	1,404	–	–
03. Namoi	1,116	–	–
04. Peel	252	–	–
04A. North West	–	1,307	–
05. Lachlan	1,661	–	–
06. Macquarie	1,825	–	–
06A. Central West	–	1,361	–
07. Far West	–	1,394	–
08. Murray	5,797	320	–
09. Murrumbidgee	5,920	844	–
10. North Coast	51	2,490	–
11. Hunter	1,175	1,687	–
12. South Coast	123	4,427	–
13. Inland	–	–	8,999
14. Coastal	–	–	2,271
<b>Total for water type</b>	<b>20,255</b>	<b>13,830</b>	<b>11,270</b>

## 1.8 Water management

### 1.8.1 Demand forecasts – water management

Water licences are grouped in three tariff categories for pricing purposes:

- Entitlement charge licences – licences subject to an annual entitlement charge (an entitlement charge licence is also subject to a water take charge, if the water take is measured in a way that qualifies the licence for a 2-part tariff).
- Water take charge only licences – licences subject only to the water take charge.
- Minimum charge only licences – licences subject only to the minimum annual charge.

A mapping of the water licence category with the assigned tariff category is provided in Chapter 8. Share component forecasts are provided for each of the tariff categories, as well as licence numbers and water take for each pricing water source.

#### Regulated rivers demand forecasts

The share component for regulated rivers is forecast to increase by 0.5 per cent, as a result of the issue of new licences associated with environmental projects such as River Murray Increased Flows.

The regulated river water take forecast is based on the historical 20-year average water take, including a forecast for Lowbidgee Supplementary water. Preliminary estimates for floodplain harvesting average water take are included for pricing water sources, where the issue of this category of licence is being negotiated.

**Table 1.5: Regulated river water take forecast (ML)**

Pricing water source	20-year average including Lowbidgee	Floodplain harvesting	Total forecast
01. Border	144,533	41,000	185,533
02. Gwydir	266,784	118,000	384,784
03. Namoi	167,761	48,000	215,761
04. Peel	11,242	–	11,242
05. Lachlan	215,287	–	215,287
06. Macquarie	263,577	29,000	292,577
07. Far West	–	–	–
08. Murray	1,414,869	–	1,414,869
09. Murrumbidgee	1,751,181	–	1,751,181
10. North Coast	584	–	584
11. Hunter	124,601	–	124,601
12. South Coast	3,943	–	3,943
<b>Total</b>	<b>4,364,363</b>	<b>236,000</b>	<b>4,600,363</b>

## Unregulated rivers demand forecasts

The share component for unregulated rivers is forecast to increase by 0.5 per cent, as a result of recognition from a pricing perspective of the additional share component issued for licences for the Barwon Darling (Far West).

No change related to entitlement charge licences moving from a 1-part to 2-part tariff has been included in the measured water take forecast. This is because a water take measurement strategy is being developed and it has not been possible to finalise any assumptions for change. A significant movement between licences on 1-part and 2-part tariffs has a significant impact on prices. Table 1.6 shows the forecast measured water take (with estimated floodplain harvesting water take shown separately), and the estimated water take associated with entitlement charge licences on a 1-part tariff.

**Table 1.6: Unregulated river total water take forecast (ML)**

Pricing water source	Floodplain harvesting water take	Measured 2-part tariff water take	Estimated 1-part tariff water take	Total
01. Border	–	730	7,907	8,637
02. Gwydir	–	303	8,241	8,544
03. Namoi	–	434	26,536	26,971
04. Peel	–	2,240	2,162	4,402
05. Lachlan	–	1,978	8,893	10,871
06. Macquarie	–	19,236	23,969	43,205
07. Far West	30,000	101,687	52,922	184,609
08. Murray	–	4,561	6,034	10,595
09. Murrumbidgee	–	4,013	14,023	18,036
10. North Coast	–	48,885	26,799	75,683
11. Hunter	–	129,033	31,703	160,735
12. South Coast	–	586,179	17,211	603,390
<b>Total</b>	<b>30,000</b>	<b>929,280</b>	<b>226,398</b>	<b>1,155,677</b>

## Groundwater demand forecasts

The share component for groundwater is forecast to increase overall by 0.1 per cent, as a result of the controlled allocation of new entitlement being offset by the termination of groundwater supplementary licences. The groundwater water take forecast is shown in Table 1.7

**Table 1.7: Groundwater total water take forecast (ML) (2017/18)**

Pricing water source	Measured 2-part tariff water take	Estimated 1-part tariff water take	Total
13. Inland	755,773	38,945	794,718
14. Coastal	6,670	68,523	75,193
<b>Total</b>	<b>762,443</b>	<b>107,468</b>	<b>869,911</b>

## 1.8.2 Proposed prices – water management charges

### Pricing principles

The proposed pricing principles are outlined in Section 8.4. These include:

- Water management charges apply to all water licences.
- The tariff category for each type of water licence is determined by the category of the water access licence.
- The fixed (entitlement) and variable (water take) charges will target a 70:30 revenue split in all water types. The only exception is North Coast regulated river that will continue at 92:08.
- The unit 1-part entitlement price for entitlement charge licences in unregulated river and groundwater pricing water sources will continue to be the sum of the unit 2-part entitlement and water take prices.
- The existing 21 pricing water sources (11 regulated river, eight unregulated river, and two groundwater) will be retained. A mapping of water sources for water sharing plans to pricing water sources is provided at Appendix K.

An assessment of the impacts of the implementation of the 70:30 fixed/variable ratio for all pricing water sources (with the exception of North Coast regulated river), using the latest water take forecasts, is provided in Chapter 8.

Licence specific costs are assessed in providing the justification for an increase in the minimum annual charge from the current \$105.34 to \$150.00. The user share of the cost of the licence-related activities represents 22 per cent of the user share of revenue needs. Increasing the minimum annual charge to \$150 is forecast to increase the number of minimum annual charges billed from 15,392 to 21,270 in 2016/17, representing 57 per cent of licences and seven per cent of the user share of revenue needs.

### Proposed pricing approach

In summary, the following pricing approach is proposed:

- Adoption of a pricing strategy of a constrained glide path to full cost recovery.
- Increasing the minimum annual charge to \$150 with effect from 2016/17.
- Water management tariffs for 2016/17 being set to not increase the bill for a typical licence – an entitlement charge licence with a median quantity of share component on a 2-part tariff (excluding licences on a minimum annual charge or where the licence share component has increased), with the average water take activation rate (that is, the average annual water take as percentage of share component).
- Where a pricing water source is below full cost recovery in 2016/17, prices will be increased in 2017/18 and beyond, at a maximum rate of 2.5 per cent per annum real (2.5 per cent plus CPI) over the determination period or until the full cost recovery price is reached.
- Where a pricing water source would be above full cost recovery at current prices, prices will be reduced to the future full cost recovery price with effect from 2016/17.
- For pricing water sources subject to the introduction of floodplain harvesting licences and their associated measured water take, two tariff levels are proposed: one that excludes and one that includes floodplain harvesting licences. The change from the exclusive tariff to the inclusive tariff is proposed to apply from the next 1 July following Ministerial approval to issue all floodplain harvesting licences for that pricing water source.

While prices are set in 2016/17 for no increase in the bill for a typical licence, there will be customers holding licences that normally have a water take activation rate different to the average in that pricing water source, who may be subject to an increase in their annual bill. Water take charge only licences may also be subject to increases in their bill in 2016/17. Both of



these impacts are a result of the relative change in the relationship between the water take price and the entitlement price.

### Regulated rivers

Table 1.8 outlines the proposed regulated rivers water management prices. It shows the prices for the first and last year of the determination period, and, in the two columns on the right, the price required for full cost recovery. For the pricing water sources expected to implement floodplain harvesting licences during the future determination, two price levels are shown.

**Table 1.8: Proposed water management prices for regulated river licences**

Pricing water source	2013/14 to 2015/16		2016/17		2019/20		Full cost recovery	
	Entitlement	Water take	Entitlement	Water take	Entitlement	Water take	Entitlement	Water take
01. Border	\$2.32	\$1.79	\$2.32	\$1.79	\$2.38	\$1.86	\$2.38	\$1.86
01. Border with FPH*	\$2.32	\$1.79	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71
02. Gwydir	\$1.37	\$1.26	\$1.39	\$1.20	\$1.50	\$1.29	\$1.78	\$1.53
02. Gwydir with FPH*	\$1.37	\$1.26	\$1.39	\$1.20	\$1.50	\$1.29	\$1.57	\$1.35
03. Namoi	\$2.75	\$1.88	\$2.77	\$1.85	\$2.83	\$1.89	\$2.83	\$1.89
03. Namoi with FPH*	\$2.75	\$1.88	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74
04. Peel	\$2.33	\$3.71	\$2.26	\$4.01	\$2.43	\$4.33	\$3.64	\$6.56
05. Lachlan	\$1.86	\$2.14	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10
06. Macquarie	\$1.98	\$1.90	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88
06. Macquarie with FPH*	\$1.98	\$1.90	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82
07. Far West**	–	–	–	–	–	–	–	–
08. Murray	\$1.50	\$0.97	\$1.46	\$1.05	\$1.58	\$1.12	\$1.62	\$1.15
09. Murrumbidgee	\$1.23	\$0.79	\$1.22	\$0.81	\$1.32	\$0.87	\$1.50	\$0.99
10. North Coast	\$5.58	\$5.54	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64
11. Hunter	\$2.73	\$1.75	\$2.69	\$1.84	\$2.90	\$1.98	\$3.62	\$2.51
12. South Coast	\$5.00	\$5.61	\$4.57	\$7.27	\$4.92	\$7.83	\$5.34	\$8.54
Minimum annual charge	\$105.34		\$150.00		\$150.00			

\* FPH = floodplain harvesting. \*\* There is no regulated river in the Far West pricing water source.

### Unregulated rivers

All unregulated river pricing water sources reach full cost recovery during the determination period. Therefore the 2019/20 column in Table 1.9 shows the full cost recovery price for each pricing water source. Two price levels are shown for Far West – before and after the anticipated implementation of floodplain harvesting licences.



**Table 1.9: Proposed water management prices for unregulated river licences**

Pricing water source	2013/14 to 2015/16			2016/17			2019/20		
	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement
04A. North West	\$3.73	\$1.60	\$5.34	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77
06A. Central West	\$5.87	\$2.52	\$8.39	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54
07. Far West	\$4.67	\$2.00	\$6.67	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77
07. Far West with FPH*	\$4.67	\$2.00	\$6.67	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40
08. Murray	\$6.77	\$2.91	\$9.67	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88
09. Murrumbidgee	\$8.30	\$3.55	\$11.85	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03
10. North Coast	\$7.00	\$3.00	\$10.01	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82
11. Hunter	\$2.30	\$2.17	\$4.48	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39
12. South Coast	\$2.26	\$1.48	\$3.74	\$2.10	\$1.80	\$3.90	\$2.27	\$1.89	\$4.16
Minimum annual charge	\$105.34			\$150.00			\$150.00		

\* FPH = floodplain harvesting

## Groundwater

Both inland and coastal groundwater pricing water sources are at a full cost recovery price. The exception is the Murrumbidgee region that is an overlay administrative area, which is on a glide path to the inland groundwater price. This is shown in Table 1.10.

**Table 1.10: Proposed water management prices for groundwater licences**

Pricing water source	2013/14 to 2015/16			2016/17			2019/20		
	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement
09. Murrumbidgee	\$2.47	\$1.07	\$3.53	\$2.13	\$1.72	\$3.85	\$2.29	\$1.85	\$4.14
13. Inland	\$4.86	\$2.09	\$6.95	\$3.99	\$3.23	\$7.22	\$3.99	\$3.21	\$7.20
14. Coastal	\$4.07	\$1.85	\$5.92	\$2.01	\$3.75	\$5.76	\$2.01	\$3.74	\$5.75
Minimum annual charge	\$105.34			\$150.00			\$150.00		

### 1.8.3 Impacts of proposed prices – water management charges

Prices for 2016/17 are set to deliver no increase in the bill for a typical licence (other than small increases that result from rounding of calculated prices to the nearest cent). The bill impact for an actual licence depends on the water take activation rate for the share component on a licence. Consequently there can be bill increases for licences that may usually have an activation rate different to the average. For an entitlement charge licence on a 2-part tariff, the relative change in the bill is proportionally the same for the same activation rate, regardless of the size of the licence. A bill estimator will be available on the DPI Water website to aid licence holders to assess potential bill impacts for their licence, using the proposed prices.

## Regulated rivers – entitlement charge licences

Table 1.11 shows the percentage change in the bill for each pricing water source, depending on the water take activation rate for the licence. The six activation rates shown in the table are chosen as representative of typical activation rates for regulated rivers. The first column shows the change in the bill for an entitlement charge licence on the average water take activation rate in that pricing water source.

**Table 1.11: 2016/17 bill impact for regulated rivers entitlement charge licences at different water take activation rates – percentage change in 2-part bill 2016/17**

Pricing water source	Average for water source	Water take % activation rate					
		0%	25%	35%	50%	60%	100%
01. Border	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%
01. Border with FPH*	-5.4%	-5.6%	-5.4%	-5.4%	-5.3%	-5.2%	-5.1%
02. Gwydir	-0.1%	1.5%	0.3%	-0.1%	-0.5%	-0.8%	-1.5%
02. Gwydir with FPH*	-0.1%	1.5%	0.3%	-0.1%	-0.5%	-0.8%	-1.5%
03. Namoi	0.1%	0.7%	0.4%	0.3%	0.1%	0.1%	-0.2%
03. Namoi with FPH*	-6.0%	-5.5%	-5.7%	-5.8%	-6.0%	-6.0%	-6.3%
04. Peel	0.0%	-3.0%	0.2%	1.0%	1.9%	2.4%	3.8%
05. Lachlan	-12.0%	-15.6%	-12.5%	-11.7%	-10.6%	-10.0%	-8.3%
06. Macquarie	-9.2%	-12.1%	-10.0%	-9.3%	-8.5%	-8.1%	-6.7%
06. Macquarie with FPH*	-11.9%	-14.6%	-12.6%	-12.0%	-11.3%	-10.8%	-9.5%
07. Far West**	–	–	–	–	–	–	–
08. Murray	0.1%	-2.7%	-1.1%	-0.7%	0.0%	0.4%	1.6%
09. Murrumbidgee	0.1%	-0.8%	-0.4%	-0.2%	0.0%	0.1%	0.5%
10. North Coast	-17.6%	-19.7%	-11.8%	-9.5%	-6.6%	-4.9%	0.0%
11. Hunter	0.1%	-1.5%	-0.6%	-0.3%	0.1%	0.4%	1.1%
12. South Coast	0.0%	-8.6%	-0.2%	2.2%	5.1%	6.8%	11.6%

\* FPH = floodplain harvesting. \*\* There is no regulated river in the Far West pricing water source.

Table 8.28 (in Chapter 8) provides a similar table of the cumulative real percentage change between the current price and the proposed price in 2019/20. An assessment of the possible harmonisation of prices for the Namoi and Peel is also provided in Chapter 8. The harmonisation of Namoi and Peel prices is not included in the proposed prices.

## Regulated rivers – water take charge only licences

The bill impact for water take charge only licences not on the minimum annual charge is the proportional change in the water take price compared to the current price. Table 1.12 shows, for the same volume of water take, the percentage change in the bill from 2015/16 to 2016/17, and the cumulative percentage change to 2019/20.

**Table 1.12: Cumulative bill impact for regulated river water take charge only licence**

Pricing water source	2016/17	2019/20	Full cost recovery
01. Border	0.0%	3.9%	3.9%
01. Border with FPH*	-4.5%	-4.5%	-4.5%
02. Gwydir	-4.8%	2.4%	21.4%
02. Gwydir with FPH*	-4.8%	2.4%	7.1%
03. Namoi	-1.6%	0.5%	0.5%
03. Namoi with FPH*	-7.4%	-7.4%	-7.4%
04. Peel	No water take charge only licences		
05. Lachlan	-1.9%	-1.9%	-1.9%
06. Macquarie	-1.1%	-1.1%	-1.1%
06. Macquarie with FPH*	-4.2%	-4.2%	-4.2%
07. Far West**	–	–	–
08. Murray	8.2%	15.5%	18.6%
09. Murrumbidgee	2.5%	10.1%	25.3%
10. North Coast	No water take charge only licences		
11. Hunter	5.1%	13.1%	43.4%
12. South Coast	29.6%	39.6%	52.2%

\* FPH = floodplain harvesting. \*\* There is no regulated river in the Far West pricing water source.

### Unregulated rivers – entitlement charge licences

Table 1.13 shows the percentage change in the bill for each pricing water source, depending on the water take activation rate for a licence.

Seven of the eight pricing water sources have price reductions for entitlement charge licences on a 2-part tariff, except where a licence has a very high water take activation rate. The bill for a licence on a 1-part tariff increases in the South Coast and Far West, because the sum of the proposed 2-part entitlement and water take prices (equivalent of a 2-part tariff licence at a 100 per cent activation rate) is greater than the current 1-part entitlement price.

**Table 1.13: 2016/17 bill impact for unregulated river entitlement charge licences at different water take activation rates – percentage change in 2-part bill 2016/17**

Unregulated river		Water take % activation rate for licence on a 2-part tariff						
Pricing water source	Average for water source	0%	25%	40%	50%	70%	100%	1-part tariff
04A. North West	-25%	-38%	-29%	-25%	-22%	-17%	-11%	-11%
06A. Central West	-45%	-55%	-48%	-45%	-42%	-39%	-34%	-34%
07. Far West*	-1%*	-10%	-6%	-4%	-3%	-1%	1%	1%
07. Far West with FPH*	-5%*	-10%	-8%	-7%	-6%	-5%	-4%	-4%
08. Murray	-51%	-61%	-51%	-45%	-42%	-36%	-29%	-29%
09. Murrumbidgee	-49%	-61%	-49%	-43%	-39%	-32%	-24%	-24%
10. North Coast	-17%	-32%	-22%	-17%	-14%	-9%	-2%	-2%
11. Hunter	-36%	-44%	-36%	-33%	-31%	-28%	-24%	-24%
12. South Coast	0.0%	-7.1%	-3.0%	-1.1%	0.0%	1.9%	4.3%	4%

\* Excludes additional share component added to licences.

### Groundwater – entitlement charge licences

Table 1.14 shows the percentage change in the bill for each pricing water source, depending on the water take activation rate of a licence.

The bill impact for a licence in the inland groundwater area can be an increase or a decrease, depending on the water take activation rate. Licences in the Murrumbidgee region will have annual price increases, as these licences are on a glide path to full cost recovery, that is, until they reach the same prices as groundwater inland.

The bill for a licence on a 1-part tariff increases by four per cent in the inland groundwater pricing water source. This is because the sum of the proposed 2-part entitlement and water take prices (equivalent of a 2-part tariff licence at a 100 per cent activation rate) is greater than the current 1-part entitlement price.

**Table 1.14: 2016/17 bill impact for groundwater entitlement charge licences – percentage change in 2-part bill 2016/17**

Groundwater		Water take % activation rate for licence on a 2-part tariff						
Pricing water source	Average for water source	0%	25%	40%	50%	70%	100%	1-part tariff
09. Murrumbidgee	0.0%	-14%	-6%	-3%	0%	4%	9%	9%
13. Inland	-4.6%	-18%	-11%	-7%	-5%	-1%	4%	4%
14. Coastal	-36%	-51%	-35%	-27%	-22%	-14%	-3%	-3%

Table 8.34 (in Chapter 8) provides a similar table showing the cumulative real percentage change between the current price and the proposed price in 2019/20.

### Impact of proposed water management prices on government

The water management prices proposed result in an under-recovery of revenue needs for 10 of the 21 pricing water sources, at the commencement of the next price determination. A price glide path of 2.5 per cent real is proposed for these pricing water sources, which reduces the under-

recovery over the future determination period, and results in three additional pricing water sources reaching full cost recovery. The cost recovery by pricing water source is shown in Table 1.15.

**Table 1.15: Cost recovery by pricing water source (percentage recovered)**

Pricing water source	2016/17		2019/20	
	No FPH*	With FPH*	No FPH*	With FPH*
<b>Regulated</b>				
01. Border	97.3%	100%	100%	100%
02. Gwydir	79.0%	89.0%	84.8%	95.6%
03. Namoi	98.0%	100%	100%	100%
04. Peel	63.1%		67.7%	
05. Lachlan	100%		100%	
06. Macquarie	100%	100%	100%	100%
08. Murray	91.0%		97.5%	
09. Murrumbidgee	82.1%		88.2%	
10. North Coast	100%		100%	
11. Hunter	77.1%		82.1%	
12. South Coast	86.7%		92.7%	
<b>Unregulated</b>				
04A. North West	100%		100%	
06A. Central West	100%		100%	
07. Far West	100%	100%	100%	100%
08. Murray	100%		100%	
09. Murrumbidgee	100%		100%	
10. North Coast	100%		100%	
11. Hunter	100%		100%	
12. South Coast	93.2%		100%	
<b>Groundwater</b>				
13. Inland**	91.9%		92.6%	
14. Coastal	100%		100%	

\* FPH = floodplain harvesting. \*\* Relates to Murrumbidgee groundwater only.

## 1.9 Water consent transactions

Water consent transactions are fee for service activities that manage the issue, trade and amendment of water access licences, water allocations and water approvals. Under the *Water Management Act 2000* water access licences are tradable assets that include a right to a share of the available water in a specified water source.

### 1.9.1 Demand forecasts – water consent transactions

Water consent transactions numbers are strongly affected by climate and the availability of surface water. Based on previous experience of variation in the numbers of transactions, high, median and low forecasts have been provided to show the range in the annual number of water consent transactions that can occur. The proposed charges are based on the median transaction forecast.

### 1.9.2 Future costs – water consent transactions

This submission maintains the principle of recovering only direct costs for administering water consent transactions, with all associated overheads being recovered from water management charges. The cost of processing transactions is driven by:

- The number of hours needed to complete the transaction.
- The relevant average wage rate for the hours involved.
- Any additional expenditures where required, for example advertising or site inspection.

The total DPI Water staff time, as full-time equivalent numbers (FTEs), needed to process water consent transactions under the *Water Management Act 2000* and the associated costs that will occur for low, median and high transaction years has been calculated, and is shown in Table 1.16. The time and costs assume that 40 per cent of applications will be lodged online.

**Table 1.16: Forecast FTEs and costs for years with low, median and high transaction numbers**

Yearly transaction numbers	Low	Median	High
FTE	8.9	17.5	29
\$2015/16	\$1.03m	\$2.07m	\$3.44m

### 1.9.3 Proposed prices – water consent transactions

Proposed fees have been revised and the way transactions have been differentiated has been modified for the future price determination. The variable special assessment fee has been replaced with a fixed price. Dealings that involve change of location and those that do not (administrative dealings) are differentiated, as are approval amendments that relate to new development and those that do not (administrative approval amendments).

DPI Water also proposes to implement fee variations for the following particular circumstances: online lodgement discount, extension late-lodgement fee, Aboriginal water licence fee waiver, rounding of prices to the nearest dollar, and recovery of title register search costs.

### 1.9.4 Impacts of proposed fees – water consent transactions

Table 1.17 shows how the proposed fees compare to fees under the current determination for a range of cases. It can be seen that many have been reduced while some are increased. This is a result of the availability of more data on the actual time required and improved efficiency in handling transactions.

**Table 1.17: Proposed water consent fees**

	Current*	Proposed		Proposed with online lodgement	
	Fee	Fee	Change to current fee	Fee	Change to current fee
<b>New water access licences</b>					
Zero share	\$282.59	\$329.53	17%	\$295.03	10%
Controlled allocation	\$604.77	\$329.53	-46%	\$295.03	-49%
Other	\$604.77	\$329.53	-46%	\$295.03	-49%
<b>Water access licence dealings</b>					
Dealings – regulated rivers	\$411.46	\$329.53	-16%	\$295.03	-25%
Dealings – unregulated rivers and groundwater	*\$1,593.14	\$1,067.73	-36%	\$1,033.23	-35%
Dealings – unregulated rivers and groundwater with low risk	\$758.84	\$515.10	-35%	\$468.47	-38%
Dealings – administrative	\$758.84	\$242.81	-70%	\$208.31	-72%
<b>Water allocation assignments</b>					
Unregulated rivers and groundwater	\$254.64	\$286.17	18%	\$251.67	4%
<b>Approvals</b>					
New or amended works and/or use approval	*\$2,607.33	\$1,966.74	-28%	\$1,932.24	-26%
New or amended works and/or use approval – low risk	\$1,286.63	\$1,063.12	-21%	\$1,028.62	-20%
New basic rights bore approval	\$254.33	\$406.77	60%	\$372.27	54%
Amended approval – administrative	\$926.94	\$242.81	-74%	\$208.31	-76%
Extension of approval	\$169.56	\$245.81	45%	\$211.31	31%

\* The examples of current fees including special assessment are calculated for a licence dealing of 50 ML entitlement, and for a new works and use approval for 100 l/sec pump with 40 ha irrigation.

As shown, the majority of fees are substantially reduced, which will benefit many water users. Proposed increases in some fees will have a low financial impact due to their infrequency. Further reductions and offsets to increases can be obtained if the customer lodges their application online.

## 1.10 Water take measurement services

DPI Water provides the following water take measurement services:

- Government meter operation and maintenance services.
- Ancillary (or supporting) services related to the provision of government meters.
- Water take reading and assessment services.

### 1.10.1 Meter service charge

#### Demand forecast – meter service charge

The total number of government funded meters on unregulated rivers and groundwater is anticipated to peak at 1,230 (including meters in the Murray Darling Basin and on the coast) in late 2016, and decline slightly over the determination period to an estimated 1,200 in 2020.

### Forecast operating costs – meter service charge

The total annual cost forecast for the projected final number of 1,200 meters is \$588,000.

### Proposed charges – meter service charge

The proposed charges include differentiation based solely on where there is a clear cost difference, leading to two cases:

- Sites where readings are obtained by telemetry or agency officer site visits.
- Sites with no telemetry with customer meter reading and reporting.

Applying the WaterNSW 2016/17 Australian Competition and Consumer Commission (ACCC) regulated river charges for telemetered sites to the telemetered or agency read sites, and applying a pro-rata reduced version of the charge for non-telemetered sites with customer reading and reporting, would not achieve cost recovery. To achieve this, the charges need to be increased by 13 per cent. It is therefore proposed to align charges to the ACCC regulated river charges for 2016/17, followed by a full cost recovery charge from 2017/18 onwards. This approach achieves alignment of fees and also provides a pathway for increases over two years, which will result in full cost recovery commencing in 2017/18. The proposed meter service charges are summarised in Table 1.18.

**Table 1.18: Proposed meter service charges – (\$2015/16)**

Meter size (mm)	Telemetered or agency read sites		Non-telemetered sites with customer reading and reporting	
	Proposed charge 2016/17	Proposed charge 2017/18 onwards	Proposed charge 2016/17	Proposed charge 2017/18 onwards
50	\$396.77	\$446.84	\$286.34	\$328.59
80	\$396.90	\$447.00	\$286.48	\$328.74
100	\$397.66	\$447.85	\$287.24	\$329.60
150	\$418.28	\$471.08	\$307.86	\$352.82
200	\$440.69	\$496.31	\$330.27	\$378.06
250	\$446.34	\$502.67	\$335.92	\$384.42
300	\$448.33	\$504.91	\$337.91	\$386.66
350	\$460.85	\$519.02	\$350.43	\$400.77
400	\$512.97	\$577.72	\$402.55	\$459.46
450	\$621.04	\$699.42	\$510.62	\$581.17
500	\$630.41	\$709.98	\$519.99	\$591.72
600	\$664.43	\$748.29	\$554.01	\$630.04
700	\$678.05	\$763.63	\$567.63	\$645.38
750	\$679.72	\$765.51	\$569.30	\$647.26
800	\$717.41	\$807.96	\$606.99	\$689.71
900	\$771.45	\$868.81	\$661.03	\$750.56
1000	\$776.91	\$874.96	\$666.48	\$756.71

### Impacts of proposed charges – meter service charge

The impacts of the new charges in 2016/17 and 2017/18 for different sized meters are shown in Table 1.19 and Table 1.20 below. For non-telemetered sites it is assumed that customers accept



the option of customer reading and reporting meter readings. If DPI Water is required to provide the meter reading service, the water take reading/assessment charge will apply.

**Table 1.19: Impact of proposed meter service charges on installed government meters (\$2015/16) – telemetered or agency read sites**

Meter size (mm)	No of meters installed	Current price	Proposed 2016/17	Change from current	Proposed 2017/18	Change from current
50	136	\$403.61	\$396.77	-\$6.84	\$446.84	\$43.23
80	104	\$403.61	\$396.90	-\$6.71	\$447.00	\$43.39
100	222	\$403.61	\$397.66	-\$5.95	\$447.85	\$44.24
150	346	\$403.61	\$418.28	\$14.67	\$471.08	\$67.47
200	134	\$403.61	\$440.69	\$37.08	\$496.31	\$92.70
250	173	\$403.61	\$446.34	\$42.39	\$502.67	\$99.06
300	107	\$403.61	\$448.33	\$44.72	\$504.91	\$101.30
350	45	\$403.61	\$460.85	\$57.24	\$519.02	\$115.41
400	57	\$403.61	\$512.97	\$109.36	\$577.72	\$174.11
450	45	\$403.61	\$621.04	\$217.43	\$699.42	\$295.81
500	9	\$403.61	\$630.41	\$226.80	\$709.98	\$306.37
700	2	\$403.61	\$678.05	\$274.44	\$763.63	\$360.02
800	4	\$403.61	\$717.41	\$313.80	\$807.96	\$404.35

**Table 1.20: Impact of proposed meter service charges on installed government meters (\$2015/16) – non-telemetered sites with customer reading and reporting**

Meter size (mm)	No of meters installed	Current determination	Proposed 2016/17	Change from current	Proposed 2017/18	Change from current
50	29	\$309.36	\$286.34	-\$23.02	\$328.59	\$19.23
80	16	\$309.36	\$286.48	-\$22.88	\$328.74	\$19.38
100	48	\$309.36	\$287.24	-\$22.12	\$329.60	\$20.24
150	46	\$309.36	\$307.86	-\$1.50	\$352.82	\$43.46
200	9	\$309.36	\$330.27	\$20.91	\$378.06	\$68.70
250	1	\$309.36	\$335.92	\$26.56	\$384.42	\$75.06
300	1	\$309.36	\$337.91	\$28.55	\$386.66	\$77.30

The meter size-based charge distribution adapted from the ACCC determination reduces the impact on customers with small entitlements. Assuming typical entitlements and water take associated with the meters, the impact of the increase in meter service charges between those under the current determination and the proposed charges for 2017/18 would be no more than six per cent of the total bill for small meters, dropping to less than one per cent for large meters (because of the much higher entitlements and annual water charges).

### 1.10.2 Ancillary services for government meters

For government meters, the following supporting services are needed occasionally and are billed on a fee for service basis: meter laboratory verification, meter on-site validation and meter restart.

**Table 1.21: Proposed ancillary services for government meters charges (\$2015/16)**

Ancillary service	Proposed charge
Meter laboratory verification at request of customer (refundable if meter is shown to be outside required accuracy).	\$1,751.40
Meter in-situ validation charge – where a meter is moved or disturbed.	\$240.00
Fee to reset meter after suspension of maintenance for a year or more at customer request.	\$240.00 plus parts at cost

### 1.10.3 Water take reading/assessment service

DPI Water contracts WaterNSW to read meters in inland NSW on its behalf. WaterNSW officers visit the meters from one to four times a year to obtain meter readings, which are recorded into licence water allocation accounts. Officers also visit a number of sites where there is no meter and the take of water is determined using other means, which substitute for meter reading. All of these cases incur an annual charge for the service.

#### Proposed charges – water take reading/assessment

DPI Water proposes to pass on the costs it incurs from WaterNSW, with the proposed charge based on the costs outlined in the current service agreement with WaterNSW. This includes an allowance for the combined effect of a reduction in average visits per site per year and an increase in travel between sites. Overall the result is a reduction of seven per cent from the current charge. The proposed water take reading/assessment charge for meters is \$198 (\$2015/16).

## 2 Introduction and overview

This document is DPI Water's submission to IPART for its review of prices for the Water Administration Ministerial Corporation. It sets out how DPI Water has administered water planning and management services during the current determination period and how it proposes to do so in the future. It also outlines the proposed prices for its monopoly services to recover water users' share of the costs in the next pricing determination period.

Please note that table numbers in this submission may not add up to the total stated due to the rounding of figures.

### 2.1 Introduction

DPI Water is part of the NSW Department of Primary Industries. It provides government monopoly water planning and management services for NSW. By providing these services DPI Water aims to ensure available water is shared equitably, the integrity of water rights are protected, and water resources are managed in a way that is sustainable in the long term for both water users and water dependent ecosystems.

The *Water Management Act 2000* establishes a system of rights to water. This Act outlines three types of rights:

- Environmental water rights, which can be either established by a statutory water sharing plan (planned environmental water) without the need for a licence, or can be a licence that is committed to the environment.
- Basic landholder water rights, which are the rights to take water held by the occupant of land.
- Water access licences, which are the rights held by a person or entity to take water.

The *Water Management Act 2000* also establishes a system for the water approvals required for the construction and use of water supply works, such as pumps, dams and bores, and for the application of water to land.

This Act also puts in place a system of statutory water plans, which specify how water is shared between the different kinds of rights, and how licences and approvals are administered. DPI Water develops and periodically reviews statutory water plans, and manages water according to those plans.

The *Water Management Act 2000* seeks to provide for the sustainable and integrated management of the state's water sources. These aims fall broadly into three major categories:

- Environmental – ensuring integrated and ecologically sustainable water take, which protects, enhances and restores water sources and their ecosystems.
- Social – recognising and fostering the significant social benefits resulting from the sustainable and efficient use of water, and the role of the community in partnering with government to achieve this.
- Economic – recognising and fostering the significant economic benefits resulting from ensuring the sustainable, orderly, efficient and equitable sharing of water sources.

#### 2.1.1 DPI Water charges

Under the National Water Initiative (NWI) agreed in 2004 by the Council of Australian Governments (COAG), the state and territory governments made commitments to best practice water pricing. This included the recovery from water users of a share of the cost of the

management of water. This pricing aims to make sure there is sufficient revenue to allow efficient delivery of the required services, under the principle of impactor or user pays. It also aims to achieve pricing transparency in this cost recovery for water planning and management.

DPI Water has three types of charges: water management charges, water consent transaction fees, and charges for water take measurement services.

### **Water management charges**

Water management charges apply to all categories of water access licences and are paid by licence holders. These include irrigators, mines and other industries, environmental water holders, and local water utilities and major utilities supplying water to cities and towns. Water management charges recover the user share of the costs of water planning and management. These charges vary between water sources, reflecting localised variations in the nature and cost of services. There are three components of water management charges:

- Entitlement charge – an annual charge that applies to each water access licence with an entitlement charge tariff category.
- Water take (usage) charge – a charge that applies to the quantity of water recorded as taken in the period for a water access licence.
- Minimum annual charge – a charge that applies if the sum of the entitlement charge and usage charge for the water access licence is less than the amount of the minimum annual charge.

### **Water consent transaction charges**

Under the *Water Management Act 2000* a water user can trade water licences and water allocations, apply for new water approvals, and apply for amendments to water approvals. Consent transaction charges apply to these transactions on a fee for service basis. The charges recover the cost of processing the applications.

Consent transaction charges recover only the marginal costs of providing those services on a fee for service basis. Costs for establishing and maintaining the business processes and information systems underpinning these services, as well as other activities and general overhead costs, are recovered through the water management charges.

### **Water take measurement services charges**

Water users who have a government owned meter on their water supply work are billed a meter service charge. The meter service charge recovers the cost of operating and maintaining the meter on a fee for service basis. It does not apply to water users who operate and maintain their own meters.

Water take reading/assessment charges apply to water users on unregulated river and groundwater sources where meters are read, or water take is otherwise determined by DPI Water. This charge can apply to both government and privately owned meters where the meter is not telemetered and the licence holder does not self-report the water take measurement reading. These charges recover the cost of measuring water take.

## **2.2 Pricing water sources**

DPI Water allocates costs according to the pricing water source, which is a combination of water type (regulated river, unregulated river and groundwater) and the location (valley or area) of the water type. The following maps show the pricing water sources in NSW affected by this pricing submission.

Figure 2.1: Pricing water sources – regulated rivers

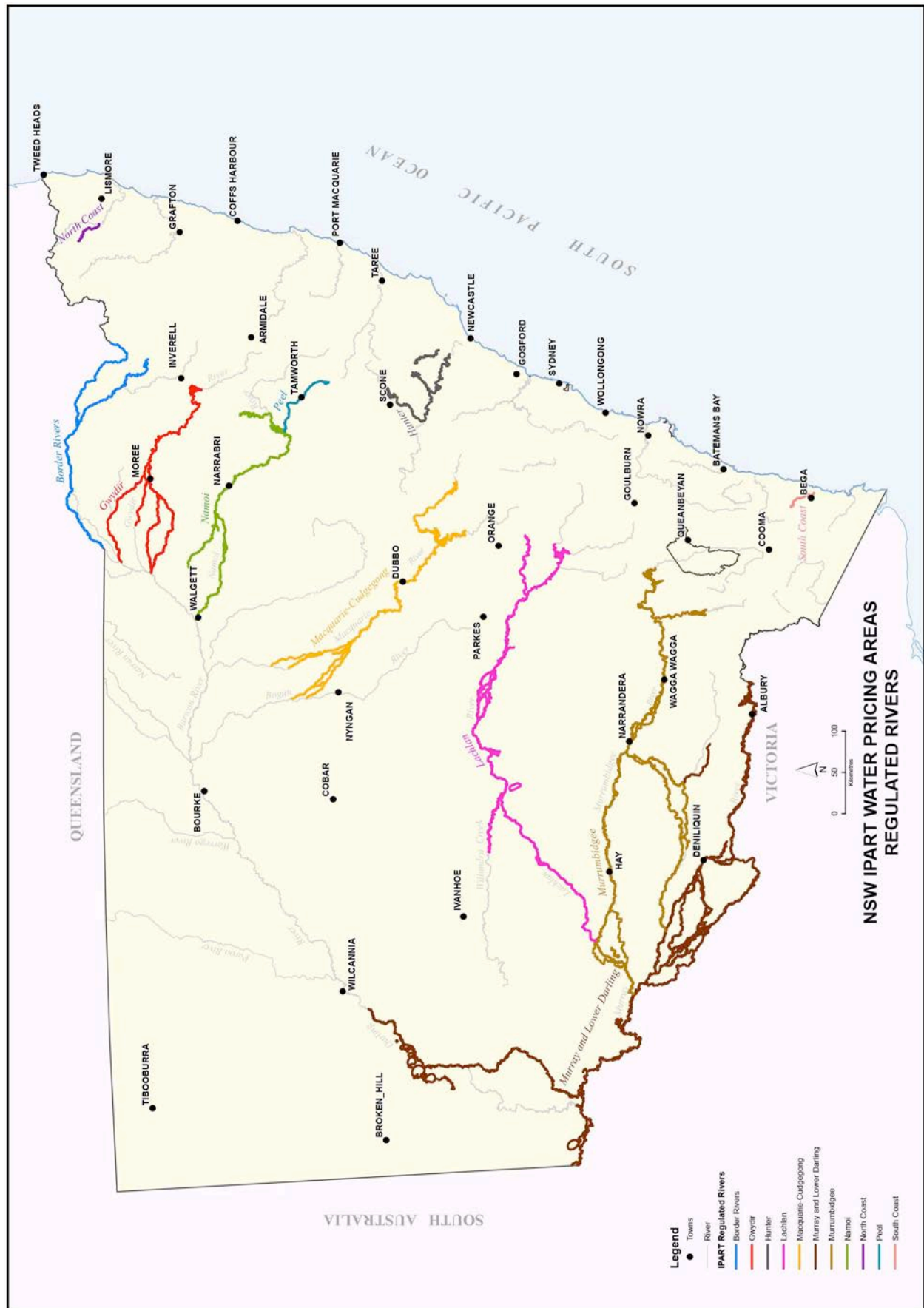




Figure 2.2: Pricing water sources – unregulated rivers

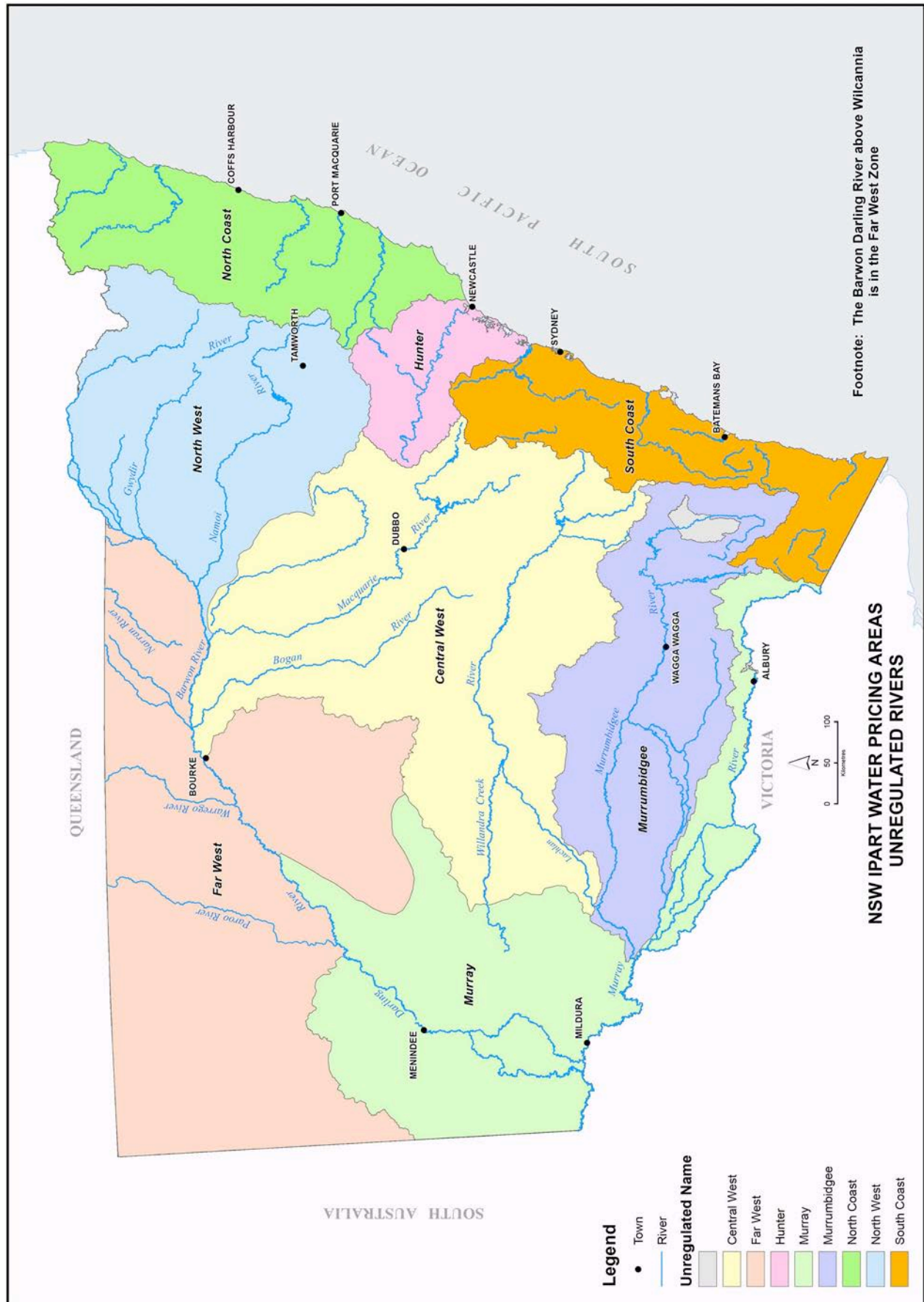
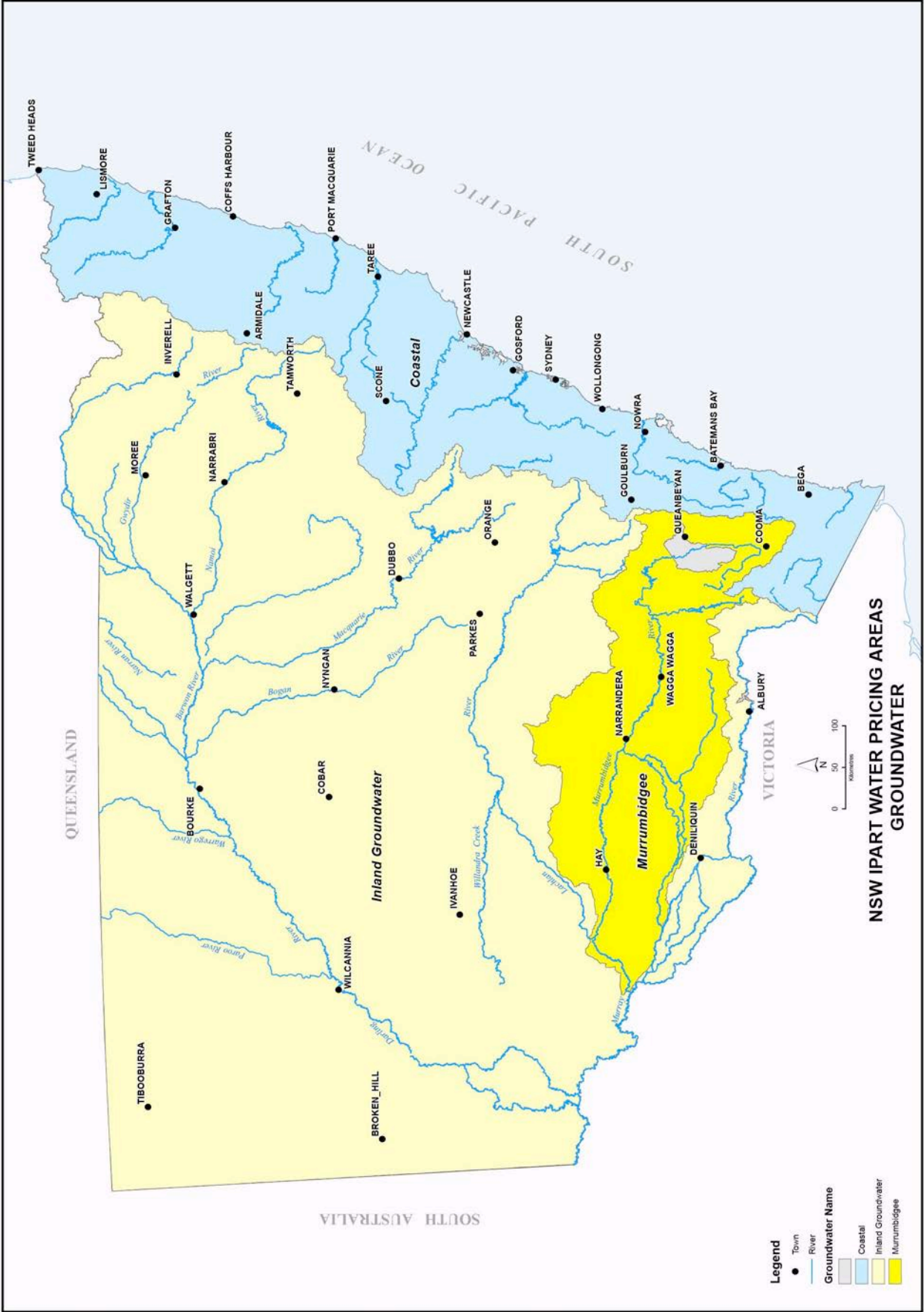


Figure 2.3: Pricing water sources – groundwater



## 2.3 Document structure

The contents of this submission are as follows:

### Part A – The agency’s role and functions

- Chapter 3 discusses the national and state institutional and legislative framework, and DPI Water’s role, functions and customer profiles.

### Part B – End of determination report

- Chapter 4 discusses how DPI Water performed against the forecast operating expenditure and targets set by the current determination, and the actions taken to improve performance during the current determination period.
- Chapter 5 discusses the revenue needs during the current determination period.

### Part C – Pricing submission

- Chapter 6 provides a map of new activity codes to the current codes, and discusses the strategies and actions planned for the delivery of services during the next determination period.
- Chapter 7 details DPI Water’s forecast expenditure and how it has been determined, and other business-wide matters that impact DPI Water’s revenue needs.
- Chapter 8 is the pricing submission for water management charges, and discusses proposed costs, revenue needs, and tariffs.
- Chapter 9 is the pricing submission for water consent transaction fees, and discusses proposed costs and tariffs.
- Chapter 10 is the pricing submission for metering services, and discusses proposed costs and tariffs.

## 2.4 Meeting IPART’s requirements

This submission meets IPART’s requirements as outlined in the following documents:

- IPART Guidelines for Water Agency Pricing Submissions (November 2014).
- The issues identified by IPART under ‘outstanding issues from IPART’s 2011 determination’ and ‘issues for this review’ in its letter to the DPI Water commissioner, dated 28 March 2014.
- Appendix F of IPART’s issues paper titled ‘Review of prices for the Water Administration Ministerial Corporation’, outlining ‘information that IPART is seeking from NOW (DPI Water)’.

Further detail on these requirements and their location in this submission is provided in Appendix M.

## 2.5 Terminology used in this submission

DPI Water is proposing changes in the terminology it uses for pricing and charging for water. The changes mainly relate to the definition and clarification of concepts for the measurement of water take.

DPI Water is proposing to continue the use of a 2-part tariff in the next determination period. To support the application of the 2-part tariff for pricing, and recovery of water planning and management costs from users, it is necessary to define and clarify the concept of measuring water take.

The change in terminology has resulted from DPI Water’s investigation of the costs and benefits of metering. It is also driven by the recognition that there are many methods by which water take may be measured and different circumstances where water take measurement may be applied. The investigation has been undertaken as part of the analysis required to support the development of a water take measurement strategy for DPI Water.



In this submission the following terms are introduced:

- The term 'water take' is used instead of 'usage'.
- The term 'water take measurement' is used instead of 'metering' or 'metered'.

These changes bring DPI Water's terminology in line with the terms 'take of water' in the *Water Act 2007 (Commonwealth)* and 'water taken' in the *NSW Water Management Act 2000*. The use of 'water take' instead of 'usage' also avoids confusion with the statutory meaning of 'use of water'.

'Water take measurement' describes a much broader concept than 'metering'. There are methods other than metering that can be used to assess and quantify water take. The term 'metering' restricts the understanding of what are suitable and allowed methods for measuring water take. This clarification will assist with the water take measurement strategy being developed by DPI Water, in consultation with water users and stakeholders.

Information regarding DPI Water's development of a water take measurement strategy is described in Section 4.4 of this submission. The future application of this strategy is described in Section 6.6. The revised definitions and rules regarding the application of water take measurement for the water management charge are referenced in Chapter 8.

In this submission, the names used for the two unregulated river pricing water sources containing multiple valleys are:

- North West – containing the unregulated rivers in the Border, Gwydir, Namoi and Peel valleys.
- Central West – containing the unregulated rivers in the Lachlan and Macquarie valleys.

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# Part A

## The agency's role and functions

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## 3 Operating context

This chapter outlines the national, interstate and state institutional and legislative framework, the roles and functions, and the customer profiles for DPI Water.

### 3.1 National and interstate institutional and legislative framework

The national and interstate institutional and legislative framework and requirements that apply to DPI Water are complex, as shown in Figure 3.1, and outlined below in more detail.

#### 3.1.1 Water Act 2007 (Commonwealth)

The primary federal legislation which impacts water sharing arrangements in NSW is the *Water Act 2007 (Commonwealth)*. This Act established the Murray Darling Basin Authority and Murray Darling Basin Agreement, which has been signed by NSW, Victoria, Queensland and South Australia (the Basin states). This agreement commits these states to implementing the Murray Darling Basin Plan (the Basin Plan). This involves amending water sharing plans (WSPs) for the Murray Darling Basin (the Basin) to meet accreditation requirements under the Basin Plan, and to develop water resource plans (WRPs) (see 3.1.3 for more information).

#### 3.1.2 National Water Initiative

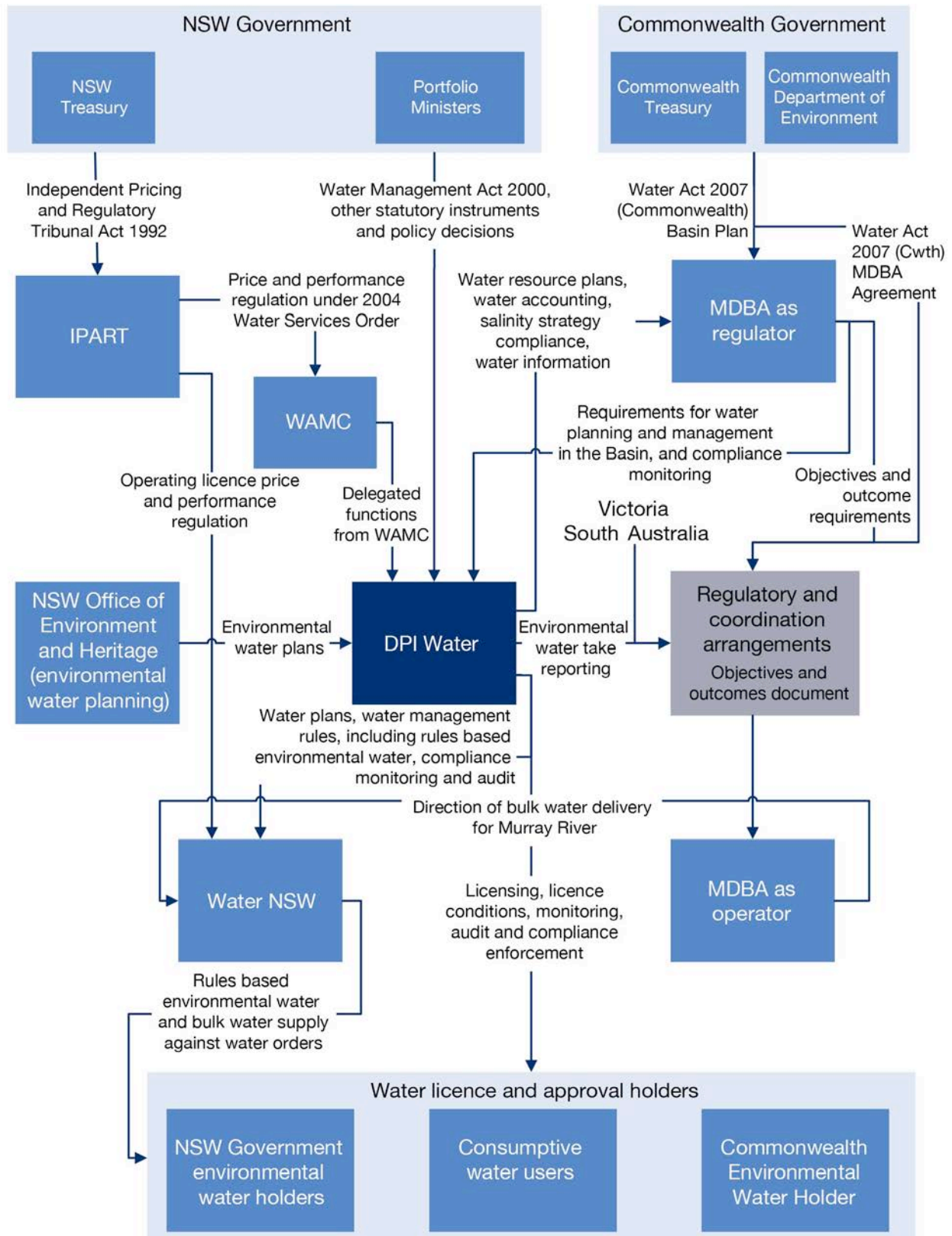
The Council of Australian Governments (COAG) signed an inter-governmental agreement on the National Water Initiative (NWI) in June 2004. The NWI is a shared commitment by governments to increase the efficiency of Australia's water use, leading to greater certainty for investment and productivity, for rural and urban communities, and for the environment.

Under the NWI governments are required to:

- Prepare water plans with provision for the environment.
- Deal with over-allocated or stressed water systems.
- Introduce registers of water rights and standards for water accounting.
- Expand the trade in water, including cross-border trade.
- Improve pricing for water storage and delivery.
- Meet and manage urban water demands.

The following specific areas of reform under the COAG Water Reforms Work Program must be accelerated:

- Develop: a national water market system; national metering standards; a framework for non-urban water metering; consistent planning guidelines and common water accounting processes across jurisdictions; a national hydrological modelling platform; a national groundwater strategic plan; a national wetlands policy statement; an aquatic ecosystems toolkit for identification, classification and management of high ecological value aquatic ecosystems; strategic directions for the national water quality management strategy (NWQMS); acid sulphate soils projects to develop national guidance material for assessment and management; national water planning report cards; boundary description guidelines and mapping specifications for Australian Ramsar sites; and Great Artesian Basin (GAB) coordinating committee operating protocols.
- Develop and implement: a best-practice risk- and outcomes-based compliance framework.

**Figure 3.1: DPI Water institutional and legislative context**

- Implement: the 2012–15 water-efficiency labelling standards strategic plan and cost recovery arrangements; and the national knowledge and research platform.
- Review: the national urban water planning and pricing principles; the groundwater protection guidelines; the Australia and New Zealand guidelines for freshwater and marine water quality; the GAB strategic management plan, and sustainability initiative and coordinating committee work plan.

DPI Water has been working on delivering these national level commitments, representing NSW, providing input to various working groups, and reporting on its progress with the implementation of NWI for the 2014 Triennial Assessment by the National Water Commission.

NSW received Commonwealth funding for implementing the national framework for compliance and enforcement systems for water resource management up to the end of 2015/16 financial year. Although the obligations and reporting requirements of this project will cease in June 2016, compliance activities consistent with the national framework will need to continue as part of DPI Water's regulation management.

In December 2013 COAG decided to abolish the Standing Council for Environment and Water. The COAG water reform work has continued under the newly constituted interim National Water Reform Committee (NWRC), which is chaired by the Commonwealth. The NWI commitments are now overseen by the Commonwealth Department of Environment, following the June 2015 decision by the Commonwealth to abolish the National Water Commission. The Productivity Commission will continue other additional statutory functions.

The NWRC's program of work includes:

- Develop: modules to the NWI policy guidelines on water planning and management to take into account the effects of climate change, and for engaging indigenous people in water planning; a national groundwater strategic framework; an action plan for further implementation; an aquatic ecosystems toolkit; a national hydrological modelling platform for a consistent national approach to eco-hydrological modelling; and a national wetlands policy statement.
- Continue: the implementation of the national framework for compliance and enforcement systems for water resource management, including a national framework for a judicial database; work on AUSRIVAS (bio-assessment tool); and implementation of the national framework for non-urban water metering.
- Review: NWI pricing principles; national urban water planning principles; groundwater protection guidelines; and the Australian and New Zealand guidelines for fresh and marine water quality.
- Coordinate Australia's implementation of the Ramsar Convention<sup>1</sup> on wetlands of international importance.
- Update the NWQMS.
- Implement: the national water knowledge and research platform; and the 2012-15 water-efficiency labelling standards strategic plan and cost recovery arrangements.

The National Framework for Non-urban Water Metering was established to deliver the objectives of the NWI for national metering standards, and to provide a nationally consistent framework for water metering and measurement. It outlines national standards for meter construction, installation and maintenance; the need to use certified installers, maintainers and validators; and the compliance, auditing and reporting requirements. The framework requires non-complying

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<sup>1</sup> The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

meters to be replaced by 1 July 2020, and all new meters installed after 30 June 2010 to be compliant.

### 3.1.3 Murray Darling Basin Authority

The Murray Darling Basin Authority (MDBA) was established under the *Water Act 2007 (Commonwealth)* as an independent, expertise-based statutory agency. The MDBA undertakes activities that support the sustainable and integrated management of the water resources of the Basin. The *Water Act 2007 (Commonwealth)* requires the MDBA to:

- Implement the Basin Plan.
- Construct and operate River Murray assets such as dams and weirs.
- Advise the Commonwealth Minister for water on the accreditation of state WRPs.
- Develop a water rights information service to facilitate water trading across the Basin.
- Manage water sharing between the states.
- Manage all aspects of Basin water resources, including water, organisms and other components and ecosystems that contribute to the physical state and environmental value of the Basin's water resources.
- Measure and monitor water resources in the Basin.
- Gather information and undertake research.
- Engage and educate the community in the management of the Basin's resources.

The MDBA carries out these functions directly and through the Basin states' government agencies in partnership with the Commonwealth Government.

While the Commonwealth is the sole funder for implementation of the Basin Plan, the MDBA undertakes a number of other activities that are cost shared with partner jurisdictions. Basin ministers, through the Murray Darling Basin Ministerial Council agree the amounts to be contributed by each partner government, and authorise this funding and the activities to be undertaken by approving the MDBA corporate plan. The MDBA then funds the joint activities to be undertaken by state constructing authorities and state agencies through the Joint Programs budget.

The NSW contribution to the MDBA Joint Programs is divided between bulk water storage and supply operations, and water resource management, based upon MDBA's forecast activities. WaterNSW recovers the bulk water storage and supply operations component through its price determinations, as appropriate. A proportion of the NSW contribution to the resource management component of the Joint Programs is recovered from water users through DPI Water's (WAMC's<sup>2</sup>) water management charge. The NSW Government provides the balance of the NSW contribution.

The *Water Act 2007 (Commonwealth)*, in relation to the Basin, provided additional service obligations to DPI Water's water management activities. These include regulatory framework development and implementation, information provision, consultation, reporting and negotiation with the Commonwealth.

The Basin Plan was developed in 2012, and outlines the rules that apply across the Basin. These include extraction limits, risk management strategies, water trading rules, management plans, and WSP requirements.

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<sup>2</sup> DPI Water carries out the delegated functions of WAMC. For more information on WAMC see section 3.2.3.



Each state is responsible for implementing and operationalising these rules in their WRPs. This includes the need for WSPs and the allocation of water on an annual basis to be consistent with these rules. For more information on WRPs and WSPs, see Section 6.3.

From 2019 all subsequent NSW WRPs must be consistent with the Basin Plan and accredited by the MDBA. These WRPs will be a key driver in implementing the Basin Plan at local and basin levels.

The Basin Plan sets limits on the quantities of surface and groundwater that can be taken from basin water resources for agriculture and other consumptive purposes. These limits are known as sustainable diversion limits (SDLs). WRPs have a fundamental role in ensuring SDLs operate from 2019 and beyond.

WRPs will set out arrangements to share water for consumptive use. They will establish rules to meet environmental and water quality objectives, and take account of potential and emerging risks to water resources. They will also set out the inter-related water management arrangements for each plan area, and therefore impose new obligations on NSW.

WRPs for NSW build on existing water planning arrangements, and can be made up of a range of documents, such as WSPs, state strategies and technical reports. They will:

- Provide for environmental watering to occur in a way that is consistent with the environmental watering plan and the basin-wide environmental watering strategy.
- Manage water quality outcomes in line with the water quality and salinity management plan.
- Manage some aspects of water trading.
- Manage the sustainability of resources, including recognising the local impacts of water take and accounting for water management.
- Outline indigenous values and uses of water, based on consultation.
- Manage risks to the resources.
- Manage potential and emerging threats to water resources, including extreme events.
- Manage the use of information and data, recognising compliance requirements.
- Monitor and review WRPs, using the best available data.

WRPs may impose requirements on the management of water interception, where water is captured for use before it reaches a river (for example by farm dams and plantation forests). However the plans do not directly regulate land use or land use planning.

NSW is required to complete 22 of the 36 WRPs across the Basin by 2019. To meet this timeframe DPI Water proposes to develop and commence these plans in three stages (2017, 2018 and 2019).

In 2009, the Commonwealth announced it would use water entitlements it had acquired on the Darling River and some tributaries to supply water to environmental assets on the Lower Murray, which is known as water shepherding. This required water to be allowed to flow down the river rather than being taken or diverted for other purposes. Because the NSW water management framework had never been designed to provide for this, new arrangements were required to be developed. The NSW and Commonwealth Governments signed a memorandum of understanding (MoU) on shepherding water for the environment in July 2010.

The MoU established two stages to developing water shepherding arrangements. Stage 1 outlined the preferred water shepherding approach and an implementation plan. This stage included consultation on the proposed arrangements in 2012. A number of briefing sessions were held with key stakeholders and 33 submissions were received, with a comprehensive summary of the issues and responses being published. Matters raised during consultation have informed areas for further investigation. This work will be undertaken as part of stage 2 of the

water shepherding project, which will be subject to a further agreement between the NSW and Commonwealth Governments, which is yet to be finalised.

DPI Water is not seeking to recover the costs in this determination of completing these extra activities required to establish or implement the WRPs. However, funding for implementing the Basin Plan after 2020 will need to be resolved in the next few years. DPI Water will, however, continue to prepare and implement WSPs in this determination period, and seek to recover costs incurred from licence holders.

#### **3.1.4 Dumaresq-Barwon Border Rivers Commission**

The Dumaresq-Barwon Border Rivers Commission (DBBRC) was created by the NSW and Queensland Governments to control and coordinate the water available from the rivers around the border of the two states, and is funded by these governments. Its main functions are to:

- Determine the anticipated quantity of water available from the system and notify the states of the amount of water they may divert and use.
- Control the construction, operation and maintenance of works under its remit.
- Report and make recommendations to the governments of NSW and Queensland regarding water sharing matters.
- Maintain surface and groundwater monitoring systems.

Under the intergovernmental agreement, DPI Water must comply with any direction from the DBBRC in relation to the construction of water related works and restrictions on water diversions.

NSW and Queensland provide equal funding to the DBBRC. DPI Water recovers a proportion of the NSW costs through the water management charge.

#### **3.1.5 Australian Competition and Consumer Commission and water charging, water market and water trading rules**

The Australian Competition and Consumer Commission (ACCC) provides advice to the responsible Commonwealth Minister on water market, trade and charge rules for storage and delivery, planning and management; provides advice for infrastructure operators within the Basin; and ensures its rulings are enforced.

The ACCC set termination fee rules for trade out of irrigation corporations, private irrigation districts and water trusts that commenced on 1 September 2009. DPI Water will be required to facilitate the implementation of these rules, which will have implications for compliance, metering and licensing activities.

Certain tasks have transitioned to the ACCC over the current determination period, and it now sets water market rules (from 1 January 2010); water charge rules for water planning and management (from 24 July 2010); water charge rules for infrastructure operators (from 12 January 2011); and water trading rules in the Basin Plan (from 1 July 2014).

In addition, under Part 4 of the *Water Act 2007 (Commonwealth)*, the ACCC is required to monitor and report on regulated water charges, transformation arrangements, and compliance with the water charge rules and water market rules.

The ACCC's annual reports provide information for the financial year and are developed using information provided by irrigation infrastructure operators, bulk water suppliers and relevant basin state government departments and water authorities. DPI Water contributes data and information to these reports, which provide information on:

- The ACCC's role in regulating and reporting on water charges and trade related arrangements in the Basin.

- The rural water supply chain in the Basin.
- Regulated water charges payable to the Basin states' government departments and water authorities, bulk water suppliers and irrigation infrastructure operators. The analysis highlights the charging arrangements of operators and longer-term trends in regulated charges.
- Transformation of irrigation rights (held by irrigators against an irrigation infrastructure operator) into water access entitlement that can be more widely traded.
- Termination of irrigators' right of access to an irrigation network.
- The compliance and enforcement activities carried out in the relevant year by the ACCC.

The ACCC does not have an enforcement role for water charges applying to water planning and management. As a result, the Commonwealth Minister made the Water Charge (Planning and Management Information) Rules 2010. These ensure the consistency, and outline the scope, of information available to water users and policy makers about existing (and new) water planning and management charges imposed by the Basin states, and the extent to which those charges recover the costs of these activities. DPI Water provides information for the ACCC's annual requests for information and any follow-up questions relating to water planning and management activities. This includes the requirement to convert the cost information required by IPART into the structure required by the ACCC.

### 3.1.6 Bureau of Meteorology and the collection of water information

The Bureau of Meteorology (BoM) collects and publishes national water information, including a national water account and periodic reporting on water resource status, usage and forecasts of future availability. The BoM is developing a national water information system that will collate information about river flows, groundwater levels, storage volumes, water quality, water use, groundwater entitlements and trade from more than 200 water sources across Australia. The BoM will also issue national standards for water information.

NSW has statutory obligations with regard to BoM activities under the *Water Act 2007 (Commonwealth)*. DPI Water represents NSW on the jurisdictional reference group on water information, which is chaired by the BoM, and on the national water accounting committee.

DPI Water provides information for, and the review of, the NSW component of the annual national water accounts, and also responds to other miscellaneous requests.

DPI Water, along with other named agencies in the *Water Act 2007 (Commonwealth)*, also provides a continuous electronic data feed to the BoM for the categories of information defined in this Act.

## 3.2 State institutional and legislative framework

The state institutional and legislative framework and requirements that apply to DPI Water are shown in Figure 3.1, and outlined below in more detail.

### 3.2.1 Water Management Act 2000 and Water Act 1912

The main responsibility of DPI Water is to administer the *Water Management Act 2000*, the objects of which are:

*...to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular:*

- (a) *to apply the principles of ecologically sustainable development, and*
- (b) *to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and*

- (c) *to recognise and foster the significant social and economic benefits to the State that result from the sustainable and efficient use of water, including:*
  - (i) *benefits to the environment, and*
  - (ii) *benefits to urban communities, agriculture, fisheries, industry and recreation, and*
  - (iii) *benefits to culture and heritage, and*
  - (iv) *benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water,*
- (d) *to recognise the role of the community, as a partner with government, in resolving issues relating to the management of water sources,*
- (e) *to provide for the orderly, efficient and equitable sharing of water from water sources,*
- (f) *to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna,*
- (g) *to encourage the sharing of responsibility for the sustainable and efficient use of water between the Government and water users,*
- (h) *to encourage best practice in the management and use of water.*<sup>3</sup>

DPI Water exercises the powers under the Act with the aim of achieving these objectives. This is a complex task as water resources are highly valued and there is competition for their use.

In NSW, people have been competing for water rights since the nineteenth century. This led to the *Water Rights Act 1896* and then the *Water Act 1912*. These Acts vested the rights to water in the Crown (that is, the government), and water licensing arrangements were put in place. These arrangements initially focused on addressing competition for water at a local level. However the expansion of development over time led to competition increasing to the river valley level, and eventually the whole-of-basin level in the inland. Resolving these competing interests has been complex and challenging. This is DPI Water's task, under the direction of the Minister, and using the powers provided in legislation.

The *Water Management Act 2000* supersedes the *Water Act 1912*. It was designed to provide a modern, holistic framework for water management that recognises the complexity of the competing interests, and includes the statutory recognition of the need for water in ensuring ecosystem health. It recognises the need to allocate and provide water for the environmental health of our rivers and groundwater systems, and for Aboriginal cultural purposes. It also provides licence holders with more secure access to water, and greater opportunities to trade water through the separation of water licences from land.

At the core of the *Water Management Act 2000* is a formal process for planning, which is designed to resolve competing interests for water at a whole-of-resource level, and provide optimal water access for human uses within sustainable limits. The planning process has an ongoing cycle of review that ensures continuous improvement and learning, and adapts to changing information and understanding, and community needs and values. The plans outline how operational management activities will achieve the objectives of the *Water Management Act 2000*. These operational management activities include water consent transactions, compliance, operational water sharing and accounting, environmental water management, and works and measures.

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<sup>3</sup> Water Management Act 2000, Section 3

The *Water Management Act 2000* establishes the framework for assessing and issuing water access licences and water supply work approvals. These are implemented through the Water Management (General) Regulation 2011, WSPs and policies. WSPs are statutory instruments that set out the manner in which water in specified water sources is to be shared over time. They define strategies and rules for managing water access licences, water approvals and water infrastructure that are aimed at supporting economic uses of water and providing for essential water needs, at the same time as maintaining the health and resilience of important water dependent ecosystems and functions. For water access licence holders, the statutory constraints on changing the plans provides confidence in the integrity of their licences, intended to support ongoing investment.

The *Water Management Act 2000* currently covers 95 per cent of NSW and the *Water Act 1912* covers the remaining five per cent. The *Water Act 1912* is slowly being phased out with the commencement of WSPs, which will result in the *Water Management Act 2000* becoming the sole legislation governing water management in NSW.

In 2012 the Aquifer Interference Policy was developed, which established the regulatory framework for assessing aquifer interference activities in regards to water licences and approvals. The NSW Government is currently assessing whether aquifer interference approvals will be implemented. See Chapter 9 for further information.

### 3.2.2 Water Management Amendment Act 2014

The *Water Management Amendment Act 2014* includes amendments and additions to sections of the *Water Management Act 2000*. In summary the amendments: outline how water users can capture and use water such as floodwater, rainfall and surface runoff; provide greater security for supplementary water entitlements; and improve water allocation trading.

### 3.2.3 Water Administration Ministerial Corporation (WAMC)

The Water Administration Ministerial Corporation (WAMC) is constituted under section 371 of the *Water Management Act 2000* and has certain functions under that Act and a number of other statutes, including the *Water Act 1912*, the *New South Wales-Queensland Border Rivers Act 1947* and the *Independent Pricing and Regulatory Tribunal Act 1992*. These functions can be broadly referred to as the supply of water, and water planning and management activities, which are designed to ensure the sustainability of the resource (water).

Under the Independent Pricing and Regulatory Tribunal (Water Services) Order 2004, WAMC's activities in relation to making available water, making available water supply facilities and the supply of water are monopoly services that must be price regulated by IPART.

WAMC does not have its own staff, but is authorised to use the staff of any government agency to perform its functions and achieve its objectives. To facilitate this, section 377 of the *Water Management Act 2000* authorises WAMC to delegate its functions. An instrument dated 1 November 2011 delegates the delivery of most of WAMC's services to DPI Water. All of WAMC's functions are referred to as DPI Water's functions in this submission.

### 3.2.4 Independent Pricing and Regulatory Tribunal Act 1992

Under the *Independent Pricing and Regulatory Tribunal Act 1992*, WAMC supplies the monopoly water resource management activities for which fees and charges are payable under the *Water Management Act 2000* and the *Water Act 1912*. As outlined above in 3.2.3, DPI Water provides the services on behalf of WAMC. IPART sets the maximum prices DPI Water can charge its customers for the monopoly services it delivers on behalf of WAMC.

This submission, while prepared by DPI Water, is officially a submission from WAMC, and the IPART determination is a determination in relation to WAMC.



### 3.2.5 WaterNSW

The State Water Corporation and the Sydney Catchment Authority were merged in 2015 to form WaterNSW. Its activities include delivering allocated water from regulated rivers to licensees and supplying water from unregulated rivers to Sydney Water. WaterNSW receives water orders from customers and coordinates releases from the dams to meet these orders. To deliver this allocated water to its customers, WaterNSW manages and maintains a portfolio of assets, including 20 dams and more than 280 weirs and regulators.

To ensure the efficient delivery of water to all customers, WaterNSW coordinates water ordering, collects water take figures, uses water operations modelling, and monitors river and dam levels to enable real-time management of regulated rivers. WaterNSW also plays a key role in coordinating and managing flood operations.

In general DPI Water is responsible for water planning and management, while WaterNSW is responsible for water operations.

### 3.2.6 NSW Office of Environment and Heritage

The NSW Office of Environment and Heritage (OEH) is the environmental water manager in NSW. It is responsible for the use of allocations for licensed environmental water. OEH is also responsible for management of environmental flow reference committees. These committees provide advice on the best use of environmental contingency allowances specified in plans.

### 3.2.7 NSW bulk water reform

In 2013 the NSW Government commissioned an independent bulk water review to investigate the potential for governance and functional reforms that could result in improved service delivery and better outcomes for customers.

Stage one of the NSW Bulk Water Reforms created WaterNSW through the merger of the State Water Corporation and the Sydney Catchment Authority. Implementation of further reforms, as announced by the Minister for Lands and Water on 3 July 2015, is subject to further consideration but is expected to result in substantial realignment of the functions currently delivered by DPI Water and WaterNSW.

The next stage of the review process may lead to changes in responsibility for various functions currently delivered by WaterNSW and DPI Water. At the time of preparing this submission no decisions had been made on this issue.

In advance of implementing these reforms DPI Water has prepared cost forecasts on a business as usual basis, but with a 'plug out/plug in' approach. It is proposed to IPART that funding of any functions that are transferred be managed through service agreements between DPI Water and WaterNSW, until prices can be adjusted in the next price determination for WaterNSW. This approach has been discussed and agreed with WaterNSW.

Careful consideration has been given to ensuring the planning and costing undertaken for DPI Water's preparation of this pricing submission took this into account

### 3.2.8 Agency restructuring

DPI Water was formerly known as the Office of Water. Its name was changed to DPI Water on 1 July 2015.

In 2011 DPI Water was transferred from the former Department of Environment, Climate Change and Water to the Department of Primary Industries, which was a division within the former NSW Trade and Investment cluster, and the Metropolitan Water Directorate was transferred to the former Department of Finance and Services. In July 2015 the Trade and Investment cluster became the Industry, Skills and Regional Development cluster (Industry cluster).

The Department of Primary Industries and DPI Water are currently undergoing a further restructure process due to the implementation of the *Government Sector Employment Act 2013*. This restructure process will not result in any change to its functions.

In 2014 the NSW Government brought back the Metropolitan Water Directorate from the Department of Finance, Services and Innovation into DPI Water, to align water policy, planning, regulation, monitoring and evaluation. The Metropolitan Water Directorate leads water planning for the greater Sydney and lower Hunter regions. The costs of the Metropolitan Water Directorate's water planning activities, and the possible recovery of these costs through the water management charge, is discussed in this submission.

### 3.3 DPI Water's role and functions

DPI Water is a division of the NSW Department of Primary Industries within the Industry cluster. DPI Water is responsible for surface and groundwater management in NSW and leads NSW Government representation at interstate and national water management forums. It is responsible for the policy, planning, regulation, monitoring and evaluation related to the state's surface and groundwater resources.

The legal right to take and use water through a water access licence is an extremely valuable asset, and is a property right separate from land that can be traded and used as collateral.

DPI Water's goal and challenge is to provide certainty for water users and to balance the water needs of farmers, towns and cities, industries and the environment in the face of increased competition for water and natural seasonal and climatic water variability, which can range from prolonged droughts to extensive flooding.

With customers spread across the state, DPI Water has a strong regional presence with staff located in 40 offices across NSW.

An overview of DPI Water's role, core business and its key responsibilities is provided below. DPI Water delivers these through its water management activities, as defined in the activity framework for its services for water planning and management. An overview of the current activities is provided in Chapter 4, and an overview of the future activities and the planned standards of service are provided in Chapter 6.

#### 3.3.1 What DPI Water does

DPI Water develops and implements policies, planning and water management arrangements for NSW.

Through the development and application of water regulation and policy, DPI Water has established a water management framework that underpins the productive and sustainable use of water.

DPI Water ensures the available surface and groundwater resources are shared equitably between towns and cities, the environment, irrigation, stock and domestic needs, and industry; and water entitlements and allocations are secure and tradeable. It works closely with major utilities and local water utilities, government agencies, industry, business, environmental agencies, and consumer and Aboriginal groups, as well as other stakeholders to:

- Ensure the sustainable allocation of water between communities, industry, farmers and the environment to meet NSW commitments under the NWI.
- Provide reliable, efficient, affordable and well-managed urban water supply and sewerage services to country towns and Aboriginal communities.
- Help drive the economic growth of rural communities through policies, and the provision of information that supports the productive use of water for agricultural activities and industry.

### 3.3.2 Core business

DPI Water's core business is to:

- Establish a system of water access that is secure and clear, while being responsive to changing water availability.
- Determine the annual volumes of water available for allocation to towns, farmers, various industries and the environment, particularly during times of severe water shortage.
- Ensure all users have access to secure water supplies in line with statute-based priorities.
- Develop statutory WSPs, which set the rules for sharing water between users, and between users and the environment, and set trade rules; and evaluate the outcomes of these plans.
- Regulate water users by monitoring and enforcing compliance with licence conditions and water legislation.
- Negotiate interstate and national water agreements to protect NSW interests and access to water.
- Regulate the extraction and use of water, and the trade of water entitlements and annual allocations.
- Provide technical and financial assistance to secure potable water supplies and to assist regional water utilities to meet appropriate standards of water supply and sewerage services.
- Monitor the quantity, quality and health of water resources and aquatic ecosystems, water extractions and use.
- Monitor compliance with water rules to safeguard access for legitimate users.
- Develop policies to provide access to and protect valuable groundwater sources.
- Review and assess proposed developments to ensure the state's water resources are protected.

The Metropolitan Water Directorate is part of DPI Water and its key functions are:

- Lead whole-of-government water planning for greater Sydney and the lower Hunter (a population of around five million people).
- Provide advice to the Minister for Lands and Water on urban water industry policy, regulation, competition and reform – including the current reform of the *Water Industry Competition Act 2006*.
- Deliver an integrated community engagement and social research program in support of water planning and policy.

### 3.3.3 Key responsibilities

DPI Water's key responsibilities are:

- Water planning.
- Implementation of interstate programs and agreements.
- Surface water and groundwater management.
- Water licensing and compliance management.
- Water information and modelling.
- Science, monitoring and evaluation.
- Policy development.
- Regulation of local water utilities.



### 3.3.4 National and cross-border issues

DPI Water is the state's water manager and the lead agency in NSW for implementing national and interstate agreements including:

- NWI.
- COAG water reforms.
- MDBA, including the cap on diversions, the basin salinity management strategy and the Basin Plan.
- NSW's responsibilities under the *Water Act 2007 (Commonwealth)*, including implementation of the Basin Plan and provision of water data to the BoM.
- GAB Sustainability Initiative.
- Border Rivers Agreement.
- Snowy River Agreement.
- Water Management Partnership Agreement, covering \$708 million in Commonwealth funded water infrastructure projects.
- Agreements under a National Compliance and Enforcement Framework, National Water Market System, and National Hydrological Modelling Platform.
- Water sharing with the Australian Capital Territory (ACT).

DPI Water leads NSW involvement in interstate water forums including the Murray Darling Basin Officials Committee, the Queensland–NSW Border Rivers Commission, Snowy Senior Officials Group, and the interim NWRC established to address national water management issues; and participates in many working groups.

### 3.3.5 Stakeholders and partners

Table 3.1 outlines the key DPI Water stakeholders and partners, and provides a summary of their regulatory and funding roles.

**Table 3.1: DPI Water stakeholders and partners**

Organisation	Regulatory role	Funding role
NSW Government	Provision of policy decisions and statutory instruments for water planning and management.	Funding of: <ul style="list-style-type: none"> <li>• Government share of DPI Water costs via Department of Industry, Skills and Regional Development and Department of Primary Industries.</li> <li>• Government share of NSW contributions to MDBA and DBBRC.</li> <li>• CSO for WaterNSW water delivery.</li> <li>• Funding for 'held' environmental water.</li> </ul>
Commonwealth Government	Provision of Commonwealth Water Act and Basin Plan for water planning and management.	Funding of: <ul style="list-style-type: none"> <li>• MDBA as regulator.</li> <li>• Basin projects and implementation of Basin Plan.</li> <li>• Commonwealth share of MDBA as operator costs.</li> </ul>

Organisation	Regulatory role	Funding role
Murray Darling Basin Authority (MDBA)	<ul style="list-style-type: none"> <li>Establishment and management of the Basin water-resource planning framework involving the setting of objectives, standards and planning requirements.</li> <li>Accreditation of DPI Water planning activities to comply with the Basin Plan requirements.</li> <li>Oversight of plan implementation, monitoring, audit, assessment and compliance management of Basin WRPs.</li> </ul>	<ul style="list-style-type: none"> <li>Administration of the Murray Darling Basin Agreement Joint Programs funds received from NSW, Victoria, South Australia and Commonwealth governments.</li> <li>Payment for direct and subcontract delivery of water resource management and bulk water delivery activities</li> </ul>
Water Administration Ministerial Corporation (WAMC)	The Water Administration Ministerial Corporation (WAMC) is the legal entity responsible for water management in NSW. DPI Water delivers its water planning and management activities.	The Corporation does not receive or remit funds. These functions are delegated.
DPI Water (part of DPI)	Water resource planning and management that involves creation of water plans, water management rules, the monitoring, assessment and revision of those plans, the issue and compliance assurance of water licences and approvals.	Administration of the payment of: <ul style="list-style-type: none"> <li>CSO for WaterNSW bulk water delivery costs.</li> <li>NSW contributions to MDBA and DBBRC.</li> </ul>
Australia Competition and Consumer Council (ACCC)	Regulation of prices in compliance with the <i>Competition and Consumer Act 2010</i> . Accreditation of IPART to regulate prices on behalf of ACCC for water delivery monopoly services in NSW areas of the Murray Darling Basin.	N/A
Independent Pricing and Regulatory Tribunal (IPART)	Regulation of prices, monitors quality and reliability of monopoly services and compliance with operating licences.	N/A
NSW Department of Primary Industries (DPI)	The NSW Government department (part of the Department of Industry, Skills and Regional Development), which is responsible for administering its sub-unit of DPI Water	<ul style="list-style-type: none"> <li>Management and administration of funding for DPI Water expenditure.</li> </ul>
WaterNSW	Operation of river systems and bulk water delivery in compliance with system objectives, water plans, licences and approval conditions, compliance management of water take.	<ul style="list-style-type: none"> <li>Billing and revenue collection for WaterNSW and DPI Water.</li> <li>Forwarding of revenue collected as an agent for DPI Water.</li> </ul>
Office of the Environment and Heritage (OEH)	Office within the Department of Planning responsible for water quality objectives, and management and operation of held environmental water.	<ul style="list-style-type: none"> <li>Payment of water management charges for environmental water.</li> </ul>
Commonwealth Environmental Water Holder (CEWH)	Management and operation of held environmental water.	<ul style="list-style-type: none"> <li>Payment of water management charges for environmental water applying to water access licences held by CEWH.</li> </ul>

DPI Water's other stakeholders include:

- Water users, including towns, irrigation, farming, mining and extractive industries, and environmental water holders.
- Licensed water users, including urban water utilities, power generation companies and irrigation corporations.
- All consumptive, cultural and environmental water users in NSW outside of the NSW metropolitan areas.

- Stakeholder and water industry groups.
- Relevant government agencies and non-government organisations in NSW, Victoria, South Australia, Queensland, ACT and the Commonwealth relating to the management of the Murray Darling Basin and Great Artesian Basin.
- All governments relating to the COAG water reforms.
- Local government.
- Research and educational institutions.

For information on customer profiles see Section 3.4.

### 3.4 Customer profiles

DPI Water's customers for monopoly services regulated by IPART are mostly holders of water licences subject to water management charges, and work approval holders with meters subject to meter service or meter reading charges. These customers have accounts with DPI Water for each of the licences and approvals the charges apply to. Water consent transaction fees are not recorded on customer accounts, as they are paid in advance when a customer submits a consent application.

DPI Water does not currently classify customers by industry. Customers as licence holders are from all sectors of the economy: agriculture, mining, manufacturing, utilities, infrastructure and government. The following customer analysis is based on 2013/14 billing information.

DPI Water has a total of 23,491 customers with accounts for water management charges and meter services.

The number of customers in each pricing water source is shown in Table 3.2. A customer may hold licences in several valleys or pricing water sources (one customer holds licences in 10 pricing water sources), so the total incidence of customers shown in this table is greater than the total number of customers.

**Table 3.2: Number of water management charge customers in each pricing water source (2013/14)**

Pricing water source	Regulated river	Unregulated river	Groundwater	Total
01. Border	136	266	–	402
02. Gwydir	203	156	–	359
03. Namoi	331	310	–	641
04. Peel	167	215	–	382
05. Lachlan	1,007	397	–	1,414
06. Macquarie	728	906	–	1,634
07. Far West	–	214	–	214
08. Murray	1,853	261	–	2,114
09. Murrumbidgee	927	637	–	1,564
10. North Coast	53	2,905	–	2,958
11. Hunter	847	2,321	–	3,168
12. South Coast	80	2,429	–	2,509
13. Inland	–	–	5,164	5,164
14. Coastal	–	–	3,302	3,302
<b>Total</b>	<b>6,332</b>	<b>11,017</b>	<b>8,466</b>	<b>25,815</b>

The majority (91 per cent) of DPI Water customers hold licences for only one water type, nine per cent of customers hold licences for two water types and less than one per cent of customers hold licences for all three water types. The total for regulated rivers includes customers holding 3,127 domestic and stock licences. There are currently 2,407 domestic and stock only unregulated river licences (*Water Management Act 2000* and *Water Act 1912*) that have not been billed under the current determination. Unregulated river domestic and stock licences will be billed from 2016/17 onwards (see Section 8.2.4). As groundwater areas are often independent of the surface water geography, the water types that overlap the most are either regulated rivers and groundwater, or unregulated rivers and groundwater, as shown in Table 3.3.

**Table 3.3: Customer involvement in multiple water types (per cent) (2013/14)**

Customers with licences in	Regulated river	Unregulated river	Groundwater	All customers
<b>One water type</b>				
Regulated river	82.9	–	–	22.0
Unregulated river	–	87.8	–	41.1
Groundwater	–	–	77.8	28.0
<b>Total one water type</b>	<b>82.9</b>	<b>87.8</b>	<b>77.8</b>	<b>91.1</b>
<b>Two water types</b>				
Regulated river and unregulated river	3.4	1.9	–	0.9
Regulated river and groundwater	12.0	–	8.9	3.2
Unregulated river and groundwater	–	9.3	12.1	4.4
<b>Total two water types</b>	<b>15.4</b>	<b>11.2</b>	<b>21.0</b>	<b>8.5</b>
<b>Three water types</b>				
Regulated river, unregulated river and groundwater	1.6	0.9	1.2	0.4
<b>Total three water types</b>	<b>1.6</b>	<b>0.9</b>	<b>1.2</b>	<b>0.4</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

DPI Water's customer account value profile is shown in Table 3.4. Thirty-four customers (0.1 per cent) have account values of greater than \$100,000 and provide 38 per cent of DPI Water's water management and meter services revenue. In comparison, 18,922 (81 per cent) of customers have account values of less than \$1,000 and provide 11 per cent of revenue.

**Table 3.4: Customer account value profile (2013/14)**

Customer value	Customers (number)	Customers (per cent)	Total revenue (per cent)
Minimum annual charge	7,771	33	2
\$106 – \$999	11,151	47	9
\$1,000 – \$9,999	4,067	17	26
\$10,000 – \$99,999	468	2	26
\$100,000 – \$999,999	30	0.1	17
\$1,000,000 and over	4	0.02	21
<b>Total</b>	<b>23,491</b>	<b>100</b>	<b>100</b>

## **Part B**

### End of determination report

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## 4 Performance of water planning and management services

Chapters 4 and 5 form the End of Determination Report for DPI Water. Chapter 4 discusses how DPI Water performed against the forecast operating expenditure and service targets set by the current determination, and actions taken by DPI Water to improve performance during the current determination period. Chapter 5 discusses the revenue needs for the current determination period.

This chapter provides an overview of the activities and costs of DPI Water during the four financial years 2011/12 to 2014/15, and the work DPI Water has done to improve services for its customers. Forecasts for 2015/16 will match activity forecast targets and achievements for 2014/15 unless explicitly stated. DPI Water's operating costs for water management activities are shown in Table 4.1 and Table 4.2.

Some of DPI Water's monopoly water planning and management activities are provided to other organisations on a fee for service basis, or funded by specific grants, such as those received from the Commonwealth Government. The costs shown in these tables are the cost of monopoly services net of grants and fees for service. The tables show the user and government shares of costs paid for by water management charges through licence holders and NSW Government contributions.

The NSW contributions to the Murray Darling Basin Authority (MDBA) and the Dumaresq-Barwon Border Rivers Commission (DBBRC) are shown as a separate item in the tables. The costs also exclude the cost of delivering meter service and meter reading services, and the incremental cost of consent transactions. The overhead cost for the consent transaction activities is included in the water management charge.

The 2011 pricing determination provided an allowance for Scenario 2 costs, which arose as a result of implementing the requirements of the *Water Act 2007 (Commonwealth)* and the Murray Darling Basin Plan (the Basin Plan). The Scenario 2 costs are for increases in core activities and reform activities not funded by the Commonwealth. In reporting its performance, DPI Water has included the allowance for Scenario 2 costs in IPART allowed costs for water management activities, which are shown in Table 4.1 and Table 4.2. While some tasks were specifically accounted for as Scenario 2 costs, much of the additional costs as a result of Scenario 2 were incremental requirements to existing activities. The incremental activities are referenced in the relevant activity reports below.

DPI Water has worked to improve all of its activities during the current determination. These improvements are noted in each activity description below as appropriate. During the determination period water management institutional arrangements have evolved within the state and across state boundaries. DPI Water has also addressed changing technology, emerging issues such as coal seam gas exploration and mining expansion, and the return of drought in many areas of the state.

Included in this chapter are the following areas IPART requires DPI Water to report on in its End of Determination Report:

- Water take measurement.
- Domestic and stock and other basic rights holders.
- Consultation with users about performance, expenditures and revenue.
- Billing systems and administration.
- Financial systems, including the ring-fencing of expenditures related to the monopoly services.
- Asset management and capital planning frameworks.
- Timely, accurate and complete annual reports, as sought by IPART.

#### 4.1 How DPI Water allocates costs to customers

During the current determination DPI Water has costed its services to 11 water management activity groups that contain a total of 36 activities. It then forecasts, records and reports on costs by these water management activities. As most of these activities are performed on a state-wide basis, costs are initially forecast for the whole state and then allocated to water sources (a combination of water type and location) using a primary cost driver for each water management activity.

For example, the primary driver for cost allocation for C01-01 surface water quantity monitoring is the number and location of hydrometric stations. Therefore the cost for this water management activity is allocated to each water source based on the proportion of hydrometric stations it has.

A full list of the cost drivers used for each water management activity in the current determination period is provided in Appendix B.

When IPART determined the price DPI Water's customers pay for water management activities, it determined the user share of each activity's cost, which is the percentage paid for by customers through the water management charge. This established how the cost of DPI Water's monopoly service activity is shared between water users (customers who are licence holders) and the NSW Government (on behalf of the community). This process aims to ensure water users and the community each pay a fair share of the efficient costs of water planning and management.

Table 4.1 shows DPI Water's actual operating cost for water management at activity group level, allocated by pricing area and water type using the cost drivers. The table shows the IPART allowed efficient cost as well as the user share of actual and allowed total cost for each pricing area.



**Table 4.1: DPI Water historical five-year total water management costs by pricing water source in \$'000s (CPI adjusted to 2015/16)**

Pricing Area	C01	C02	C03	C04	C05	C06	C07	C08	C09	C11	Total operating	Total user share	User share %
IPART	48,811	27,405	–	3,997	20,494	45,573	72,675	3,463	65,574	14,645	302,637	226,086	75%
Percentage of IPART allowed	22%	12%	0%	2%	9%	20%	32%	2%	29%	6%	134%	100%	–
<b>Regulated river</b>													
01. Border	522	–	-	82	727	835	1,536	–	847	295	4,844	3,405	70%
02. Gwydir	1,066	–	1	186	1,225	998	2,062	–	913	473	6,924	4,572	66%
03. Namoi	863	–	1	186	752	1,006	2,143	–	1,399	460	6,810	4,880	72%
04. Peel	264	–	-	68	196	154	335	–	492	128	1,636	1,220	75%
05. Lachlan	1,769	–	4	285	1,483	2,073	4,007	–	3,798	1,092	14,512	10,636	73%
06. Macquarie	1,997	–	2	302	1,493	1,680	3,274	–	2,922	768	12,439	8,853	71%
07. Far West	–	–	–	–	–	–	–	–	–	–	–	–	–
08. Murray	3,684	–	7	799	4,978	3,486	7,568	2,452	7,596	2,978	33,548	22,883	68%
09. Murrumbidgee	5,076	–	3	721	5,601	3,371	7,841	2,291	3,686	2,211	30,802	19,491	63%
10. North Coast	214	–	–	–	29	49	81	–	160	39	573	445	78%
11. Hunter	813	–	3	148	750	1,127	2,846	–	3,303	842	9,833	7,719	79%
12. South Coast	534	–	–	32	134	327	513	–	296	68	1,903	1,298	68%
<b>Regulated river total</b>	16,802	–	22	2,809	17,369	15,105	32,207	4,743	25,413	9,353	123,822	85,403	69%

Pricing Area	C01	C02	C03	C04	C05	C06	C07	C08	C09	C11	Total operating	Total user share	User share %
<b>Unregulated river</b>													
04A. North West	4,843	–	3	399	254	1,003	1,286	–	2,362	452	10,602	7,850	74%
06A. Central West	2,764	–	7	330	358	866	1,081	–	3,318	628	9,351	7,313	78%
07. Far West	3,020	–	37	336	425	2,265	2,392	–	541	265	9,281	6,219	67%
08. Murray	1,455	–	1	48	56	354	372	–	566	111	2,963	2,231	75%
09. Murrumbidgee	4,706	–	2	326	97	553	719	–	1,686	285	8,374	6,080	73%
10. North Coast	9,443	–	15	542	271	1,276	2,131	–	6,166	995	20,839	16,136	77%
11. Hunter	3,730	–	28	160	515	1,303	3,145	–	5,007	1,213	15,101	11,846	78%
12. South Coast	7,888	–	101	435	1,467	4,548	9,951	–	5,354	1,955	31,697	23,378	74%
<b>Unregulated river total</b>	<b>37,849</b>	<b>–</b>	<b>193</b>	<b>2,575</b>	<b>3,443</b>	<b>12,167</b>	<b>21,077</b>	<b>–</b>	<b>25,000</b>	<b>5,904</b>	<b>108,207</b>	<b>81,052</b>	<b>75%</b>
<b>Groundwater</b>													
13. Inland	–	21,101	1,642	237	4,860	4,280	8,855	–	10,792	2,963	54,731	14,356	26%
14. Coastal	–	2,758	9	111	492	1,273	3,644	–	6,708	1,195	16,189	49,737	307%
<b>Groundwater total</b>	<b>–</b>	<b>23,859</b>	<b>1,651</b>	<b>348</b>	<b>5,352</b>	<b>5,553</b>	<b>12,499</b>	<b>–</b>	<b>17,500</b>	<b>4,158</b>	<b>70,920</b>	<b>64,094</b>	<b>90%</b>
<b>DPI Water total revenue needs</b>	<b>54,651</b>	<b>23,859</b>	<b>1,866</b>	<b>5,731</b>	<b>26,163</b>	<b>32,826</b>	<b>65,783</b>	<b>4,743</b>	<b>67,913</b>	<b>19,415</b>	<b>302,949</b>	<b>230,549</b>	<b>76%</b>
Percentage of operating costs	18%	8%	1%	2%	9%	11%	22%	2%	22%	6%	100%	–	–
<b>Other revenue needs</b>													
MDBA	13,439	–	–	–	1,546	456	15,490	21,712	–	–	52,643	29,647	56%
DBBRC	1,999	–	–	–	–	–	–	–	–	–	1,999	1,347	67%
RAB revenue needs	–	–	–	–	–	–	–	–	–	–	3,099	2,169	–
<b>Grand total</b>	<b>70,088</b>	<b>23,859</b>	<b>1,866</b>	<b>5,731</b>	<b>27,709</b>	<b>33,281</b>	<b>81,273</b>	<b>26,456</b>	<b>67,913</b>	<b>19,415</b>	<b>360,691</b>	<b>263,712</b>	<b>73%</b>

**Table 4.2: DPI Water historical five-year water management activity costs by year in \$'000s (CPI adjusted to 2015/16)**

Activity code	Activity name	2012		2013		2014		2015		2016		Totals	
		Actual	IPART	Actual	IPART	Actual	IPART	Actual	IPART	Budget	IPART	Actual/ budget	IPART
C01-01	Surface water quantity monitoring	8,071	5,380	6,649	6,208	7,730	6,683	7,454	6,886	5,382	6,879	35,286	32,037
C01-02	Surface water quantity data management and reporting	1,502	1,003	1,178	1,158	792	1,242	768	1,277	1,085	1,276	5,325	5,955
C01-03	Surface water quality monitoring	1,904	1,212	1,660	1,279	1,416	1,317	1,540	1,390	1,903	1,388	8,423	6,586
C01-04	Surface water ecology, biology and algal monitoring	517	266	785	263	356	260	259	259	568	258	2,484	1,305
C01-05	Surface water quality and biological database management	578	257	341	305	402	335	610	354	499	353	2,429	1,604
C01-06	Surface water monitoring assets management	289	271	313	267	1	264	-	261	100	261	704	1,324
C02-01	Groundwater quantity monitoring	3,901	4,667	4,451	4,948	3,246	5,095	3,682	5,208	3,269	5,203	18,549	25,121
C02-02	Groundwater quality monitoring	86	140	94	138	134	137	184	137	125	137	623	690
C02-03	Groundwater database management	135	34	386	33	733	33	1,108	33	657	33	3,020	165
C02-04	Groundwater monitoring assets management	401	291	-	287	622	283	350	284	294	284	1,667	1,429
C03-02	Metering data management	70	-	164	-	612	-	748	-	272	-	1,866	-
C04-01	Water quality analysis	1,170	682	936	739	1,075	805	1,497	886	1,053	885	5,731	3,997
C05-01	Water sharing/water management modelling	2,969	3,035	3,992	3,127	3,416	3,142	3,244	3,164	2,666	3,161	16,287	15,630
C05-02	Resource assessments	103	88	29	88	-	88	-	88	369	88	501	440
C05-03	Water balances and accounting	1,118	431	1,151	428	596	425	690	423	527	422	4,081	2,130
C05-04	Groundwater modelling	1,394	465	1,316	460	788	455	978	458	818	457	5,293	2,295
C06-01	Systems operation and water availability management	962	1,557	943	1,268	2,801	1,273	3,361	1,405	3,388	1,403	11,456	6,907
C06-02	Trading and accounts management	70	1,537	279	1,523	142	1,510	1	1,509	337	1,508	828	7,587

Activity code	Activity name	2012		2013		2014		2015		2016		Totals	
		Actual	IPART	Actual	IPART	Actual	IPART	Actual	IPART	Budget	IPART	Actual/ budget	IPART
C06-03	Plan performance monitoring and reporting	3,497	4,502	2,848	4,546	2,242	4,948	2,309	4,702	2,834	4,697	13,730	23,395
C06-04	Blue-green algae management	604	399	505	413	518	422	467	433	502	433	2,597	2,100
C06-05	Environmental water management	1,823	1,110	739	1,114	779	1,115	510	1,123	364	1,122	4,216	5,584
C07-01	Water sharing plan development	9,656	3,490	9,308	3,566	6,815	3,675	8,622	3,738	8,093	3,734	42,493	18,203
C07-02	Operational planning	3,105	6,794	1,992	7,357	3,008	7,469	2,732	7,357	2,457	7,350	13,295	36,327
C07-03	Environmental water planning	1,374	1,113	1,400	1,174	531	1,292	336	1,237	706	1,236	4,347	6,051
C07-04	Cross-border and national commitments	1,504	1,522	784	1,548	1,262	1,569	700	1,579	880	1,577	5,131	7,795
C07-05	Water industry regulation	294	853	44	862	87	859	8	863	82	862	516	4,298
C08-01	River management works	938	704	1,092	695	1,150	687	587	689	978	689	4,743	3,463
C09-01	Licence administration	10,292	3,569	7,732	3,521	7,411	3,481	6,175	3,470	3,620	3,466	35,230	17,507
C09-02	Licence conversion and entitlement specification	1,795	1,521	1,489	1,501	1,536	1,483	2,197	1,479	1,748	1,477	8,765	7,462
C09-03	Compliance	3,849	5,436	3,932	5,824	3,805	5,960	4,275	6,137	4,014	6,131	19,875	29,488
C09-04	Water consents overhead	71	2,265	930	2,234	1,123	2,208	1,202	2,206	716	2,204	4,042	11,116
C11-01	Financial administration	3,312	2,269	3,320	2,239	-	2,213	1,886	2,074	1,506	2,072	10,025	10,868
C11-02	Business development	846	761	115	770	3,009	775	3,252	736	2,168	735	9,390	3,777
<b>Grand Total</b>		<b>68,201</b>	<b>57,624</b>	<b>60,896</b>	<b>59,884</b>	<b>58,138</b>	<b>61,503</b>	<b>61,733</b>	<b>61,843</b>	<b>53,982</b>	<b>61,783</b>	<b>302,949</b>	<b>302,637</b>
MDBA		20,717	19,307	14,442	17,570	1,354	19,571	6,038	19,571	10,091	19,571	52,643	95,589
DBBRC		416	471	406	443	394	447	385	447	399	446	1,999	2,254
RAB revenue needs		138	97	406	284	673	471	941	659	941	659	3,099	2,169
<b>Total</b>		<b>89,472</b>	<b>77,499</b>	<b>76,149</b>	<b>78,182</b>	<b>60,559</b>	<b>81,992</b>	<b>69,097</b>	<b>82,519</b>	<b>65,413</b>	<b>82,458</b>	<b>360,690</b>	<b>402,650</b>

## 4.2 The performance of DPI Water for 2011/12 – 2015/16

### 4.2.1 Standards of service – C01 Surface water monitoring

C-code	Activity group name	Summary of activity
<b>C01</b>	<b>Surface water monitoring</b>	The collection and provision of quantity, quality, algal and ecological information for monitoring, use, assessment and management of surface water.

Surface water monitoring data from hydrometric stations and water quality sampling underpins the delivery of many water management measures. These include, but are not limited to, water sharing plan (WSP) development, assessing WSP performance (for example, assessing low-flow and high-flow water sharing and access restrictions on unregulated river and regulated river operations), surface water modelling and monitoring impacts on water quality.

#### C01-01 Surface water quantity monitoring

DPI Water operates a network of 900 hydrometric stations to manage water resources in NSW. Water users contribute to the operation costs of 534 hydrometric stations through the water management charge, 17 of which are operated by Manly Hydraulics Laboratory. The other stations are paid for through service agreements with external organisations such as WaterNSW, the MDBA and the DBBRC.

The cost grouping of the 534 hydrometric stations costed to the surface water monitoring (C01-01) activity is as shown in Table 4.3. This is consistent with the forecast service level of 513 hydrometric stations.

**Table 4.3: Hydrometric stations costed to C01-01**

	Hydrometric stations
Stations fully costed to water management revenue needs	397
Stations partly costed to water management revenue needs	91
Manly Hydraulics Laboratory stations operated under service level agreement and costed to water management revenue needs	17
Stations operated under service level agreement with DBBRC and funded via state contributions to DBBRC	29
<b>Total</b>	<b>534</b>

The network of hydrometric stations is continually under review to improve performance and maintain the required service level. New stations have been installed where required and existing stations, which were either not required or have been replaced by the new stations, have been closed.

The provision of real-time data has increased, with 300 hydrometric stations being upgraded to automatically transmit flow data via telemetry-enabled technology. Surface water quantity information from these stations is made available to the public on the Our Water website and Water Live smartphone app, with a daily reliability of 98 per cent.

The hydrometric stations are visited for calibration and validation of collected data, and to ensure they are functioning correctly. The average number of visits per station per year has increased from 3.5 to 4.8 (not including repair and rebuild visits). Complex and higher risk stations are visited more often than the average, with 45 stations visited seven to 14 times each. This was to ensure the hydrometric stations functioned at critical times, such as when flow levels were close to the 'cease to pump' trigger level, or when field calibration was required. Other stations

required two or less visits per year due to the basic nature of the station and a lower need for the information it supplied.

Overall river flow data is now much more accessible, accurate and reliable than before. DPI Water has adopted the latest in spot river flow measurement technology, to allow improvements to the calibration curves that translate river heights into flow rates. The new acoustic-doppler meters allow spot river flow measurements, from very small to very large, to be measured with much greater frequency, accuracy and efficiency, and with increased safety for staff than the previously used propeller water velocity meters.

Expenditure on the hydrometric network has been above forecast. This is because of the work required to improve the standard of information collected and to sustain the required level of service, such as the provision of real-time information. It is also due to the need to implement the necessary repairs and maintenance required as a result of major flood events, the largest of which was in 2012. In addition, some of the costs for C01-06 were attributed to this activity.

### **C01-02 Surface water quantity data management and reporting**

DPI Water compiles, stores, manages and reports surface water quantity information to stakeholders and the general public. This information from hydrometric stations is available to the public on the Our Water website and Water Live smartphone app, with a daily reliability of 98 per cent. DPI Water monitors its network of stations, as well as 10 privately owned stations and 17 operated under a service level agreement with Manly Hydraulics Laboratory. Of the stations monitored, 799 are telemetered and the remainder are read manually. Active data collection is managed from DPI Water's hydrometric stations, as well as other stations operated by other entities such as WaterNSW. Data management occurs for 1,245 surface water sites.

Data from 93.6 per cent of telemetered sites is available on DPI Water's website from 9am the following day, which is slightly below the 95 per cent target. The hardware for this service is in the process of being updated in order to improve performance and meet the target.

Expenditure for this activity was slightly above forecast due to spending required for system upgrades and the transition to a new software platform.

### **C01-03 Surface water quality monitoring**

The surface water quality monitoring program captures information necessary to assess river condition and establish water quality trends through the assessment of physical and chemical water properties. This benefits water users, industry and the environment. Water quality data feeds into state and federal environment reporting and is used for water management in NSW, including assessment against water quality targets for irrigation, recreation and water-dependent ecosystems.

To monitor water quality and assess river conditions, DPI Water collected data from 125 water sampling sites a month. This level of activity includes testing to establish achievable quality standards for NSW water sources. The surface water quality monitoring activity exceeded the target to visit 114 sampling sites, which accounts for expenditure being above forecast for this activity. As an adaptive program responding to changing priorities and resources, the surface water quality monitoring program achieved an increase in the total number of sites sampled over the determination period. Introducing new sites and value-adding to other funded programs enabled this increased sampling to fill data gaps and better address changing government policies and community values.

Real-time dissolved oxygen and temperature monitoring was commenced to guide management of blackwater events<sup>1</sup> and the temperature suppression impacts of water storages. Studies of past blackwater events and the use of environmental releases indicated active management by dilution might successfully reduce the risk of occurrence. Remotely accessible dissolved oxygen sensors were installed at strategic hydrometric sites in the Riverina to provide an early warning system for dropping oxygen levels. The data will also greatly improve the modelling capabilities of blackwater events by providing better datasets and measuring river health.

These achievements exceed the set target, which also accounts for expenditure being above forecast for this activity.

#### **C01-04 Surface water ecology, biology and algal monitoring**

DPI Water provides surface water algal monitoring to detect potentially toxic algal blooms. Algal monitoring includes design, sample collection, algal identification and data archiving to meet the required standards.

In 2014/15 DPI Water monitored 73 sites for algal bloom occurrence, which is consistent with the forecast service level. Monitoring data collected from these sites informed management decisions and priorities for combating these occurrences. These actions met the target service level.

DPI Water partnered with the CSIRO to develop an early warning system for harmful algal blooms. The project uses satellite and other remote sensing technology to provide an inexpensive, timely and automated way of identifying and tracking potentially hazardous blue-green algal blooms in NSW lakes, rivers and reservoirs. The remote sensing data will be backed up by additional data collected by other instruments that detect blue-green algae, the viewing of the water in-situ and a laboratory verification program. The project has five stages, and the first two have been completed, involving developing the means for rapid bloom identification using both near surface sensing instruments and satellite sensing.

As part of the cost of this activity the River Condition Index (RCI) was developed. The RCI is a tool that incorporates spatial and remote sensing data for hydrology, geomorphology, riparian vegetation, biota, environmental disturbance and water quality to determine the river condition of a given area or water source.

Expenditure was above forecast for this activity as the RCI was significantly enhanced, including the collection and input of large amounts of data, to provide the fundamental information required for risk analyses undertaken as part of water sharing plan development.

#### **C01-05 Surface water quality and biological database management**

DPI Water has developed a database (KWiQM), which meets the target of creating one central database for project data. The database contains 100 per cent of the collected water quality data and 50 per cent of the collected biological data. This exceeds the target of storing 80 per cent of project data.

Database information informs the management and assessment of waterway health through inputs into the RCI and risk assessments. Having all biological and water quality data in one database enables quick and easy interrogation of current and archived data to discern trends in water quality and waterway health.

Ongoing work is being invested in updating the database to improve functionality, as well as to ensure quality control of input data. This accounts for expenditure being above forecast.

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<sup>1</sup> Blackwater is a natural event and can occur during times of drought or floods, where decaying organic matter uses oxygen and darkens the water. This places stress on fish and other aquatic biota, potentially leading to fish kills.



### C01-06 Surface water quantity monitoring assets management

This activity involves the maintenance and operation of vehicles used for monitoring hydrometric stations, gauging and monitoring equipment such as sensors and loggers installed at hydrometric stations, associated safety equipment and laptops. It ensures the longevity of these assets and also that equipment upgrades achieve the maximum benefits for customers and stakeholders.

DPI Water achieved the target of upgrading five per cent of its hydrometric stations annually. Expenditure recorded in this activity was below forecast as some of the costs for this activity were attributed to C01-01.

#### 4.2.2 Standards of service – C02 Groundwater monitoring

C-code	Activity group name	Summary of activity
<b>C02</b>	<b>Groundwater monitoring</b>	The collection and provision of water level, pressure, flow and quality information for monitoring, use, assessment and management of groundwater.

Groundwater data derived from monitoring bores underpins the delivery of many water management measures such as groundwater system modelling for WSP development, assessing performance of water management against WSP requirements, implementation of WSP rules (such as triggers for restrictions on access to protect the water source and dependent ecosystems), and assessment of applications for new water supply works and trades to identify and manage potential impacts.

#### C02-01 Groundwater quantity monitoring

Monitoring enables groundwater's long-term health and availability to be managed through balancing the competing needs of the environment and water users. Collected groundwater data is essential for the ongoing assessment of groundwater licences and trade. The scrutiny and rules applied by DPI Water allow appropriate developments to occur without adversely impacting groundwater resources.

DPI Water operates a network of 4,440 groundwater monitoring bore sites of which 2,868 are currently active. The network provides data on key information such as groundwater trends and resource availability, which feeds into assessing groundwater impacts and implementing WSP rules.

DPI Water has adopted a risk-based approach to collecting groundwater data. The frequency of monitoring is tailored to the specific monitoring requirements of an individual water source, including the data requirement for modelling and monitoring purposes, groundwater source sensitivity to extraction, and the remoteness of the site.

Data is collected more frequently from areas under greater risk of aquifer stress. The number of visits ranges from every two weeks, through monthly, bi-monthly, quarterly, six-monthly, annually and every two years (mostly Great Artesian Basin bores). About 77 per cent of active bores are manually monitored, and 23 per cent are telemetered to automatically collect data. Of the instrumented bores 63 per cent have data loggers that have to be manually downloaded requiring site visits, and 37 per cent are fitted with telemetry requiring maintenance and calibration visits. In 2014/15 DPI Water collected groundwater level (standing water level) data from all active sites.

DPI Water also increased the spatial coverage of the monitoring bore network to address the arising issues of coal seam gas extraction and mining. This included the drilling of new groundwater bores in the Gunnedah to Spring Ridge, Broke-Bulga and Merriwa areas between August 2013 and August 2014. In 2015/16 up to 10 monitoring bores will be drilled, with the total number depending on geological conditions.

Work recently commenced on collating and publishing essential information on critical groundwater basins, starting with the Gunnedah, Gloucester and Clarence-Moreton basins. Water profiles, water availability information, and information on where industries such as agriculture and mining draw their water from is gathered. The volume allocated will be made available, using web-based monitoring and visualisation software. Once complete these information systems will also provide real-time data from bores across these basins, which can be used as an 'early warning' system to quickly identify threats to water resources, tackle the causes and prevent future problems. The information systems will draw on DPI Water's state-of-the-art computer modelling in conjunction with groundwater monitoring data and expert analysis.

Expenditure was below forecast for this activity due to reduced staff availability. Costs have also moved from this activity to C02-02, C02-03 and C02-04, to more accurately reflect the resourcing needs of each activity, which was originally incorrectly estimated.

### **C02-02 Groundwater quality monitoring**

Water quality analysis, particularly salinity measurement, is used to monitor the long-term trends in the physical and chemical properties of groundwater, which informs groundwater management decisions. DPI Water collected water quality data from 495 bore pipes representing more than 10 per cent of active sites in 2013/14, which met the target for sampling confidence.

The number of bore pipes monitored varies annually, depending on the number and priority of information needs. DPI Water has adopted a risk-based approach to reflect the changing needs for water quality analysis. This approach determines groundwater systems that are highly vulnerable to water quality degradation, or systems where the consequences of water quality degradation are high (that is, town water supplies). Requests for water quality sampling are also factored into the sampling regime.

Groundwater quality monitoring occurs in the larger inland alluvium systems such as the mid- and lower-Murrumbidgee water sources, as well as in some coastal areas such as Stuarts Point and the Hunter Basin. For example, in the Stuarts Point groundwater source quality monitoring determines the influence of extraction on the groundwater-seawater interface, which impacts on town water supplies for the Nambucca area.

Collected water quality data is stored in DPI Water's database (KiWQM). Groundwater quality data is needed to meet reporting requirements to the Bureau of Meteorology (BoM), MDBA, state of catchment reports, catchment action plans and salinity management plans.

Expenditure is above forecast for this activity. This can be attributed to the work health and safety requirement to have two staff members travel to isolated sampling sites, and the reallocation of resources from C02-01 to this activity.

### **C02-03 Groundwater database management**

This activity includes corporate database administration, systems maintenance and upgrades, and quality control and assurance.

DPI Water continually updated groundwater level and water quality data on its website to ensure the most current information was made available to the public. In this determination period DPI Water established clear reporting parameters and protocols for extracting data to improve information consistency for reporting to IPART and to meet other reporting requirements.

In 2014/15, 83 per cent of sites were subject to data management, which is below the target of 100 per cent. Data management performance was affected by the need to divert resources to develop the Water Live smartphone app, deliver required major system upgrades, transfer data into one central database, and supply data for major requests related to coal basin monitoring.

Expenditure was slightly above forecast due to resources being needed to deal with collateral data management issues such as transitioning to a new software platform, and the reallocation of resources from C02-01 to this activity.

#### **C02-04 Groundwater monitoring assets**

This activity involves the maintenance and operation of structures, vehicles and equipment such as sensors, loggers and laptops used for installing monitoring bores. This ensures the longevity of these assets through equipment upgrades.

In 2014/15 DPI Water achieved the annual target of upgrading three per cent of its hydrometric stations. Expenditure is above forecast because some of the tasks required for this activity were included in the forecast for C02-01.

### **4.2.3 Standards of service – C03 Surface and groundwater metering**

<b>C-code</b>	<b>Activity group name</b>	<b>Summary of activity</b>
<b>C03</b>	<b>Surface and groundwater metering</b>	The provision of metering services, the collection of water take data and its recording on water allocation accounts for unregulated and groundwater licence holders.

Measurement of water take is essential to protecting the integrity and value of water rights, which include water access licences, basic landholder water rights and environmental water rights. It allows DPI Water to know if water licence holders unintentionally or deliberately take more than their water allocation, which would result in less water being available and failure to achieve the intended water sharing as outlined in water sharing plans. This is particularly important for water sources where competition for water is high and take of water is close to its limit. Meters are commonly used to measure the take of water.

The metering of water take is under review as part of a wider water take measurement strategy, which is being developed to provide clarity and consistency to water users in regards to the water take measurement devices required.

#### **C03-01 Metering operations – user owned**

Surface and groundwater metering measures the volume of water taken by water users, as recorded through a metering device. Where the meter is owned and maintained by the water user, it may be read by government staff or, in some cases, read and self-reported to DPI Water by the water user. Where government staff read the meter the cost is recovered through a meter reading charge.

DPI Water has a service level agreement with WaterNSW to carry out unregulated river and groundwater meter readings in specified areas on its behalf. WaterNSW performs this service itself for regulated river water take.

In 2013/14, 3,002 meters were read, with a meter reading fee charged. There were other site visits that identified no meter installed or no viable supply work infrastructure. The level of meter readings is currently under review in line with the development of the water take measurement strategy. Meter reading is undertaken on a fee for service basis, which means only water users who received the service paid for the service.

#### **C03-02 Metering data management**

DPI Water is responsible for collecting, storing and managing data on water take from unregulated river and groundwater sources. Where WaterNSW reads meters under a service agreement, WaterNSW enters the readings in the water allocation accounting system. Where water users self-report (for example major utilities and local water utilities), and for telemetered meters, DPI Water stores the readings.

Water take measurement data was collected and stored for a total of 3.4 million shares (or 70 per cent) of unregulated river and groundwater licensed entitlement.

### **C03-03 Metering operations – government owned**

Over the first four years of the current determination, 417 new government owned unregulated river and groundwater meters were installed in the Murray and Murrumbidgee valleys. Another 301 unregulated river and groundwater meters are planned to be installed by the end of the current period. Before the start of the current pricing determination, 817 government owned meters had been installed in the Hawkesbury Nepean and Bega Bemboka valleys in 2010/11. Following negotiations with water users, the program to install government owned meters was substantially reduced in the northern valleys of the Murray Darling Basin and Commonwealth funding for the program was decreased accordingly. A few meters have been removed at the request of approval holders as a result of their surrender of water licences or termination of a work approval. Also, as a result of the review of metering policy occurring in 2015/16 (see Section 4.3), the maintenance of some meters that have not proved to be cost effective may be discontinued prior to the end of the current determination. The total number of government meters installed is less than the original target of 4,000.

### **4.2.4 Standards of service – C04 Surface water and groundwater analysis**

<b>C-code</b>	<b>Activity group name</b>	<b>Summary of activity</b>
<b>C04</b>	<b>Surface and groundwater analysis</b>	The provision of testing and analytical services for water quality programs.

#### **C04-01 Water quality analysis**

The surface and groundwater analysis service benefits water users by assessing the effectiveness of different water management options (for example the effectiveness of thermal curtains in combating cold water pollution), detecting waterways with poorer water quality requiring remedial attention, and enabling the early detection of toxic algal blooms.

In 2013/14 DPI Water undertook 31,100 chemical tests, which was just below the annual target of 32,100. It also undertook 2,200 algal tests, which was below the target of 3,500 a year. In 2014/15 the number of chemical tests increased to 32,500, and the number of algal tests increased to 2,400.

The number of algal tests is determined by algal bloom occurrence and therefore test numbers vary from year to year depending on the incidence of potentially toxic algal blooms. It should be noted the target measure of 3,500 tests incorrectly includes externally funded algal analyses for WaterNSW, which are no longer carried out by DPI Water. Excluding the 1,300 algal analyses per annum conducted for WaterNSW results in a revised target measure of 2,200 algal tests, which was met or exceeded in both 2013/14 and 2014/15.

In 2014 DPI Water moved its laboratory facility from Wolli Creek to Wollongbar. This state-of-the-art NATA (National Association of Testing Authorities) accredited laboratory meets industry and national quality standards. The analytical service was not affected by the relocation.

The cost of water quality testing and analysis was above forecast for the four years because of an under-estimate of the resourcing required to deliver the planned service.

#### 4.2.5 Standards of service – C05 Water modelling and impact assessment

C-code	Activity group name	Summary of activity
<b>C05</b>	<b>Water modelling and impact assessment</b>	The development and use of water system models for water sharing and water management applications, resource impact and water balance assessments, and annual general purpose water resource accounts for NSW water sources.

DPI Water uses water models of managed river and groundwater systems to understand how they will respond to water management rules and the extraction of water. These models are used to predict and assess the likely impacts of different water management scenarios on water balance through long-term variable climate sequences. Water models underpin development of annual and long-term extraction limits established under water sharing plans, and are used to assess the compliance of NSW with interstate water sharing agreements. Their value is dependent on how well they are able to simulate the complex behaviour of water systems over time. Therefore DPI Water has continued to invest in improving and expanding its set of water system models.

##### C05-01 Water sharing/water management modelling

Water models undergo a process of continuous improvement to maintain their fitness for purpose and to enable them to meet stakeholder needs and expectations. This activity focuses on developing, upgrading and maintaining water models in the Integrated Quantity and Quality Model (IQQM) platform. The IQQM has been DPI Water's main surface water modelling platform for the past two decades. It has been configured to provide detailed models for all managed river systems in the Murray Darling Basin and most of the major managed river systems along the coast.

Spatial data and user surveys have been analysed as source input data for on-farm development to ensure current infrastructure is being correctly represented. Models for climate and runoff projections up to 2030 have been completed for NSW, meeting the service level target. Particular attention has been focused on modelling river responses to different management strategies and climate scenarios in the Gwydir and Lachlan valleys to inform policy and planning processes.

In response to the Basin Plan, DPI Water has started developing water resource planning models on the eWater Source platform, in order to transition from IQQM prior to the 2019 Basin Plan timeline. eWater Source is a national water modelling platform endorsed by COAG, and its ownership is shared across NSW, Queensland, South Australia, Victoria and the Commonwealth. This arrangement has created a modelling community of practice and a shared software capability, which supports building and continually upgrading models using innovative and consistent approaches. The development of eWater Source models will increase the capability to model contemporary requirements, including environmental watering and more sophisticated irrigated farm operations, and will be important in getting water resource planning models accredited for the Basin Plan.

Expenditure was above forecast for this activity due to the extra models produced, which were above the service level target.

##### C05-02 Resource assessments

Costs and required achievements for this activity were progressively moved to water balances accounting (C05-03) during the reporting period, which accounts for expenditure being below forecast.

##### C05-03 Water balances accounting

The primary responsibility of this activity is to create surface water models that test specific water policy and planning scenarios to compare the resulting water balance changes, and to ensure these changes comply with statutory water management arrangements.



These scenarios include, but are not limited to, monitoring that growth in use complies with WSP plan limits, auditing compliance with the Murray Darling Basin cap on diversions, developing new rules for WSP replacements, assessing licence transfers for projects under the sustaining the Basin program, and assessing various sustainable diversion limit (SDL) offset projects. This met the target of developing surface water models capable of being used in the 2014 WSP reviews.

Modelling outputs were also used to inform strategic water planning for Infrastructure NSW, in order to assess where water infrastructure would be best targeted to address water availability and reliability issues.

DPI Water has been progressively developing, refining and publishing online annual general purpose water accounting reports for major NSW water sources during the determination period. These reports are developed under the Australian water accounting standard (adapted from financial accounting principles), and provide a contextual setting, description of key system attributes (available water determinations, water trades, environmental water use), and detailed information on water resource balances and changes to these between years. These accounts and their data inputs are being improved to become the source of a single point of truth to support multiple reporting requirements for Basin Plan requirements.

There has been a significant increase in the work required under water balances accounting to prepare for and respond to Basin Plan requirements. General purpose water accounts are produced for the inland valleys using a consistent approach and following the standards set by the BoM.

As a result of the increased requirements, including Basin Plan related tasks, and costs being moved from resource assessments (C05-02) to this activity, expenditure is more than double the forecast.

#### **C05-04 Groundwater modelling**

DPI Water regional groundwater models are updated annually to enable ongoing assessment of aquifer behaviour in response to WSP extraction limits. The target of developing groundwater models for use in the 2016 WSP reviews has been met.

The groundwater modelling resources developed, updated and, if required, re-calibrated large numbers of regional models. While the level of resourcing required exceeds the target, it is a reflection of the ongoing need and demand for such data.

In 2014/15 DPI Water developed a model that encompasses the NSW and Queensland border rivers groundwater systems. It also completed significant rebuilds of the Upper Namoi, Gwydir, Lower Murray and Upper Lachlan regional groundwater models. Expert analysis has also been provided for the Great Artesian Basin and groundwater monitoring network reviews.

Increasing demand on groundwater sources has required an increased allocation of resources to this activity. A dedicated manager for groundwater modelling commenced in mid-2014. This position provides increased coordinated and strategic direction to improve efficiency in developing groundwater models. Groundwater modelling now includes rigorous model updates, which focus on improving model development to meet customer needs, reporting and scenario documentation.

Technical modelling advice ensures potential impacts on existing stakeholders and the environment are identified. Groundwater models are also used in assessing diversion compliance with established WSP and Basin Plan limits.

To support salinity management in the Murray, DPI Water has recently reviewed and improved groundwater models specifically designed for the management of groundwater salt interception schemes at Buronga and Mallee Cliffs. A modelling tool for assessing the salinity impact of changing irrigation development along the river has also been developed and used.

To accommodate all the groundwater modelling requests required to address WSP development and replacement issues, expenditure on groundwater modelling has been more than double the expenditure forecast.

#### 4.2.6 Standards of service – C06 Water management implementation

C-code	Activity group name	Summary of activity
<b>C06</b>	<b>Water management implementation</b>	The implementation of procedures and systems to deliver the provisions of water management plans, blue-green algal management and environmental water management, the assessment and evaluation of these plans, and compliance with long-term extraction limits.

As part of its legislative obligation in implementing WSPs, DPI Water is required to put plan rules into effect. This activity provides feedback on the practicality and efficiency of implementing WSP rules to feed into the WSP development and replacement process in order to better refine rules in the future. Ecological assessments and evaluations are also undertaken to inform how plan rules should be written and reformed to achieve better environmental and cultural outcomes while maintaining water user rights and security.

##### C06-01 System operation and water availability management

DPI Water took a risk-based approach to the development of methods, procedures and tools to operationalise the WSPs. The procedures and tools were developed collaboratively with WaterNSW. Prioritisation was given to flood management from 2011 to 2013, followed by drought management in 2014 and 2015.

Implementation project plans are being developed for each functional area of DPI Water. This has been found to be more cost effective than the previous process of developing a comprehensive implementation program for each WSP. In the current determination period DPI Water audited operational implementation of all WSPs that had been in place for five years. These audits identified issues that need to be addressed to make the plans more efficient in their operation.

DPI Water undertakes annual compliance reviews of WaterNSW's water supply work approvals. These approvals provide the rules to direct the operation of dams and weirs across NSW. Available water determinations were published on time and are accessible online through DPI Water's website within five days of any change, meeting the target service level.

This activity includes availability management of groundwater resources. For example DPI Water worked with landholders to reduce water loss in the NSW Great Artesian Basin by capping and piping free-flowing artesian bores between 1999 and 2014 when the program concluded. While the works program was separately funded, the strategy and implementation requirements for the program were provided under this activity. The program gave landholders in the Great Artesian Basin financial incentives to cap and pipe their bores. This increases artesian pressure, while establishing reliable and efficient supplies of good quality water to properties across north west NSW.

There are 1,400 bores tapping the Great Artesian Basin. Natural pressure across the Basin has significantly declined due to overuse. Nearly half the bores have stopped flowing, reducing landholder access to water. In the past, up to 95 per cent of artesian water was being wasted through evaporation and seepage. The cap and pipe the bores program has improved water supply by saving 78,500 ML of water every year, controlling 398 free flowing bores, improving water quality for stock and domestic use, increasing artesian pressure, increasing access to water, and reducing salt discharge by 62,800 tonnes every year.

DPI Water undertakes low inflow and critical water planning and management during drought. Substantial parts of NSW experienced less than expected rainfall and very high temperatures over the summer of 2014/15 leading to many areas of the state being drought declared.



Consequently, planning commenced to manage lower than average reserves of water in the state's storages. In particular water in the Darling River and tributaries, and in Menindee Lakes, has been managed since February 2014 to ensure water supply for Broken Hill and for rural residents who rely on this water. Critical water supply contingency measures have been implemented, such as increasing the efficiency of the Menindee Lakes and reducing evaporation losses, to ensure essential water needs can be met. Affected water users have been kept updated through consultation and publication of regular status updates.

Expenditure was above forecast for this activity because of extra activities undertaken for the Basin Plan and to implement contingency measures to manage the return of drought conditions in northern and western NSW since 2013/14 and 2014/15. Work associated with the Basin Plan has been cost recovered through Commonwealth funding supplied by the MDBA. Also some costs from trading and account management (C06-02) were costed to this activity.

### **C06-02 Trading and account management**

Under this activity DPI Water administers water trading (dealing) rules and water source constraints as determined by the WSP, to ensure water market integrity. This includes administering water source changes, implementing conversion factors and controlled allocation processes, overseeing water allocation accounting, and managing compliance with plan rules including the application of spill and carryover rules to water accounts.

This activity also includes the management of local extraction impacts in groundwater sources by developing and implementing assessment procedures and groundwater trading rules.

Expenditure recorded directly to this activity has been significantly below forecast as the costs of some trading management and water regulation tasks have been attributed to other activities (C06-01 and C09-01) to reflect more accurately where the work is being done.

### **C06-03 Plan performance monitoring and reporting**

DPI Water developed five ecological monitoring plans to evaluate the effectiveness of WSP rules. The results and conclusions from these plans were then extrapolated to enable the evaluation of similar WSPs. A spatial tool called the River Condition Index (RCI) and remote sensing technologies were used to identify similar WSPs. Therefore, although the number of comprehensive ecological plans was reduced, DPI Water met the target requirements by extrapolation of results for evaluation of similar WSPs or through specific monitoring projects.

This activity provided a significant contribution for the WSP audits outlined in C06-01 and C07-01. In 2014/15 DPI Water commenced evaluation of WSPs that had reached full term. The evaluations examine whether the plans have been effective and efficient in achieving their objectives. The approach to evaluations has been evolving to make use of a broader range of available information. An evaluation method and template has been developed. Evaluations involve the collection of multiple lines of evidence from subject matter experts to assess whether plans are appropriate, effective and efficient. The evaluations will be fully implemented over the next determination period.

Decisions on rules for water access and trade in water sharing plans for unregulated rivers have been substantially informed by the assessment of any risk water take might impose on the particular river ecosystem by altering the flow regime. In the past the method of assessing risk has been to only consider impact of low flows and the overall ecological values of the river that are reliant on flows. While this is a reasonable approach for the coast, DPI Water has developed a more refined approach to risk assessment in the inland. This takes better account of the part of the flow regime most likely to be affected by take (for example low flows, freshes, overbank flows, etc) and the dependence of identified ecological values on the affected part of the flow regime.

For example, where the identified ecological values are dependent on overbank flows, but water take is largely from low flows, the restrictions on trade and access to low flows can be less than previously assumed without risking the values. Work on risk assessments has largely been costed to C07-01 water planning development. The new risk assessment has been completed for Namoi and is underway in other inland areas, and will be ready to inform the WSP replacements as required for the Basin Plan.

To help the public understand the nature of water resources, water resource issues, plans, management arrangements and available information in their area, DPI Water prepared and published catchment snapshots covering all of NSW, and detailed catchment description reports for the major inland regulated river valleys. The detailed reports include information such as climate, hydrology, environmental aspects, land use, water resources, regulating structures and water resource management.

Additionally, DPI Water produced a series of annual summary reports on several of the state's major inland groundwater sources which described water sharing plan provisions, available water determinations, account management rules, up to date information on access licences, water account information, trade statistics, groundwater extractions and water levels.

Expenditure was below forecast as resources were diverted to WSP development (C07-01) with a focus on assessing WSP rules.

#### **C06-04 Blue green algal management**

DPI Water oversees the algal risk management framework for fresh and marine waters. It has a coordination and knowledge-broker role that includes coordinating the state algal advisory group and the technical advisory group, as well as the regional algal coordinating committees (RACCs). Over the determination period all nine regional risk management plans for blue-green algal management were updated.

Algal bloom risks were mitigated through the delivery of weekly reports to the RACCs and implementation of the algal risk management plan. In peak season, red-alert events were declared when algal cell numbers exceeded guideline thresholds. Mitigation strategies included issuing algal alerts to the public via the algal information line and website updates, and increasing awareness of risks by providing training for management authorities. These achievements met targets.

Expenditure was above forecast, but some reduction has been made in the annual cost for this activity over the determination period.

#### **C06-05 Environmental water management**

The four major areas of this activity are outlined below. Overall expenditure was slightly above forecast for this activity due to resources being required for Basin Plan negotiation, and implementation tasks associated with this activity.

**Management of planned, adaptive and held environmental water in regulated rivers** – The majority of regulated river WSPs establish environmental water allowance accounts, which set aside environmental water through rules addressing the crediting, debiting and release of water. These account rules inform water supply work approval conditions for the operation of WaterNSW's dams. DPI Water is responsible for monitoring the effectiveness of these approval conditions for environmental purposes, and ensuring WaterNSW and the Office of Environment and Heritage comply with these conditions. DPI Water also helps develop annual release strategies for the major regulated valleys, via the environmental water advisory groups. These strategies integrate the use of planned, held and adaptive environmental water.

**Snowy Water initiative** – Between 2002 and 2014/15, a four-stage environmental water release strategy has been delivered to the Snowy River increased flows, downstream of Jindabyne. Annual release strategies have been developed for the reporting period, and stage four includes the use of hydrological-scaling to maximise the environmental benefits. Reporting on environmental outcomes for the four stages is ongoing. An annual release strategy has been developed and implemented for the Snowy Rivers Increased Flows, and for the Snowy Montane Rivers Increased Flows.

**The Living Murray Initiative** – The Living Murray Initiative has seen the integrated watering of iconic sites in NSW and across the length of the Murray River during the reporting period. In NSW, the commissioning of infrastructure in the Koondrook-Perricoota Forest occurred. The flood enhancement project delivered environmental water to over 17,000 hectares of forest. NSW, the Commonwealth, Victoria and South Australia jointly manage the Living Murray Initiative. The Living Murray Initiative portfolio is now managed by the inter-jurisdictional Southern Connected Environmental Water Committee to ensure the best use of the environmental water.

**Basin Plan implementation** – DPI Water is a member of the MDBA environmental water working group, and has had significant input to the development of the Basin-wide environmental watering strategy. The strategy is now publicly available and provides direction for the development of long-term environmental water plans. DPI Water has commenced scientific studies in the Border Rivers to support the northern Basin science review. This science review will assist with the review of the sustainable diversion limits (SDL) in the northern Basin.

#### 4.2.7 Standards of service – C07 Water management planning

C-code	Activity group name	Summary of activity
C07	Water management planning	The development, review, amendment, and extension or replacement of water management plans, regional planning and management strategies, and development of the water planning and regulatory framework.

DPI Water develops statutory WSPs and water policies which set the rules for how water is shared and accessed in NSW. WSPs provide rules for sharing available water between water users and the environment. These rules protect the fundamental environmental health of the water source by ensuring water take is sustainable in the long term and they also impose rules to protect cultural assets. They provide clarity and security for water users over when and how much water will be available.

The introduction of a WSP to a water source for the first time transitions water licences under the *Water Act 1912* into water access licences managed under the *Water Management Act 2000*, most of which are continuing or perpetual, and have a title separate from the land. This enables better water trading opportunities.

In this activity overall costs were attributed to WSP development rather than operational planning (C07-02) and water industry regulation (C07-05), as the integrated nature of planning activities made it difficult to delineate.

##### C07-01 Water sharing plan development

DPI Water increased the number of completed WSPs from 45 to 70, including five plans that commenced in 2010/11 financial year. This is behind the planned timeline due to the development of amendments to existing WSPs taking priority and resources.

During the determination period, 17 inland WSPs commenced, which in addition to the WSPs already commenced results in 100 per cent of the Murray Darling Basin being covered. Twelve remaining coastal WSPs are due to be finalised in 2015/16. Eight of these have been publicly exhibited and are being finalised for approval to commence. A further four will go on public exhibition in late 2015 to early 2016.

After this, WSPs will have been completed for all water sources in NSW allowing the transition of licences to the *Water Management Act 2000* to be completed. The completion of water sharing planning across NSW is a unique achievement in Australia and the world. NSW will be the only jurisdiction where the rights and rules for sharing water, tailored to local circumstances, and clearly specified in an enforceable statutory instrument, will exist for all groundwater and surface water resources. Commercial rights to surface and groundwater will be defined in perpetual, tradeable rights (water access licences) that are unbundled from works and land. All of the water sources in the state will be managed by a formal, structured process for ongoing periodic review of plans to allow for continual learning, improvement and adaptation to changing circumstances. All of these achievements are unique to NSW.

**Table 4.4: Water sharing plan status**

	Prior to 2010/11	2010/11	2011/12 – 2014/15	2015/16 (forecast)
Commenced	45	5 (4 coastal and 1 inland)	20 (3 coastal and 17 inland)	12
Reviewed and replaced	-	-	-	7
Reviewed and merged	-	-	-	24
<b>Total WSPs implemented</b>	<b>45</b>	<b>50</b>	<b>70</b>	<b>58</b>

Under section 44 of the *Water Management Act 2000*, all WSPs must be audited every five years to identify which provisions have not been implemented, or only partially implemented, and why. In 2013 a second round of audits was completed of plans grouped into regulated, unregulated and groundwater (and also segmented into coastal and inland) for the period of 2009 to 2012. Progress was made in addressing metering and information gaps. Many of the identified issues required changes to the plans themselves.

DPI Water has also evaluated water sharing plans that commenced in 2006. Evaluations differ from audits as they are focused on assessing whether the WSP met its objectives, whereas audits assess WSP implementation.

The NSW Government has extended the deadline for reviewing and amending the 31 existing WSPs to July 2016. While this does not meet the original target of reviewing the plans by 2014, the extension was necessary to respond appropriately to issues identified by water users. DPI Water has been holding meetings and discussions with stakeholders during 2014 and 2015 to ensure issues are properly understood and adequately addressed.

Identifying and understanding the groundwater dependent ecosystems (GDEs) is important for ongoing improvement in water planning and management, ensuring risks to them can be properly considered and managed. DPI Water has been investing in a state-wide program of mapping potential GDEs and high value GDEs (a subset of potential GDEs). This has been completed for the coast (except the greater metropolitan area), and the Namoi valley, and has commenced in the Lachlan valley. Identifying GDEs is the first step in implementing distance rules, which are WSP rules applied to water supply work approvals where applicable.

DPI Water is leading a whole-of-government review of the 2010 Metropolitan Water Plan (MWP). This plan outlines the measures and policies that ensure water security and reliability for greater Sydney. The review is investigating potential environmental flow (e-flow) approaches to improve the health of the Hawkesbury-Nepean river system, to meet previous government commitments to include a decision on e-flows from Warragamba Dam in the next iteration of the MWP. Warragamba Dam is the last of the Sydney water supply dams to be assessed for variable e-flows. The benefits of enhanced e-flows include reductions in floating weeds, increased fish

abundance, increased length of the river suitable for swimming, improved boating conditions, and improved ecosystem health.

DPI Water is assessing options to identify the optimal rules and the strength of the business case for making variable releases from Warragamba Dam. The assessment takes account of the costs of dam modification works and the loss of water from greater Sydney's biggest storage dam; and long term social, economic and environmental benefits and costs for the Hawkesbury-Nepean river system.

The business case for e-flows is sensitive to changes in the demand and supply forecasts, with the cost of lost water supply yield being the factor that ultimately drives the net cost differential between the options and their economic viability. Introducing e-flows will reduce available supply and generate extra costs over time due to one or more of the following:

- Triggering more frequent pumping from the Shoalhaven and operation of the Sydney Desalination Plant.
- Increasing the duration of restrictions.
- Bringing forward investment in the next supply augmentation.

Major hydro economic modelling and analysis is required to properly assess these costs and inform the e-flows economic appraisal. Further analysis is required to assess the change, if any, to e-flow benefits and costs if the government decides to change full supply level of Warragamba Dam and/or raise the dam wall as an outcome of the separate review into flood management for the Hawkesbury-Nepean valley. These projects are continuing in 2015.

DPI Water also led the development of the Lower Hunter Water Plan, which was approved by the NSW Government and released in early 2014. The government assigned this responsibility to the Metropolitan Water Directorate (now within DPI Water) after the previously proposed Tillegga Dam was rejected. This occurred after the last price determination, and the costs were recovered directly from the Hunter Water Corporation.

DPI Water established the Aboriginal Water Initiative, to ensure there is ongoing effective state wide and regional engagement with Aboriginal communities for the WSPs. This includes actioning and reporting on measurable Aboriginal water outcomes for both environmental and commercial use. Since April 2011, DPI Water has conducted 59 consultation workshops for Aboriginal community members across the state. Participating in these workshops gave people an opportunity to influence WSPs by providing information that could protect water-dependent cultural assets. Licences relevant to Aboriginal people were also discussed.

The Aboriginal Water Initiative also provided Aboriginal cultural awareness training to DPI Water staff. The training aims to equip staff with the necessary knowledge, education and understanding of Aboriginal people, culture, history, and water management knowledge and experiences. The Commonwealth funds all activities associated with the Aboriginal Water Initiative. However, many of the outputs from this initiative feed into the planning process; for example C07-01, distance rules for cultural assets.

Statutory floodplain management plans are being developed for rural floodplains in the Barwon-Darling, Gwydir, Border Rivers, Macquarie and Namoi valleys as part of the Healthy Floodplains Project, which is funded by the Commonwealth Government. DPI Water and the Office of Environment and Heritage are developing the plans jointly. Floodplain management plans provide the framework for coordinating flood work development to minimise future changes to flooding behaviour, improve the environmental health of floodplains, and increase awareness of risk to life and property from the effects of flooding. Floodplain management plans establish management zones and rules, which provide clarity about where flood works can be constructed on the floodplain, and streamline the approval process for new and amended flood works.



Subject to Ministerial approval, the 2015 floodplain management plan for the Gwydir valley floodplain is scheduled to commence prior to 30 November 2015, with others to follow.

Due to the integrated nature of planning activities, most of the cost for water management planning (C07) was recorded against this activity. The expenditure on this activity was therefore significantly above budget, while the cost recorded against operational planning (C07-02) and water industry regulation (C07-05) was significantly below budget.

### **C07-02 Operational planning**

DPI Water has developed and published policies and guidelines to regulate various activities, and to provide an accurate interpretation of relevant legislation for water users. Some of these include the floodplain harvesting policy, the aquifer interference policy, and controlled allocation orders. Over the determination period government priorities have changed in response to changing community perspectives. This has resulted in changes to the set of operational policies and regulations required by government during the determination period.

In late 2014 the NSW Parliament passed the *Water Management Amendment Act 2014*. Many of the changes in the new legislation dealt with concerns raised by stakeholders. This Act provides greater water security for supplementary licence holders on regulated rivers by making these licences perpetual and providing compensation rights. Floodplain harvesting licences can now be issued, consistent with the floodplain harvesting policy. Amending how harvestable rights are regulated has provided increased flexibility in how water users can take and store water.

Development of a NSW stormwater harvesting policy could not be completed until the *Water Management Act 2000* had been amended to clarify the definition of state's water rights. Now this amendment has been made, work to finalise this policy recommenced in 2015. Work is continuing on development of a set of groundwater return flow rules.

Due to the integrated nature of planning activities, most of the costs for water management planning (C07) were recorded against water sharing plan development (C07-01). Expenditure on this activity was therefore significantly below budget.

### **C07-03 Environmental water planning**

DPI Water collaborated with the Office of Environment and Heritage to develop environmental measures that efficiently use both licensed and non-licensed water to achieve environmental outcomes. Environmental water is provided to protect important ecological assets, such as wetlands protected under the Ramsar Convention, and to achieve environmental benefits, such as supplementing high-flow events to stimulate waterbird breeding.

Over the reporting period DPI Water contributed to developing Adaptive Environmental Water Plans (AEWPs) and implemented the NSW wetlands policy, which met legislative requirements. Consistency between AEWPs and WSPs was also achieved by providing advice on subjects such as water availability forecasts and water delivery. These achievements met the service level target.

Expenditure was below forecast as a result of staff being redirected to Basin Plan funded activities in 2014 and 2015.

### **C07-04 Cross border and national commitments**

This activity involves developing interstate water sharing arrangements and implementing operational programs to meet national and interstate commitments. It is essential for meeting national and interstate obligations, such as progressing and meeting National Water Initiative (NWI) commitments.

Over the reporting period DPI Water ensured 100 per cent of valleys complied with the Murray Darling Basin cap on diversions, with reports required for implementation submitted as required. Involvement in Basin Plan activities increased over the period, which met the contractual obligations with the MDBA. These achievements met the service level target.

In 2014 NSW agreed to implement the Basin Plan. The Basin Plan allows sustainable diversion limits (SDLs) to be adjusted for projects that provide more effective environmental watering or produce water savings, known as SDL adjustment measures (or supply measures in the Basin Plan). The Basin Plan sets a SDL for each catchment and aquifer in the Basin, as well as an overall limit for the Basin as a whole. In order to meet the new limits 2,750 gigalitres (GL) of water needs to be recovered Basin-wide. NSW's share of this SDL gap is 1,312 GL, with approximately 870 GL of water recovered to date. For the remaining 442 GL of recovery, NSW has been pursuing investment by the Commonwealth Government in a range of projects and programs, with infrastructure projects being prioritised over water buybacks. Coordination of these activities for NSW is costed to this activity.

The review of the Border Rivers Intergovernmental Agreement commenced in the current determination period. This work is expected to be finalised and redeveloped in the future determination period. The *New South Wales – Queensland Border Rivers Act 1947* will also be redeveloped in response to the new agreement.

Net expenditure on this activity for the water management charge was below forecast.

#### **C07-05 Water industry regulation**

Under this activity, DPI Water ensures the *Water Management Act 2000* meets the requirements of the Council of Australian Governments' water reform agendas in the state. It also provides legal and regulatory support for water planning, such as interpreting legislation and providing advice.

The *Water Management Act 2000* covers 95 per cent of water entitlement. This is below the target of 100 per cent, which will be resolved in the next determination with the commencement of the 12 remaining WSPs.

Expenditure on this activity was significantly below budget because the costs and activities associated with this code were recorded to water sharing plan development (C07-01) and operational planning (C07-02).

#### **4.2.8 Standards of service – C08 River management works**

C-code	Activity group name	Summary of activity
<b>C08</b>	<b>River management works</b>	The undertaking of water management works to reduce the impacts arising from water use or to remediate water courses.

#### **C08-01 River management works**

From 2011 to 2014, DPI Water undertook river management works on 32 kilometres of riverbank, which exceeded the target kilometres. The work resulted in the stabilisation and protection of 80 per cent of high priority areas. This is below the target percentage because the size of impacted priority areas increased due to high rates of erosion from releases of water for licensed water users, and record flooding that significantly damaged the riverbanks.

Expenditure was above forecast due to the scale of damage needing repair. These charges are only allocated to valleys where the work is carried out, to users who directly benefit from the activity.



#### 4.2.9 Standards of service – C09 Water consents administration

C-code	Activity group name	Summary of activity
C09	Licensing administration	The development, operation and management of the administration of licences, approvals, their associated transactions and compliance management enforcement.

DPI Water is responsible for assessing and determining application outcomes for water licences, licence dealings and approvals in accordance with the *Water Management Act 2000* and the *Water Act 1912*. This is water consents administration and involves creating and managing records in database systems and assessing applications in line with approved procedures. The overhead cost for water consents is included in the water management charge under this activity. The incremental cost of water consents transactions is recovered on a fee for service basis under C10-01.

##### C09-01 Licence administration

DPI Water has processed 100 per cent of access licence and approval applications through the Water Licensing System (WLS), which meets the target.

The WLS has been developed to improve access to data from the public water access licence register maintained by Land and Property Information. This ensures DPI Water holds accurate licence holder information. The WLS provides information to customers on what conditions they have to adhere to without having to consult the relevant WSP. This includes the development of an assessment support tool that enables the more efficient assessment of licence and dealing applications. The tool steps users through the assessment process and auto-generates relevant information for the assessment, such as the commencement of a WSP or the location of groundwater dependent ecosystems. It then generates a final report summarising all the information relevant to the application.

Customer accessibility and convenience has been improved through the delivery of online transactions and online payment options. Improvements have also been made to the online harvestable rights calculator, which calculates which size dam customers are permitted. Significant enhancements were made to the NSW Water Register to facilitate water trading.

A new customer service charter was published and is being publicly reported on, and a program of customer communication, engagement and education was undertaken.

Expenditure for this activity was significantly above forecast as DPI Water restructured the licensing and compliance branch into a single coherent water regulation group. This has resulted in flexible multi-skilled water regulation officers who can move between licensing and compliance work as priorities change.

This activity also accounts for responding to customer enquiries relating to the licences and approvals. Enquiries are responded to either by phone, email, counter services and property inspections.

This activity undertook an ongoing program of policy, regulatory and legislative reform to remove inconsistencies and address any service gaps. This included developing a licensing procedures manual to guide consistent service delivery; repealing *Water Act 1912* stock and domestic bore provisions; drafting *Water Management Act 2000* amendments to reduce the burden on customers and achieve efficiencies; and reviewing and consulting on the NSW drillers' licensing framework.

The increased expenditure was also due to the delivery of enhanced online services, which required extra funds; and administrative costs from trading and account management (C06-02), and overhead costs from water consent transactions (C10-01) being costed to this activity.

### C09-02 Licence conversion and entitlement specification

Since 2004, DPI Water has progressively implemented WSPs across NSW under the *Water Management Act 2000*. As each plan is implemented, all water licences in the area issued under the *Water Act 1912* are converted to water access licences and approvals under the *Water Management Act 2000*. In the period from 1 July 2011 to 30 June 2015, 10,946 licences were created for the WSPs implemented.

All access licences have been recorded on the public registers – the water access licence register and the NSW Water Register – within five months of implementing a WSP, which exceeds the target of 90 per cent. DPI Water has made significant improvements to its online NSW Water Register to support customers in finding information about licences and approvals.

Additional services in holder verification were completed for 1,150 access licences, and 4,489 licence certificates were released, which accounted for expenditure on this activity being slightly above forecast.

### C09-03 Compliance

DPI Water's compliance program is designed to promote compliance with water rights by licence holders and the public generally. This is achieved through education, monitoring and, where necessary, enforcement. Without compliance management, the integrity of the system of tradeable water rights and the rights of individuals to take and use water would be impacted by any unlawful take of water. The expected economic returns from licences worth millions of dollars would also be impacted because water would not be available to them according to their rights. Likewise, water set aside to maintain the integrity of the water resource and highly valued ecosystems would be threatened. The orderly sharing of water established under the legislation, and determined with considerable community and government input at a local level in water sharing plans, would be undermined.

A significant boost to compliance activity occurred in 2011 as a result of receiving Commonwealth funding. On 7 December 2009, COAG agreed to a National Framework for Compliance and Enforcement Systems for Water Resource Management. The framework aims to provide a nationally consistent approach, by strengthening compliance and enforcement within each jurisdiction, and addressing any gaps in their systems. Under the plan there have been substantial improvements in the efficiency and effectiveness of the compliance program. This is supported by an additional 19 staff funded and deployed by the Commonwealth for five years concluding in October 2016. DPI Water is using the Commonwealth funding received to develop improved strategies and tools for compliance, and to expand its compliance activity.

A new customer service charter was published and is being publicly reported on, and a program of customer communication, engagement and education was undertaken.

In 2014/15, there were 761 new alleged breaches detected and reported. A total of 771 investigations were commenced and 790 finalised. Investigations commenced can include alleged breaches reported in the current fiscal year as well as in previous fiscal years. Likewise, investigations finalised can include investigations commenced this fiscal year as well as those commenced in previous fiscal years, depending on the complexity of the investigation. This explains the higher number of investigations finalised than received and commenced. All alleged breaches were risk assessed (high, medium or low) with 91 per cent assessed within 14 days, which met the target. More detail is provided in Table 4.5 below. Since 2011/12 DPI Water has undertaken 18 prosecutions related to bulk water, leading to payments of \$556,400 in fines and \$325,810 in costs, resulting in a total amount of \$882,210. This money is paid to the state's consolidated revenue and is not recovered by DPI Water.

**Table 4.5: Assessment of reported breaches**

Breach reports	2010/11	2011/12	2012/13	2013/14	2014/15
Total received	509	460	531	1039	761
Total finalised	475	372	521	840	790
Assessed as low or medium risk	283	177	233	593	393
Assessed as high risk	121	104	91	108	172
Assessed as very high risk	85	142	152	113	171
Percentage assessed within 14 days*	N/A	90%	77%	88%	91%

\* This percentage only represents the number of breaches assessed within 14 days, not the total amount assessed.

Expenditure on this activity was below forecast as Commonwealth funds were used to supplement this activity.

#### 4.2.10 Standards of service – C10 Water consents transactions

C-code	Activity group name	Summary of activity
<b>C10</b>	<b>Water consents transactions</b>	The administration of water consents transactions.

##### C10-01 Water consent transactions

Over the four-year reporting period, DPI Water processed a total of 21,311 water consent transactions, including water trade, licence and approval transactions. Over 93 per cent of transactions for the permanent trade of access licences were completed within 28 days, and 87 per cent of all other transactions and approvals were completed within three months. This exceeded the targets of 90 and 60 per cent respectively.

In the current determination period, DPI Water successfully implemented a backlog elimination project to finalise all outstanding *Water Act 1912* legacy applications (in some cases more than 10 years old) by June 2013. This issue arose as a result of high workloads due to drought, the lack of a regulatory implementation framework, and various agency restructures, but is now largely resolved. All legacy applications within DPI Water's control were addressed.

The incremental cost of consent transactions is recovered on a fee for service basis per transaction. The overhead cost for consents is included in the water management charge under C09 licencing administration.

The cost of water consent transactions was below forecast as a result of lower transaction volumes and significant productivity improvements made in this activity.

#### 4.2.11 Standards of service – C11 Business administration

C-code	Activity group name	Summary of activity
<b>C11</b>	<b>Business administration</b>	The customer, business and revenue collection services supporting the operation of DPI Water.

Business administration is the customer, business and revenue collection service that supports the operation of DPI Water and ensures water planning and management activities are appropriately governed, funded and reported.

##### C11-01 Financial administration

DPI Water bills customers to recoup costs, and collect revenue for the services it provides to customers. During the reporting period DPI Water collected 93 per cent of revenue from customers within three months of the billing period. This is just below the set target of 95 per cent.

The cost of financial administration was above forecast as a result of additional resources required to improve billing and revenue collection.

### **C11-02 Business development**

This activity includes industry consultation, the development of business plans, producing annual budgets at branch level, and business reporting to executives. DPI Water has participated in most of WaterNSW's valley customer service committees, which is below the target of attending all meetings.

A key responsibility is to report on pricing for the IPART submission and to prepare the annual information returns to IPART. This reporting process has become more efficient through improvements to administrative and management arrangements.

Expenditure on business administration was higher than forecast as a result of costs associated with the increased external reporting requirements.

## **4.3 Compliance with the 2011 Price Determination**

DPI Water has complied with implementation of maximum prices and application methodologies set by IPART in their Determination No. 4, 2010, published in February 2011 for the Water Administration Ministerial Corporation apart from the following four concessions:

The determined charges have not been applied to:

- Unregulated river domestic and stock licences (excluding town water supply).
- Salinity and Water Table Management water access licences, a category of licence created since the 2011 Determination for treating groundwater related salinity and water logging impacts.
- Unregulated river (regulated supply) water access licences, a category of licence created since the 2011 Determination for take of water in an unregulated river where that water was delivered and billed under a regulated river licence.
- Additional unregulated river share component issued to Barwon Darling licences as part of the process of conversion from quotas to water access licences. The additional issued share component will be billed under the future determination.
- Government owned meters in the Hawkesbury Nepean where an initial metering adjustment period was agreed with users. The waiving of the meter service charges in the Hawkesbury Nepean was extended to 2014/15 so that the existing metering program can be assessed in terms of the proposed water take measurement strategy being developed in consultation with users.

The waiving of charges on unregulated river domestic and stock licences has been in place while the legal validity of these licences was being determined. Government approval has been obtained for the concessions under the current determination.

Chapters 8 and 10 of this submission propose how all categories of water access licence and all government owned meters will be charged in the future determination.

## **4.4 Water take measurement**

In the current determination, IPART stated it expected DPI Water to complete:

- A cost-benefit analysis of the goal of metering 95 per cent of licensed extraction, making changes to the design of the program as necessary, and to share that cost-benefit analysis with users.
- A clear framework about how DPI Water would make decisions about the type and location of meters, having due regard to the future level of efficient operating costs of this program.

In response to this, DPI Water undertook an analysis project to better understand the profile and characteristics of extraction sites used by licence holders. This information was used to review the existing metering program. As a result of this review DPI Water, in consultation with stakeholders and users, is developing a new water take measurement strategy for measuring take of water under water access licences, taking account of the information gained and lessons learned in recent years. This strategy is due to be finalised before the start of the next determination in July 2016.

A considerable amount of work has been done on a cost-benefit analysis, however it will not be completed until there is more clarity on the categories and thresholds that are likely to be practical and appropriate. An overview of the principles and information being taken into account in developing the new strategy are outlined below.

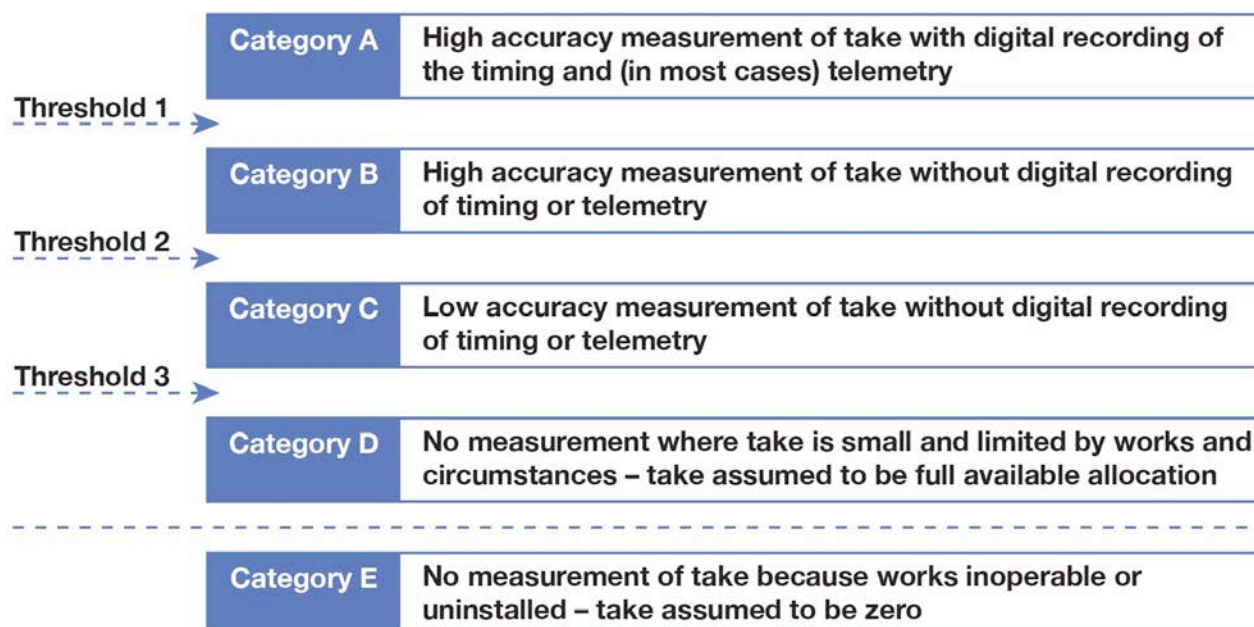
The key elements of the metering program approach prior to 2014 were:

- A target of metering 95 per cent or more of licensed water take in each area. In practice, in the Hawkesbury-Nepean and Murray, meters were installed on pumps of 50 millimetres or larger to achieve this target.
- Use of electromagnetic flow meters, which are expected to be National Water Meter Standard (NWMS) compliant (no meters were patent approved at the time) rather than mechanical or other types of meters in most locations. While the initial capital outlay for electromagnetic flow meters is higher, they are long lasting, accurate and reliable so the overall life cycle costs of these meters should be lower.
- Telemetry, allowing remote download of meter readings daily, is included at most locations to replace on-site visits to read meters, and to enable rapid detection of meter system faults through transmission of diagnostic data.
- The government owns the meters, and is responsible to maintain them consistent with the Metrological Assurance Framework (MAF).

Rather than having a single equipment requirement, in the new water take measurement strategy DPI Water is considering an approach that:

- Applies more accurate and reliable, and consequently more expensive, equipment to locations with larger take capacity.
- Applies lower accuracy, lower cost equipment to sites with smaller take capacity, on the basis that the overall accuracy of measurement will address risk to the extent it is cost effective.

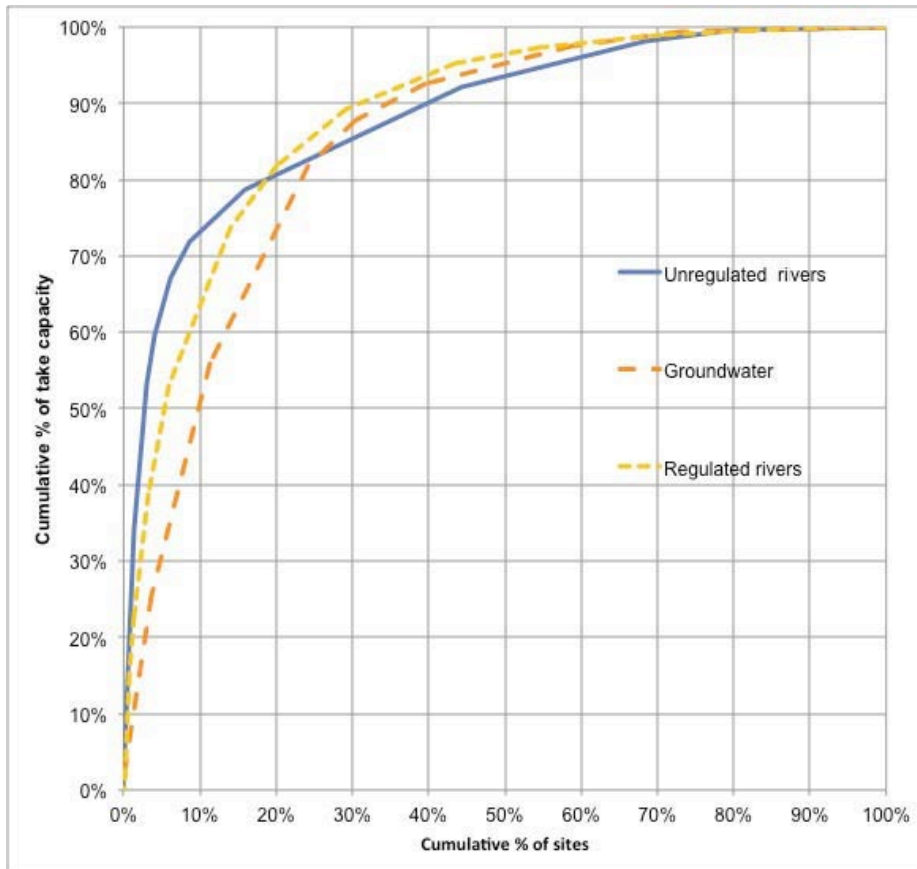
This is illustrated in Figure 4.1.

**Figure 4.1: Water take measurement categories**

There is now market-tested information on the costs for installing and operating meters, as a result of competitive tendering. Additionally, three years of meter operation has provided good data on the take of water for unregulated river sites, which was previously not known, and surveys have provided an improved picture of the profile of installed works. Using this information, analysis has been done of the cost and benefit of metering in different circumstances.

Figure 4.2 shows the cumulative percentage of overall pump capacity against the cumulative number of pump sites, with the pump capacity ranked from large to small. The curves show a large proportion of water take capacity can be addressed by measuring take at a small proportion of sites, and that, in terms of overall accuracy, extending accurate metering to smaller and smaller pump sizes yields diminishing returns. For most cases, measuring at 20 per cent of sites yields approximately 80 per cent of total take capacity; measuring at 30 per cent of sites yields approximately 90 per cent of capacity; and measuring at 50 per cent of sites yields over 95 per cent of capacity.



**Figure 4.2: Cumulative per cent of take capacity vs cumulative per cent of water take sites**

In the current approach, category A (see Figure 4.1) measurement has been applied down to 50 millimetre pump size. This has resulted in over 99 per cent of water take being measured in category A (more than was originally expected). However the less costly categories B-D could be applied to works up to around 150 to 200 millimetres outlet size (about 70 per cent of sites) in most areas and still have 90 per cent or more of water take measured.

To develop the water take measurement strategy, a discussion paper was released July 2015 and meetings held with several stakeholder groups in May, June and July 2015. The discussion paper provides some background on the current status of water take measurement, and outlined a series of principles DPI Water is considering for the strategy. Water licence holders and other interested parties were invited to provide their views, by 28 August 2015, on the principles, and more generally their views, concerns, and suggestions for how water take measurement in NSW should proceed.

Following consideration of submissions, DPI Water will develop a proposed approach or approaches that include clear definitions of categories and thresholds, and compare these to the current approach in a cost-benefit analysis.

DPI Water will then publish a draft water take measurement strategy for further consultation that takes account of the cost benefit analysis, leading to finalisation of the strategy in 2016.

Additionally, in implementing the final stage of Commonwealth funded meter rollout in the Murray Darling Basin in 2015/16, DPI Water has limited installation of meters to sites with large works (no smaller than 150 millimetres) and likely higher ongoing take of water, to minimise the risk of the meters being installed at sites with low cost-benefit.



## 4.5 Domestic and stock, and other basic rights holders

In its 2011 determination report, IPART asked DPI Water to ‘consider a policy on levying water management charges on domestic and stock and other basic rights holders’. In response to this, DPI Water investigated whether the benefits of the policy would justify the cost of its implementation.

The main issues considered as part of this investigation were:

- Can DPI Water legally charge basic landholder rights?
- Can DPI Water identify holders of basic landholder rights and maintain the data required for this purpose?
- DPI Water’s existing costs in managing domestic and stock and harvestable rights.
- The cost of establishing, collecting and maintaining the data required for levying water management charges on basic landholder rights.
- The cost of billing and collecting the charges.

The findings of the investigation revealed significant legal, establishment and on-going maintenance feasibility reasons why implementing such a charge on basic landholder rights is not justifiable. DPI Water’s conclusion was that basic landholder rights should not be subject to water management charges. These findings were communicated to IPART. Following this work by DPI Water, IPART subsequently ruled this requirement to now be out of scope for the next determination<sup>2</sup>.

## 4.6 Consultation with users about performance, expenditures and revenue

DPI Water is focused on better meeting the needs and expectations of customers and delivering its activities in a sustainable, efficient, consistent manner. This requires it to inform customers about:

- The activities DPI Water delivers, and the cost and performance of those services.
- DPI Water’s responsibilities under current legislation and regulations.
- Customers’ rights and responsibilities under current legislation and regulations.
- How customers can access services and engage with DPI Water.
- DPI Water’s commitment to customers in delivering services and its performance against the customer service charter.

DPI Water needs to ensure the above information is being successfully communicated, and it understands its customers’ needs and expectations. It achieves this by actively engaging with customers and providing multiple avenues for them to provide feedback.

For information about the cost and performance of the monopoly services provided, see Section 4.10.

In general, comprehensive information, forms and instructions are available for download from the DPI Water website, or in printed form from DPI Water offices. Information on expected application processing times is also published online via the customer service charter, along with registers on allocation and permanent trading showing the number, types and volumes involved. Information is also mailed and emailed to customers as required or when opportunities arise, such as the issuing of annual water management bills.

<sup>2</sup> Review of prices for the Water Administration Ministerial Corporation Water – Issues Paper June 2015, for the NSW Office of Water – from 1 July 2016, p50.

During the current determination period, DPI Water has delivered the following outcomes:

- Received 51,915 enquiries via the 1800 353 104 licensing phone line (92 per cent directly answered by the information line) and 50,296 enquiries via the [information@water.nsw.gov.au](mailto:information@water.nsw.gov.au) email address (79 per cent answered within three days).
- Issued 26 news flyers with water management bills to inform customers about their rights and responsibilities and relevant DPI Water services, policies, projects and initiatives.
- Developed and deployed a range of educational material to explain the *Water Act 1912* licence conversion process to *Water Management Act 2000* water access licences and approvals.
- Reviewed, updated and reissued fact sheets, guides and application forms on various licences, approvals and transaction types. Topics include flow updates, flooding, deep bore drilling, extensions to the groundwater monitoring network, annual probabilities and rules for water sharing, water reform updates, Basin Plan submissions, aquifer interference policy, and coal seam gas.
- Developed and deployed resources to educate customers on how to use Water Applications Online services, particularly lodging an online application to extend water supply work and/or use approval. Resources to educate customers about lodging an online application for a water supply work approval to take groundwater under a domestic and stock right were developed and then deployed in July 2015.
- Developed and deployed resources to enable customers to more efficiently and effectively search the public registers maintained by DPI Water for information about water licences and approvals (including conditions), water trading statistics, environmental water and other matters related to water entitlements in NSW.
- Developed and delivered a new procedure to centralise mandatory advertising for water consent transactions which has resulted in efficiencies.
- Commenced a project to update consent transactions information on DPI Water website – focussing on ensuring this information can be easily accessed within the website, is useful to customers and written in plain English. New information on recent orders and updated information on fees and charges was published in 2013.
- Presented at meetings with external stakeholders (the commissioner, senior or technical staff) on topics including floodplain harvesting policy; the Basin Plan and Basin projects; water trading; water licensing for coal seam gas and other extractive industries; aquifer interference policy; water and sewerage pricing; water outlook and allocations; the Macquarie River and Orange city pipeline; fracking; the Aboriginal Water Initiative; water savings projects; Hunter River salinity trading scheme; water sharing plan development and remake; the IPART pricing determination process; and the healthy floodplain project.
- Hosted or participated in 22 workshops or seminars on consent transactions or related regulation or compliance services, including events targeted at water users, solicitors, conveyancers, water licence interest holders and local government.
- Delivered 21 workshops over three rounds of engagement with community and stakeholders, to discuss the review of the Metropolitan Water Plan, and the potential for environmental flows from Warragamba Dam to improve the health of the Hawkesbury-Nepean River system. This engagement was supported by annual sentiment monitoring surveys and the Your Say Metro Water website.
- Undertaken social research to inform decisions regarding the impacts and sustainability of water supply, including separate choice modelling surveys on environmental flows and water restrictions.

- Developed fact sheets and a discussion paper, and held four rounds of community and stakeholder workshops to engage on community values, options and potential portfolios in developing the Lower Hunter Water Plan (this planning process was fully funded by the Hunter Water Corporation).
- Surveyed our customers to seek feedback on our service delivery and their understating of their rights and responsibilities. This included customer satisfaction surveys conducted in 2010 and 2011; online user surveys; and customer satisfaction surveys following use of online search through the NSW water registers.
- Completed a social research pilot project in collaboration with the National Centre for Groundwater Research and Training, Australian National University and University of NSW – resulting in the establishment of a three-year social research project to better understand customers' knowledge of legislation, views on complying with the legislation, experiences with DPI Water services, and preferences for receiving information.
- Led a whole-of-government approach to metropolitan water planning for greater Sydney and the Lower Hunter, including assessing options for Warragamba Dam environmental flows and the consequences for water supply security. This included senior officer group meetings, the Metropolitan Water Chief Executive Officers' Committee, and expert technical and strategic input through the Independent Water Advisory Panel meetings. In addition, DPI Water established interagency technical working groups to support the work on environmental flows, river health, hydro economic modelling of environmental flow options, and engagement/social research.
- A project to investigate stakeholder attitudes, views and experiences with DPI Water compliance and enforcement policies and practices regarding the regulation of controlled activities is at the planning stage.
- Documented standards for the capture of customer information as an outcome of the data quality project. This ensures a common and consistent approach to capturing, storing and managing customer information within DPI Water. This also improves communication methods with customers and stakeholders.
- Published approximately 70 operational media releases (not including an additional 50 for the Minister) each year on a number of topics including water allocations; supplementary access announcements; water probabilities; trade information; environmental releases as part of water sharing plans, dam management strategy or river health project such the Snowy River releases; public safety information that relates to blue-green algae alerts, salinity slugs and rising river alerts; compliance matters including warnings and information on cease to pump requirements; reviews of corporate licences; Aboriginal water planning; water sharing plans commencements and draft plans for comments, review and remake; information on the NSW response on major water reform initiatives such as the Basin Plan; and funding and progress for infrastructure projects.
- The Deputy Director-General DPI Water, and other senior staff, participated in numerous media interviews for print and electronic media.
- In 2010, DPI Water opened a twitter account that has been used to further promote real-time media releases such as alerts

#### **4.7 Billing systems and administration**

DPI Water's water regulation group is the custodian of all licensing information that forms the basis of customer bills. In the current determination period the billing function has been centralised to this group, which also has responsibility for billing rules and requirements. A position was created to manage, coordinate and improve the billing process.

Improvements implemented in the billing process include:

- Establishing a fixed timeline for the tasks required for billing.
- Creating checkpoints for review and approval for each stage of the preparation of data required for billing.
- Implementing review and reconciliation tasks to ensure the integrity and validity of billing information.
- Actively communicating with the custodians of the data required for billing.

The requirements of the determined billing rules, and any revisions to billing specifications, were reviewed and clarified to ensure clear interpretation and implementation. In addition there have been ongoing improvements to the systems that provide the data required for billing, as well as ongoing quality assurance and refinement of the data in those systems.

DPI Water has implemented, where necessary, manual processes to address billing requirements where automated systems are not yet available. An example of this is the data for water take information collection for unregulated 2-part tariff billing of major utilities and town water suppliers where a water allocation accounting system is not yet available.

Processes for recording, investigating and resolving billing issues, including the resolution of legacy billing issues, have been implemented, and most outstanding billing disputes resolved.

As a result of the above actions invoices are issued on time and are quality assured. This has resulted in a reduction in the number of billing errors, and billing enquiry and dispute numbers are now negligible.

## **4.8 Financial systems, including the ring-fencing of expenditures related to the monopoly services**

### **4.8.1 Introduction**

In the 2011 price determination IPART provided the following guidance on its expectations with regard to ring-fencing DPI Water expenditures relating to monopoly services provided under the Water Services Order (2004):

*...to ensure that NOW's (now DPI Water) forecast expenditures for price reviews relates to its monopoly service activities and that it can accurately and regularly track expenditures on monopoly service activities against expenditure allowed for when setting the prices for reporting to IPART and stakeholders.*

Following the 2011 price determination DPI Water was integrated into the Industry, Skills and Regional Development cluster, under the Department of Primary Industries. Under this cluster, provision of corporate services including financial management is centralised, and DPI Water's accounting systems were transferred to the Department's standard accounting systems from 2013.

There are two key elements of the systems that track expenditures – the general ledger and the project or costing system. The general ledger tracks expenditures by the nature of the cost and the organisation structure; the project ledger tracks expenditures by the nature and funding source of the activities being undertaken. The project ledger together with its associated processes and controls is the core system that provides the tool to track expenditures on monopoly service activities.

DPI Water is not required to prepare annual financial statements<sup>3</sup>.

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<sup>3</sup> Separate financial statements are required for WAMC.

The following sets out the systems, their accompanying processes and controls, and DPI Water's organisational structure, which together provide a robust framework to accurately record and forecast expenditures for water planning and management services.

#### 4.8.2 Managing actual operating costs

The project ledger records the cost of labour through the completion of daily timesheets by staff. These are costed into the project ledger at the staff's individual remuneration rate plus a factor for overhead recovery. DPI Water's non-remuneration costs are allocated to the relevant project. Labour and overhead standard cost variance analyses ensure that the costs in the project ledger are reflective of the actual costs as recorded in the general ledger.

#### Organisation

Approximately 70 per cent of DPI Water's staff provide water planning and management activities. The core of these activities are water management, water consent transactions, and water take measurement services, which are those services that are subject to price regulation. The balance of the water planning and management activities are funded by Commonwealth Government grants and fee for service revenue from customers.

With water planning and management activities that are funded from Commonwealth Government grants, the majority of the activities required are undertaken over a number of years and the level of funding is significant. DPI Water generally resources the majority of the work via engaging contractors, temporary staff or contingent workers for the period of the work, with management being provided by permanent staff. It is therefore simple to ensure that these resources are costed to the appropriate project. This cost allocation for the majority of Commonwealth Government grants is validated by a requirement for DPI Water to account for its expenditure against the grant and, in a number of cases, supporting internal and/or externally audited financial statements are required.

In the case of fee for service water planning and management activities, DPI Water bills the customer. Whilst there is not a specific pool of resources for these activities, generally it is the same staff that undertake the customer work each year. This consistency of staff allocation aids the appropriate allocation of costs.

DPI Water has one business unit, urban water, that does not provide water planning and management activities. This unit represents approximately six per cent of DPI Water's resources.

#### Systems and processes

Each project has a designated project manager who is accountable for the financial performance of the project, including authorising expenditures and labour time allocated to the project. Each project is designated a code that identifies how it is funded. For Commonwealth Government grants and fee for service work, it is this code that is used to account for Commonwealth Grant funds and to raise bills for fee for service.

Over the current price determination period DPI Water has better recognised the criticality of financially managing its water management, water consent transactions and water take measurement service activities. Each of the relevant projects is designated with a monopoly service activity code, which is used as a basis for reporting to IPART and to stakeholders.

#### 4.8.3 Forecasting operating costs

The standard cost variance analysis validates that the costing system appropriately reflects DPI Water's incurred costs, and can therefore be used as a basis for preparing cost forecasts.

DPI Water is subject to overall net cost of service budgetary constraints that are applied to all government departments. This budgetary constraint includes the imposition of an annual



efficiency dividend. DPI Water's external funding, via Commonwealth Government grants, fee for service revenue, and charges from water management, water consent transactions and water take measurement services, are all expected to have a zero net cost of service (after accounting for the NSW Government's share of water management services).

Cost forecasts for this price submission have been drawn up by each of DPI Water's three operational divisions using the net cost of service framework outlined above. The level of grant funding is subject to funding agreements with the Commonwealth Government, and the majority of fee for service revenue is the subject of service agreements with customers. These two pieces of information are used to ensure that the forecast results in a zero net cost of service.

For each of the water management services an output measure and performance criteria were established and agreed upon (see Chapter 6). Based upon these criteria, DPI Water's executive set a benchmark for the level of forecast costs for 'business as usual' water management services; and require that the costs of water consent transactions services and water take measurement services should match the expected income, that is, zero net cost of service. These benchmarks were driven by the Department's overall budgetary constraints as imposed onto DPI Water. Based on these benchmarks the three DPI Water's operational divisions prepared cost forecasts for staff and non-staff costs. Part of the validation processes applied to these forecasts was the critical review of the level of resources from each division to ensure that it achieved the required outcomes, for those activities that are resourced by more than one division.

The above systems, processes, controls and organisation structure provide a robust ring-fencing to ensure that forecast expenditures for price reviews relates to its monopoly service activities; and that DPI Water can accurately and regularly track expenditures on monopoly service activities against expenditure allowed for when setting the prices for reporting to IPART and stakeholders.

## **4.9 Asset management and capital planning frameworks**

### **4.9.1 Asset management**

DPI Water has developed a high-level asset strategy, which demonstrates the relationship between its physical asset portfolio and the services it delivers. This document provides the platform for subsequent detailed planning of capital investment, maintenance and disposal strategies. The asset strategy has been prepared in accordance with NSW Treasury Circular TC13/08 total asset management submission requirements and is required by Treasury to support capital expenditure proposals.

DPI Water manages information on assets, including age, theoretical lifespan and condition, via a number of IT platforms. Examples include Hydstra, which manages surface water hydrometric sites, the groundwater database system (GDS), and Excel for groundwater monitoring bores. The quality of information varies across asset classes and databases. An information management strategy will be developed to validate and consolidate the various databases into a platform that will then be used to manage condition assessment and maintenance programs (both proactively and reactively).

DPI Water engaged a full-time asset management coordinator in January 2015 to coordinate and manage the design and implementation of a comprehensive asset management strategy. A project steering committee (PSC) has also been established to oversee implementation of this strategy. The PSC is made up of executives from WaterNSW, the Department of Primary Industries (DPI), the Department of Industry, Skills and Regional Development, and DPI Water.

Implementation of the strategy across each asset category will be prioritised within a risk management framework. The asset management system, including the information

management platform, is expected to be endorsed by the DPI Water executive in late 2015 and be fully operational in 2017/18.

#### **4.9.2 Capital expenditure program**

Capital expenditure projects are supported by a range of documentation, such as planning reports, project briefs, business cases and project plans. The level of detail supporting and justifying individual capital expenditure projects varies depending on the value, proposed timing and strategic importance of the project, in accordance with NSW Treasury guidelines.

DPI facilitates a capital expenditure prioritisation process for all DPI branches based on assessment criteria such as workplace health and safety and alignment with DPI objectives. DPI Water's executive has endorsed a preliminary 10-year capital expenditure profile for major and minor projects, and capital projects are identified and monitored in the Department of Industry, Skills and Regional Development's corporate finance system.

#### **4.9.3 Project Management**

DPI Water has implemented a system of project management for capital expenditure initiatives that includes preparation of project plans and procurement strategies in accordance with Department of Industry requirements. All capital projects (minor and major) are managed by a nominated project manager and guided by a project steering committee.

Summary project plans for the 2015/16 minor capital expenditure program are scheduled for completion in September 2015. Full project plans will be developed for all major capital expenditure projects commencing from 2015/16, and will include procurement plans, risk management strategies and governance arrangements.

### **4.10 Timely, accurate and complete annual reports, as sought by IPART**

DPI Water has established processes to satisfy annual reporting requirements on its water planning and management services. External reporting includes:

- Annual Information Return and Appendix L performance report to IPART (in compliance with section 13.1 of IPART 2011 Water - Final Report), due by the end of October each year.
- Annual return to the ACCC, under the Water Charge (Planning and Management Information) Rules 2010.
- Reporting to customers on water planning and management activities, the cost, service levels and performance of these services.

#### **4.10.1 Annual Information Return and Appendix L performance report**

The Annual Information Return (AIR) and Appendix L reports are provided to IPART (see Appendix M) and include comprehensive financial and non-financial information such as those set out in Table E1 in Appendix E of the issues paper published by IPART in June 2015 as part of their review of prices for the Water Administration Ministerial Corporation.

Procedures have been established by DPI Water to facilitate the production of the required AIR information. A project accounting system is used to record, code and report the cost of water planning and management activities. The projects and their component tasks record external revenue or third-party funding in addition to the expenditure associated with these activities. This enables reporting on the net cost of the service for each activity and the billed revenue for each water type.

The non-financial information provided in the AIR includes the quantity of licensed entitlement and the volume of water take for each pricing area and water type.

In order to submit the Schedule L report, DPI Water has developed an internal template to record the output measures and performance indicators for each water management activity.



The responsible team members manage the procedures for completing these templates with data and information that is accurate and verifiable.

Procedures for the collection of data and the calculation of full-time employees for each activity support the compilation of this report. DPI Water seeks, collects, collates and calculates water management output and performance information for each of the activities for which users contribute to the cost of operation through the water management charge. Examples include the number of operational hydrometric stations, water samples, etc.

These results are reviewed against the IPART allowed figures, with variance explanations provided by the responsible manager. The compiled report is then reviewed and quality assured by senior executives prior to approval and submission to IPART.

The procedures and systems required to support the preparation of external reports are being refined to improve the quality and timeliness of information produced. The 2013/14 AIR and Appendix L reports were delivered complete and on time.

#### **4.10.2 ACCC reporting**

DPI Water reports annually to the ACCC under the Water Charge (Planning and Management Information) Rules 2010. The report to the ACCC is based on the same information reported to IPART in the AIR. The AIR information is re-worked into the format required by the ACCC. The information required to be published under the Water Charge (Planning and Management Information) Rules 2010 is made available on the DPI Water website.

#### **4.10.3 Reporting to customers**

A process of reporting the annual costs and performance of activities to customers is currently being implemented. The user share of the annual cost by activity of the water planning and management services regulated by IPART is published each year on the DPI Water website. This information can be found on the website on the price setting page, currently located at <http://www.water.nsw.gov.au/water-management/fees-and-charges/price-setting>.

This page provides an overview of the water planning and management service categories, the administrative framework under which the price of these services is determined, the process used by IPART to determine the prices, the user share of DPI Water's cost of the activities involved in delivering the services, and an aggregate view of the current level of cost recovery for these services. The cost reporting has been in place for each year of the current pricing determination. The first reporting to customers on performance levels was in 2015.

## 5 Reconciliation of revenue needs

Chapters 4 and 5 form the End of Determination Report for DPI Water. Chapter 4 discusses how DPI Water performed against the forecast operating expenditure and service targets set by the current determination, and actions taken by DPI Water to improve performance during the current determination period. Chapter 5 discusses the revenue needs for the current determination period.

### 5.1 Revenue

This section provides an overview of the components of revenue from water planning and management activities. The revenue analysis for water management services is for the four years of the current determination to 30 June 2015. This is followed by comparisons of the revenue received from water management charges with the 2011 price determination forecast, for regulated rivers, unregulated rivers and groundwater; and an explanation of the variances.

#### 5.1.1 Overview of the components of water management revenue

The water management tariff structure is made up of three components:

- Entitlement charge – an annual charge that applies to the share component specified on each water access licence.
- Water take charge (formerly usage charge) – a charge that applies to the quantity of water recorded as taken for a water licence in the billing period.
- Minimum annual charge – an annual charge that applies to a licence if the sum of the entitlement charge and water take charge for a water licence is less than the value of the minimum annual charge.

There are currently two tariff categories for licences:

- Entitlement charge licences – licences subject to a (fixed) annual entitlement charge, based on the share component for the licence.
- Water take charge only licences – licences subject only to the water take charge, based on the volume of measured water taken against the licence.

Entitlement licences are subject to a 2-part tariff (entitlement charge and water take charge) if the water take is measured. Otherwise, for unregulated river and groundwater sources, a 1-part tariff (entitlement charge) applies.

The fixed/variable ratio between the revenue raised from the entitlement charge (fixed) and the revenue raised from the water take charge (variable) was set in the current determination at 70:30 for all pricing water sources, except North Coast regulated rivers where the ratio was set at 92:08.

At the time of the 2011 price determination there was no reliable information available on measured water take for unregulated river and groundwater sources across the state. The prices set therefore made the assumption that the water take activation rate for unregulated river and groundwater sources was 100 per cent. The activation rate is the volume of water take as a percentage of the quantity of share component for each licence. The exception was that measured water take was available for WaterNSW (Metropolitan) and the Hunter Water

Corporation. The volumes for these two water utilities were taken into account in setting the prices for South Coast and Hunter unregulated and coastal groundwater pricing water sources.

Subsequent measurement of water take for unregulated river and groundwater sources indicates that this assumption was a significant over-estimate of the actual water take. The average measured water take for the period 1 July 2011 to 30 June 2015 results in a water take activation rate of 44 per cent for entitlement charge licences subject to a 2-part tariff for both unregulated rivers and groundwater.

A summary of the different causes of revenue variances between the revenue forecast in the price determination and actual revenue earned by DPI Water in each pricing water source is outlined below in Table 5.1.

**Table 5.1: Summary overview of reasons for water management revenue variances**

Water management charge type	Reason for quantity of share component variance
Entitlement charge	<ul style="list-style-type: none"> <li>• <b>The quantity of share component subject to entitlement charge</b> – more share component, compared to the forecast, will result in more entitlement charge revenue; and less share component will result in less entitlement charge revenue.</li> <li>• <b>The proportion of share component on 1-part or 2-part tariff</b> – a movement of share component from 1-part to 2-part tariff, resulting in more share component on 2-part tariff compared to forecast, means, as a result of the tariff structure, 30 per cent less revenue for that share component. A movement the other way means more entitlement charge revenue.</li> <li>• <b>The number of licences on minimum annual charge</b> – the share component for licences on the minimum annual charge is not subject to an entitlement charge, so an increase in the number of licences on minimum annual charge will result in less entitlement charge revenue.</li> </ul>
Water take charge	<ul style="list-style-type: none"> <li>• <b>The water take activation rate</b> – a higher water take activation rate means the volume of measured water take is greater than forecast, resulting in more water take charge revenue; and a lower activation rate results in less volume compared to forecast and less water take charge revenue.</li> <li>• <b>The quantity of unregulated and groundwater entitlement on 2-part tariff</b> – more unregulated river and groundwater share component on a 2-part tariff may result in a greater volume of measured water take compared to forecast (depending on the actual compared to forecast water take activation rate for licences on a 2-part tariff), and consequently more water take charge revenue.</li> <li>• <b>The number of licences on minimum annual charge</b> – the measured water take for licences on the minimum annual charge is not subject to a water take charge, so an increase in the number of licences on a 2-part tariff, subject to minimum annual charge, means less water take charge revenue.</li> </ul>
Minimum annual charge	<ul style="list-style-type: none"> <li>• <b>The water take activation rate</b> – a greater volume of measured water take means reduced minimum annual charge revenue; a lesser volume of measured water take means that more licences are subject to the minimum annual charge, resulting in more minimum annual charge revenue.</li> <li>• <b>The price of entitlement and water take charges</b> – an increase in the prices for entitlement and measured water take can result in a reduction of the number of licences on the minimum annual charge, and a reduction in the minimum annual charge revenue.</li> </ul>

### 5.1.2 Total revenue

DPI Water bills water management charges as follows:

- Regulated river licences are billed four times a year, quarterly in arrears.
- Unregulated river and groundwater licences are billed once a year, annually in arrears.

The total revenue analysis in Table 5.2 is for the water year regardless of the timing of the bill. Revenue has been aligned to match the expenditure period to which the revenue relates.

The analysis shows the actual revenue billed for the period 1 July 2011 to 30 June 2015, and compares it to the forecast amount in the 2011 price determination.

**Table 5.2: Total four-year (2011/12 to 2014/15) revenue analysis (\$'000 2015/16)**

Pricing water source	Actual revenue	Forecast revenue in 2011 price determination	Variance
<b>Regulated river</b>			
01. Border	3,425	3,476	-51
02. Gwydir	4,298	3,979	319
03. Namoi	3,988	3,774	214
04. Peel	543	581	-38
05. Lachlan	6,704	6,682	22
06. Macquarie	7,205	7,072	133
08. Murray	20,783	20,123	660
09. Murrumbidgee	19,173	18,611	562
10. North Coast	213	224	-11
11. Hunter	2,949	3,013	-64
12. South Coast	327	393	-66
<b>Total regulated river</b>	<b>69,608</b>	<b>67,928</b>	<b>1,680</b>
<b>Unregulated river</b>			
04A. North West	4,928	4,683	245
06A. Central West	6,790	4,590	2,200
07. Far West	5,195	5,310	-115
08. Murray	1,805	1,926	-121
09. Murrumbidgee	3,423	2,870	553
10. North Coast	9,744	10,620	-876
11. Hunter	8,691	8,611	80
12. South Coast	15,263	17,006	-1,743
<b>Total unregulated river</b>	<b>55,839</b>	<b>55,616</b>	<b>223</b>
<b>Groundwater</b>			
13. Inland	30,752	34,259	-3,507
14. Coastal	8,213	9,470	-1,257
<b>Total groundwater</b>	<b>38,965</b>	<b>43,729</b>	<b>-4,764</b>
<b>Total</b>	<b>164,412</b>	<b>167,273</b>	<b>-2,861</b>

A summary of the revenue variances over the first four years of the current determination period is shown in Table 5.3. The table shows the revenue variance from the different components of the water management charge for each water type.

**Table 5.3: Impact on revenue from variance between IPART predicted and actual revenue 2011/12 – 2014/15 (\$'000 15/16)**

Water type	Entitlement charge \$'000 (15/16)	Water take charge \$'000 (15/16)	Minimum annual charge \$'000 (15/16)	Revenue variance for water type \$'000 (15/16)	Percentage of revenue for water type (%)
Regulated rivers	-103	934	850	1,680	2.5%
Unregulated rivers	-521	1,123	-378	223	0.4%
Groundwater	-2,084	-3,565	885	-4,764	-11%
<b>Total</b>	<b>-2,708</b>	<b>-1,508</b>	<b>1,357</b>	<b>-2,861</b>	<b>-1.7%</b>

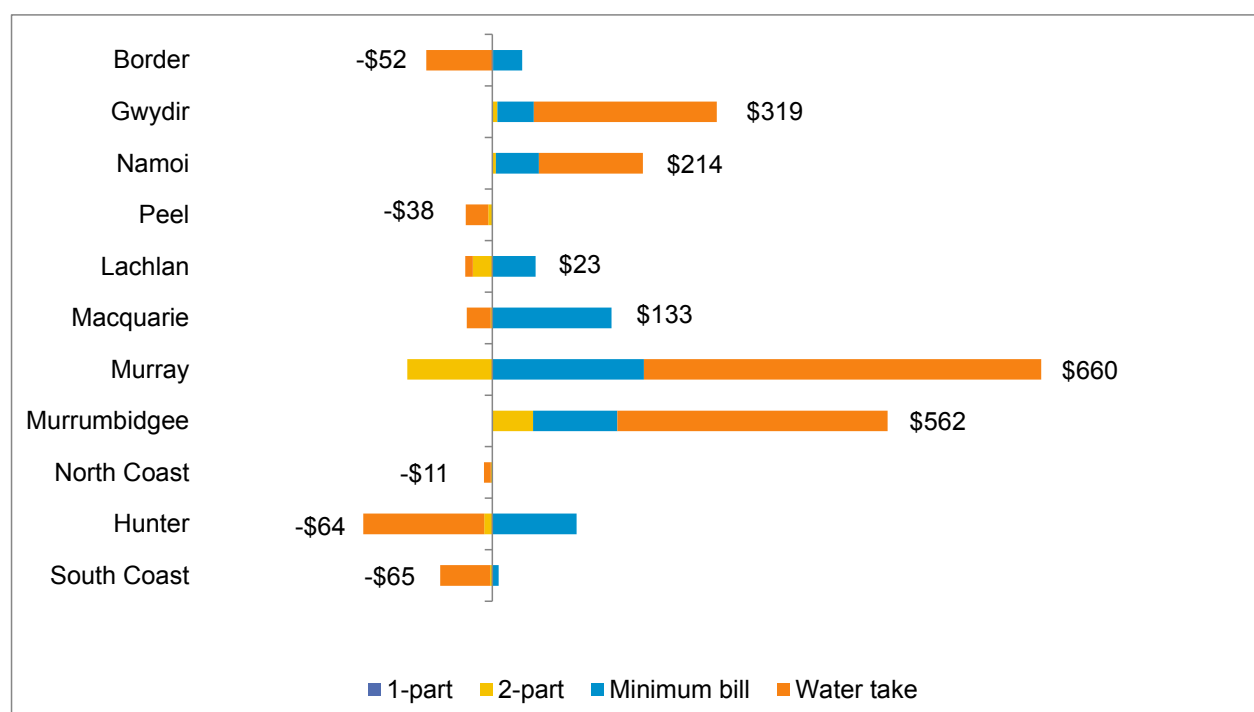
This shows an overall negative revenue variance of -1.7 per cent, with the positive revenue variance for regulated and unregulated rivers being more than offset by the negative variance for groundwater.

An analysis of revenue by year by pricing water source is included in Appendix A.

The next three sections provide an explanation of the revenue variances for each water type.

### 5.1.3 Revenue from regulated rivers

Regulated rivers have all licences on a 2-part tariff. An analysis of the revenue variance by valley and tariff type for regulated rivers is shown in Figure 5.1.

**Figure 5.1: Regulated rivers – revenue variance by valley by tariff type 2011/12 – 2014/15 (\$'000 15/16)**

### Entitlement charge

There was only a minor 0.3 per cent increase in the quantity of share component for entitlement charge licences compared to the forecast. There were no material changes across pricing water sources.

## Water take charge

Water take charge variances result from both the availability and demand for water. For three years (2011/12 to 2013/14) water take from regulated rivers showed a significant upward variance from the 20-year average, with the peak in 2012/13 being nearly 50 per cent above the forecast average.

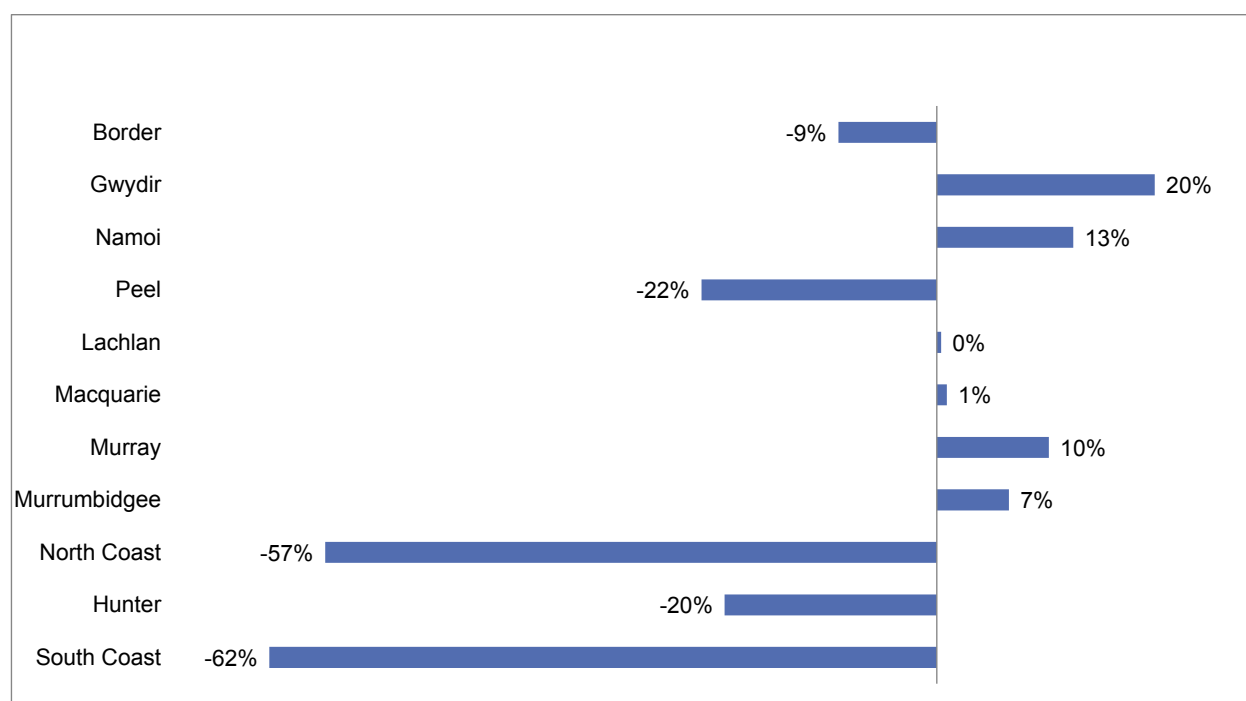
The total variance in water take against the volumes allowed for in the 2011 price determination over the period is shown in Table 5.4.

**Table 5.4: Regulated rivers – total variance in billed water take against the volumes allowed in the 2011 price determination**

2011/12	2012/13	2013/14	2014/15	Total
-3%	38%	6%	-15%	6%

The volume of water take billed for regulated rivers in the water take charge over the four years was six per cent greater than forecast. The variance for each pricing water source is shown in Figure 5.2.

**Figure 5.2: Total variance in cumulative water take against the IPART allowed volumes – regulated rivers 2011/12 – 2014/15**



The greater volume of water take means a positive revenue variance. The large coastal variance has little impact on the variance overall, because the coastal water take is only 2.5 per cent of the total measured water take for regulated rivers.

## Minimum annual charge

The number of minimum annual charge bills was 92 per cent greater than forecast over the four years, as shown in Table 5.5.

**Table 5.5: Forecast versus actual number of minimum annual charges 2011/12 – 2014/15**

Regulated rivers	Actual	Forecast	Variance
Number of minimum annual charges on licences	23,388	12,160	11,228

In summary, the 2.5 per cent total revenue variance for regulated rivers over the period 1 July 2011 to 30 June 2015 results from variances in each of the water management charge types. The summary explanation of the impact of these variances is shown in Table 5.6.

**Table 5.6: Variance summary – regulated rivers**

Water management charge type	Positive impact on revenue variance	Negative impact on revenue variance	4 year variance \$'000s (\$2015/16)
Entitlement	0.3% increase in total quantity of share component compared to forecast	A greater number of licences on minimum annual charge resulting in less entitlement charge revenue.	-103
Water take	6% greater volume of measured water take over the period compared to forecast.	A greater number of licences on minimum annual charge resulting in less water take charge revenue.	934
Minimum annual	Number of licences on minimum annual charge 92% greater than forecast.		850
<b>Total variance for the 4-year period</b>			<b>1,680</b>

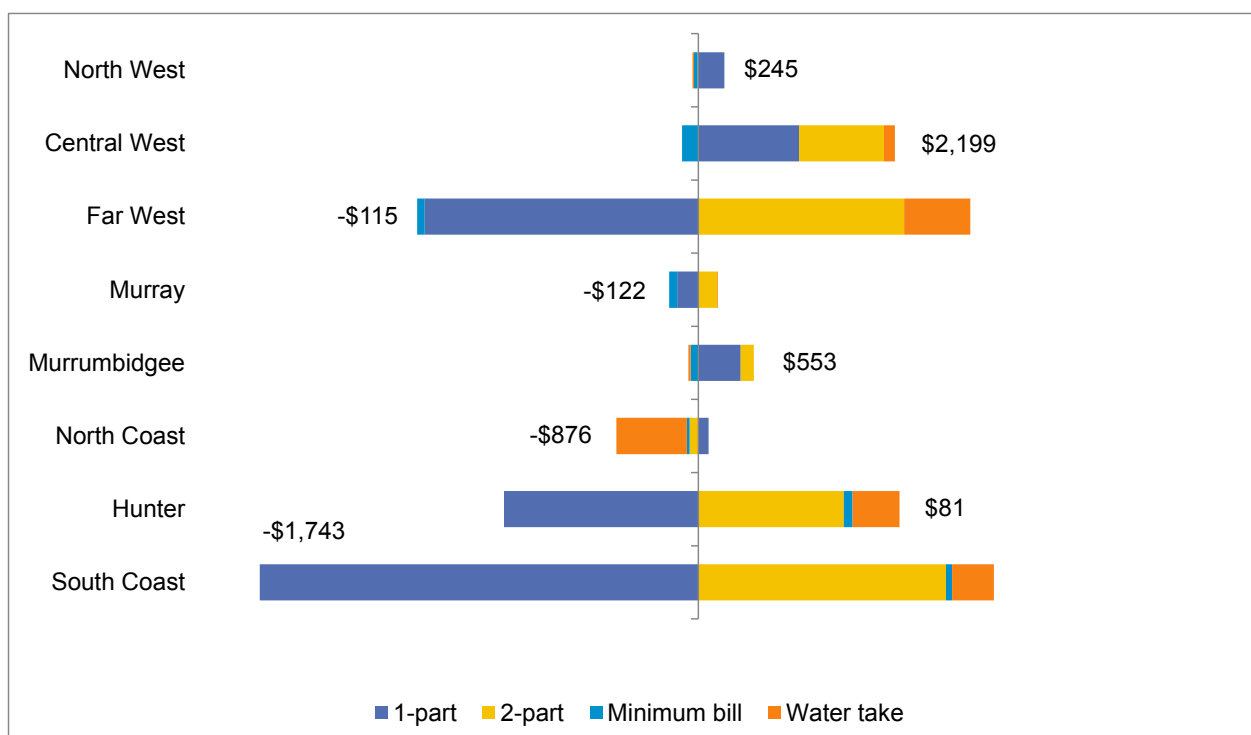
#### 5.1.4 Revenue from unregulated rivers

Unregulated rivers currently have 65 per cent of share component on a 2-part tariff. The coastal pricing water sources account for 89 per cent of the share component on a 2-part tariff. Of this, 75 per cent of the total is from two major users, WaterNSW (South Coast unregulated) and Hunter Water Corporation (Hunter unregulated), and a significant amount of the remainder is from other utilities. The measured water take for the water utilities has been fairly consistent over the current determination period.

The take of water for other categories of unregulated river licences is more variable. For example, the measured water take in the Barwon Darling River (Far West unregulated river) varied from 62 to 169 per cent of the average in the first three years of the current determination.

An analysis of the total revenue variance by valley for unregulated rivers is shown in Figure 5.3.



**Figure 5.3: Unregulated rivers – revenue variance by valley by tariff type 2011/12 – 2014/15 (\$'000 15/16)**

### Entitlement charge

The change in quantity of share component compared to the quantities in the 2011 price determination over the period 1 July 2011 to 30 June 2015 is in Table 5.7.

**Table 5.7: Unregulated rivers – changes in share component for entitlement charge licences**

Pricing water source	2010*		2015**		% change in quantity of share component
	1-part tariff	2-part tariff	1-part tariff	2-part tariff	
04A. Barwon Region	96%	4%	96%	4%	10%
06A. Central West Region	96%	4%	77%	23%	65%
07. Far West	100%	0%	37%	63%	10%
08. Murray	97%	3%	67%	33%	-1%
09. Murrumbidgee	91%	9%	83%	17%	50%
10. North Coast	52%	48%	55%	45%	4%
11. Hunter	35%	65%	27%	73%	12%
12. South Coast	17%	83%	8%	92%	0%
<b>Total</b>	<b>44%</b>	<b>56%</b>	<b>35%</b>	<b>65%</b>	<b>9%</b>

\* IPART Pricing Model 2011. \*\* DPI Water 2015 Annual Information Return to IPART.

The share component forecasts used to calculate the prices were compiled for inclusion in the DPI Water 2009 price submission. Since these forecasts were prepared, 17 water sharing plans (WSPs) for unregulated rivers have been implemented, with the associated conversion of Water

Act licences to Water Management Act licences. This explains most of the variances in quantity of share component.

### Water take charge

Measured water take in unregulated rivers is currently relatively consistent, due to the large proportion used for town water supplies and major utilities.

The total variance in water take against the volumes allowed for in the 2011 price determination over the period is shown in Table 5.8.

**Table 5.8: Unregulated rivers – total variance in measured water take against the volumes allowed in the 2011 price determination**

2011/12	2012/13	2013/14	2014/15	Total
-11%	18%	6%	7%	5%

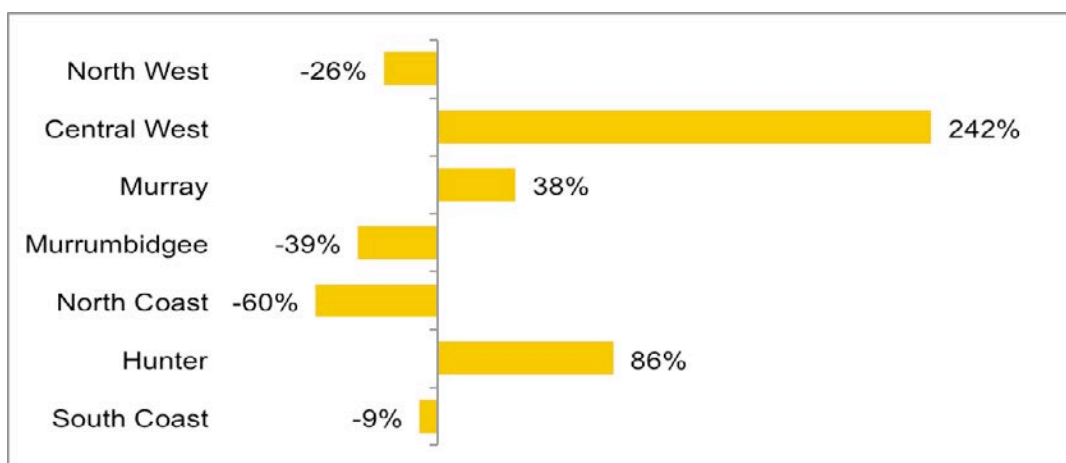
The average proportion of water take to the share component of the 2-part entitlement charge, for each pricing area, is shown in Table 5.9.

**Table 5.9: Average proportion of water take to share component for entitlement charge licences**

Pricing water source	Average % water take
04A. North West	76%
06A. Central West	38%
07. Far West	75%
08. Murray	24%
09. Murrumbidgee	30%
10. North Coast	41%
11. Hunter	24%
12. South Coast	49%
<b>Average for unregulated rivers</b>	<b>44%</b>

The average measured water take is 44 per cent of the share component subject to a 2-part tariff, compared to the forecast of 55 per cent. This negative revenue variance is more than offset by the increase in measured water take associated with the increased share component on a 2-part tariff. The result is that over the period, the total volume of water take for unregulated rivers is five per cent above the forecast. The analysis by pricing area is shown in Figure 5.4.

**Figure 5.4: Unregulated rivers – variance in measured water take against the volumes allowed for in the price determination by valley 2011/12 – 2014/15**



### Minimum annual charge

There was a 27 per cent decrease in the number of licences subject to a minimum annual charge for unregulated rivers compared to the forecast over the period, as shown in Table 5.10. This is because domestic and stock licences were not billed under the current determination.

**Table 5.10: Forecast versus actual cumulative number of water licences subject to a minimum annual charge 2011/12 – 2014/15**

Unregulated rivers	Actual	Forecast	Variance
Number of minimum annual charges on licences	17,993	24,807	-6,814

In summary, the 0.4 per cent total revenue variance for unregulated rivers over the period 1 July 2011 to 30 June 2015 results from variances in each of the water management charge types. The summary explanation of the impact of these variances is shown below in Table 5.11.

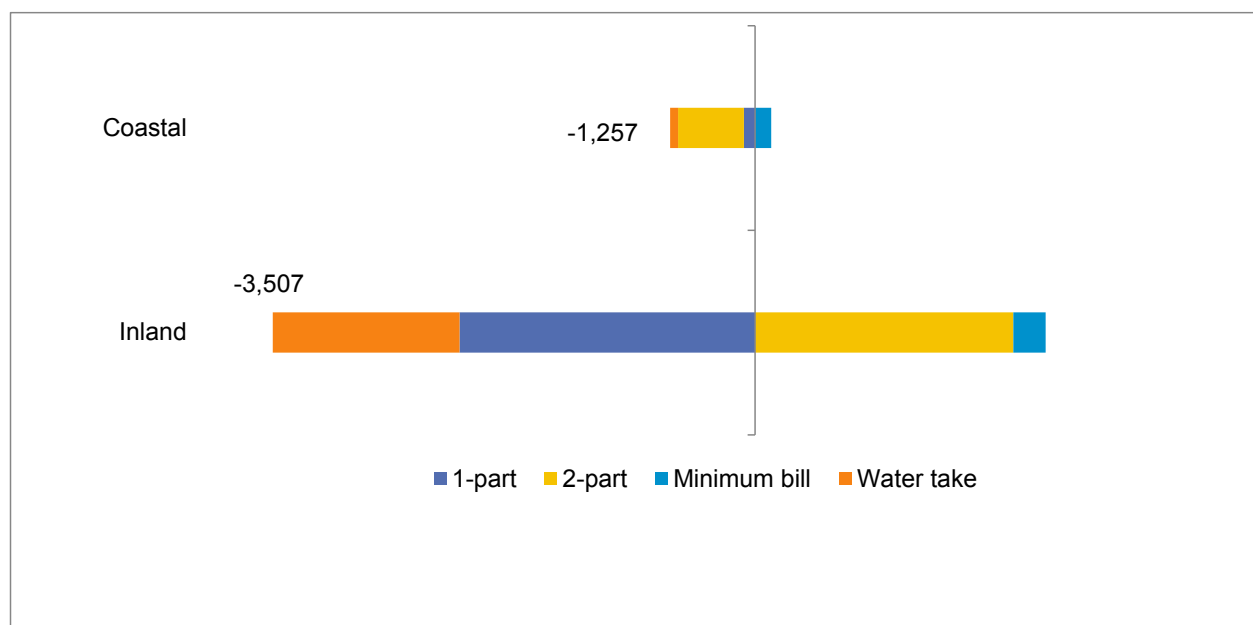
**Table 5.11: Variance summary – unregulated rivers**

Water management charge type	Positive impact on revenue variance	Negative impact on revenue variance	4 year variance \$'000s (\$2015/16)
Entitlement	9% increase in the quantity of share component.	9% movement of the share component for licences from 1-part to 2-part tariff. The negative impact exceeded the positive impact.	-521
Water take	5% greater volume of measured water take as a result of 9% of share component moving to a 2-part tariff. The positive impact exceeded the negative impact.	An actual water take activation rate of 44% compared to the average 55% forecast for licences on 2-part tariff.	1,123
Minimum annual		Number of licences on minimum annual charge is 27% less than forecast.	-378
<b>Total variance for the 4-year period</b>			<b>223</b>

### 5.1.5 Revenue from groundwater

An analysis of the groundwater revenue variance by valley is shown in Figure 5.5.

**Figure 5.5: Groundwater – revenue variance by location by tariff type 2011/12 – 2014/15 (\$'000 15/16)**



#### Entitlement charge

The change in quantity of share component over the period 1 July 2011 to 30 June 2015 is compared to the quantities in the 2011 price determination in Table 5.12.

**Table 5.12: Groundwater – share component for entitlement charge licences**

Pricing water source	2010*		2015**		% change in quantity of share component
	1-part tariff	2-part tariff	1-part tariff	2-part tariff	
13. Inland	21%	79%	6%	94%	-2%
14. Coastal	78%	22%	92%	8%	-6%
<b>Total</b>	<b>32%</b>	<b>68%</b>	<b>23%</b>	<b>77%</b>	<b>-2.5%</b>

\* IPART Pricing Model 2011. \*\* DPI Water 2015 Annual Information Return to IPART.

The groundwater share component forecast used to calculate the prices for the 2011 price submission included the forecast of a large volume of share component being considered as a severe drought response measure for Sydney. This licence was never issued, and explains the reduction in the quantity of coastal share component. The change in inland share component reflects the reductions from the Achieving Sustainable Groundwater Entitlements (ASGE) program.

The proportion of share component subject to a 2-part tariff increased to 77 per cent by 2015, compared to the forecast of 68 per cent. This is a movement of nine per cent of share component from a 1-part to a 2-part tariff.

## Water take charge

There was a total -42 per cent variance in the volume of measured water take against forecast. The variances by year are shown in Table 5.13.

**Table 5.13: Groundwater – total variance in measured water take against the volumes allowed for in the price determination**

2011/12	2012/13	2013/14	2014/15	Total
-65%	-45%	-28%	-30%	-42%

The average proportion of water take of the share component, for the 2-part entitlement charge for each pricing area, is 44 per cent for inland and 43 per cent for coastal. The water take activation rate for the last two years was 120 per cent of the average for the four-year period. The revenue impact of this is the average activation rate for groundwater share component is only 44 per cent, compared to the forecast of 100 per cent. This results in a significant negative water take revenue variance. The overall volume of measured water take for groundwater over the period was 42 per cent under the forecast.

## Minimum annual charge

The number of water licences subject to a minimum annual charge was 8,303, or 118 per cent greater than forecast as shown in Table 5.14.

**Table 5.14: Forecast versus actual number of water licences subject to a minimum annual charge 2011/12 – 2014/15**

Groundwater	Actual	Forecast	Variance
Number of minimum annual charges on licences	15,507	7,204	8,303

In summary, there was a -11 per cent total revenue variance for groundwater over the period 1 July 2011 to 30 June 2015. This results from variances in each of the water management charge types. A summary explanation of the impact of these variances is shown in Table 5.15.

**Table 5.15: Variance summary – groundwater**

Water management charge type	Positive impact on revenue variance	Negative impact on revenue variance	4 year variance \$'000s (\$2015/16)
Entitlement		Total share component is less than forecast. A 9% movement of the share component from 1-part to 2-part tariff. A greater number of licences on minimum annual charge resulting in less entitlement charge revenue.	-2,084
Water take	A greater volume of measured water take as a result of 9% of share component moving to a 2-part tariff.	An actual water take activation rate of 44%, compared to the 100% forecast for licences on 2-part tariff. The negative impact greatly exceeded the positive impact.	-3,565
Minimum annual	Number of licences on minimum annual charge 118% greater than forecast.		885
<b>Total variance for the 4-year period</b>			<b>-4,764</b>

## Summary

DPI Water has experienced a negative revenue variance of \$2.9 million (\$2015/16) over the period 1 July 2011 to 30 June 2015. Revenue from regulated and unregulated rivers was marginally above the forecast amount, and revenue from groundwater was significantly below the forecast.

For regulated rivers total revenue was 2.5 per cent above forecast. The main reason for the variances was differing volumes of water take across the state, reflecting water availability.

For unregulated rivers the main reason for the variance was the greater total quantity of share component, and the water take associated with the higher proportion of share component on a 2-part tariff.

For groundwater the main reason for the variance was a higher proportion of share component on a 2-part tariff, and a much lower water take activation rate compared to forecast.

### 5.1.6 Revenue from water consent transactions

Revenue from water consent transactions for each year is shown in Table 5.16. For more information about water consent transactions see Chapter 9.

**Table 5.16: Revenue from water consent transaction (\$'000 nominal)**

2011/12	2012/13	2013/14	2014/15
821	1,208	1,951	1,984

### 5.1.7 Revenue from water take measurement services

Revenue from water take measurement services for each year is shown in Table 5.17. For more information about water take measurement services see Chapter 10.

**Table 5.17: Revenue from water take measurement services (\$'000 nominal)**

	2011/12	2012/13	2013/14	2014/15
Meter reading	529	652	639	639
Meter service charge	–	101	175	173

## 5.2 Expenditures

This section compares the various components of revenue needs for DPI Water over the period 1 July 2011 to 30 June 2016 (the last year being the budget for 2015/16), compared with the cost forecasts included in the 2011 price determination.

### 5.2.1 Water planning and management operating costs

#### Overview

The 2011 price determination was set for the period 1 July 2011 to 30 June 2014. DPI Water requested and was granted two one-year extensions. The 2011 price determination allowed for a real increase in the level of efficient operating costs of four per cent (2011/12 – 2012/13) and 2.7 per cent (2012/13 – 2013/14).

As part of its process, in the 2011 price determination IPART also assessed the level of operating costs to be allowed in 2014/15, even though prices were not set based on this cost level. The result of this assessment was a minor real increase on the 2013/14 level. This

2014/15 level of operating costs has been used in the following analyses as the level of costs for 2014/15 and 2015/16 allowed for it in the price.

As shown in Table 5.18, DPI Water was given Commonwealth Government funds to undertake a range of water planning and management activities over the current price period.

**Table 5.18: Water planning and management activity costs 2011/12 – 2015/16 (\$'000 15/16)**

	Costs	External funding	Costs associated with price regulated activities
Price regulated water planning and management costs	327,346		327,346
Development of the Basin Plan	12,787	12,787	
Implementation of healthy flood plains policy	28,500	28,500	
<b>Total</b>	<b>368,633</b>	<b>41,287</b>	<b>327,346</b>

### Water management services operating costs

Over the period from 1 July 2011 to 30 June 2016, DPI Water's operating costs will be on average one per cent greater than allowed for in the prices determined in 2011 (\$2015/16), as shown in Table 5.19 below.

**Table 5.19: Actual operating costs against those allowed for in the 2011 price determination for the period 2011/12 – 2015/16 (\$'000 15/16)**

Pricing water source	Operating costs \$'000 (15/16)	Operating costs allowed for in the 2011 price determination \$'000 (15/16)	Variance \$ \$'000 (15/16)	Variance %
<b>Regulated rivers</b>				
01. Border	4,844	4,976	-132	-3%
02. Gwydir	6,924	7,337	-413	-6%
03. Namoi	6,810	7,216	-406	-6%
04. Peel	1,636	1,681	-45	-3%
05. Lachlan	14,512	14,414	98	1%
06. Macquarie	12,439	12,978	-539	-4%
07. Far West	–	–	–	–
08. Murray	33,548	34,296	-748	-2%
09. Murrumbidgee	30,802	33,965	-3,163	-9%
10. North Coast	573	517	56	11%
11. Hunter	9,833	9,430	403	4%
12. South Coast	1,903	951	952	100%
<b>Total regulated rivers</b>	<b>123,824</b>	<b>127,761</b>	<b>-3,937</b>	<b>-3%</b>



Pricing water source	Operating costs	Operating costs allowed for in the 2011 price determination	Variance \$	Variance
	\$'000 (15/16)	\$'000 (15/16)	\$'000 (15/16)	%
<b>Unregulated rivers</b>				
04A. North West	10,602	10,644	-42	0%
06A. Central West	9,351	7,705	1,646	21%
07. Far West	9,281	9,231	50	1%
08. Murray	2,963	3,650	-687	-19%
09. Murrumbidgee	8,374	8,333	41	0%
10. North Coast	20,839	18,207	2,632	14%
11. Hunter	15,101	13,950	1,151	8%
12. South Coast	31,697	30,633	1,064	3%
<b>Total unregulated rivers</b>	<b>108,208</b>	<b>102,353</b>	<b>5,855</b>	<b>6%</b>
<b>Groundwater</b>				
13. Inland	54,731	57,869	-3,138	-5%
14. Coastal	16,189	14,653	1,536	10%
<b>Total groundwater</b>	<b>70,920</b>	<b>72,522</b>	<b>-1,602</b>	<b>-2%</b>
<b>Total</b>	<b>302,952</b>	<b>302,636</b>	<b>316</b>	<b>Less than 1%</b>

Note: 2015/16 actual costs are those budgeted for the period. The efficient operating costs allowed for in the 2011 price determination for 2014/15 are as set out in IPART's 2011 price model and 2015/16 is assumed to be the same.

Table 5.19 shows that overspend has occurred in unregulated rivers (six per cent), and regulated rivers and groundwater will be below forecast. The main reasons for the variance are:

- In the current price period (2011/12 to 2015/16) share component for entitlement charge licences is used in the allocation of costs for 12 activities. This over allocates cost to unregulated rivers, because there is a significant proportion of share component for water take charge only licences for regulated rivers, and very little for unregulated rivers. The share component for unregulated rivers over the current price path period is also significantly greater than forecast. This is a result of 17 WSPs being implemented for unregulated rivers since the original forecasts were prepared. Therefore, more cost than forecast is being allocated to unregulated rivers. The review of cost drivers for the allocation of costs for the future determination is covered in Section 7.3.8 and Appendix E of this submission.
- There has been a focus on improving the service level for surface water monitoring. The existing cost drivers proportionally allocate more of this cost to unregulated rivers. The service review undertaken in preparing this submission has found that some of the services currently costed to unregulated rivers should be costed to regulated rivers for the future determination.

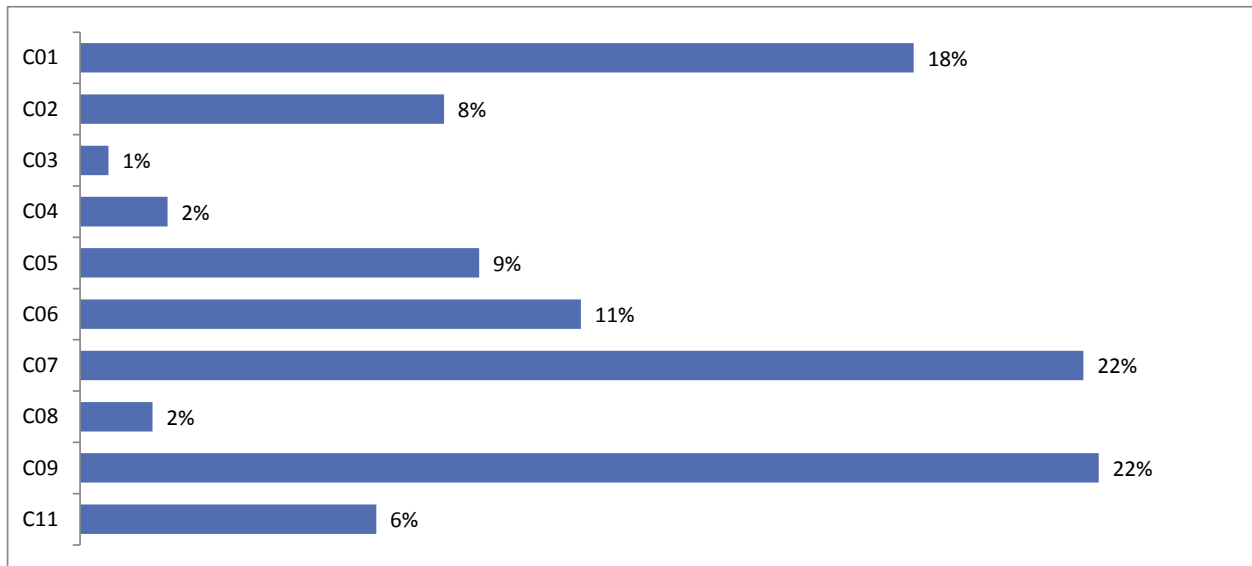
An analysis of operating expenditures by year by pricing water source is included in Appendix A. The general trend of reduction in DPI Water's operating expenditure is shown in Table 5.20.

**Table 5.20: Percentage real change in operating expenditure 2011/12 – 2015/16**

2011/12 – 2012/13	2012/13 – 2013/14	2013/14 – 2014/15	2014/15 – 2015/16	Overall change
-11%	-5%	6%	-13%	-21%

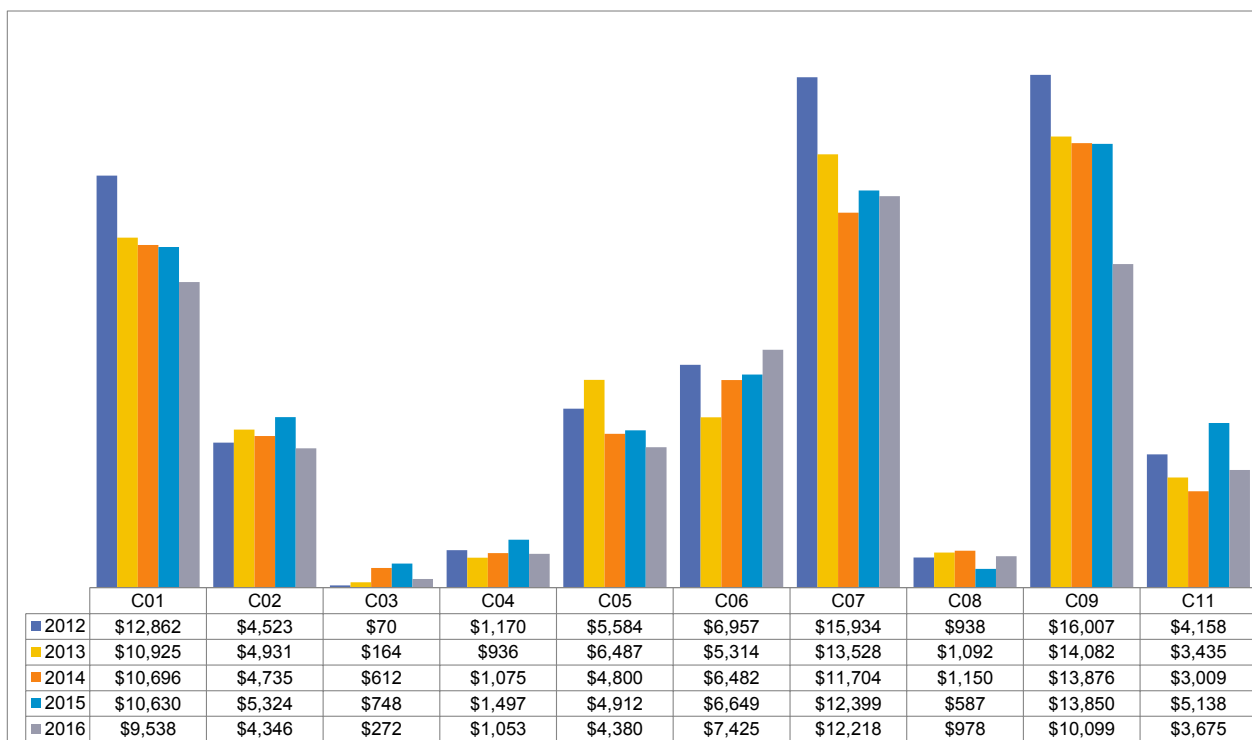
Analyses of the total operating costs over the 2011/12 to 2015/16 period is shown in Figures 5.6 and 5.7 below.

**Figure 5.6: Actual operating expenditure by activity group 2011/12 – 2015/16 (\$'000 15/16)**



An analysis by year is shown in Figure 5.7.

**Figure 5.7: Actual operating expenditure by activity group by year 2011/12 – 2015/16 (\$'000 15/16)**



C01 Surface water monitoring  
 C02 Groundwater monitoring  
 C03 Surface and groundwater metering  
 C04 Surface and groundwater analysis  
 C05 Water modelling and impact assessment

C06 Water management information  
 C07 Water management planning  
 C08 River management works  
 C09 Water consents administration  
 C11 Business administration

An analysis by water source of these variances is provided in Appendix A. Chapter 4 provides an analysis of DPI Water's performance on each activity over the period.

### User share of water management services operating expenditures

IPART's pricing framework recognises that a proportion of the costs of water management result from impacts by the community as a whole. Therefore, a proportion of the costs of each activity are paid for by the NSW Government on behalf of the community. The balance, or the user share, forms the basis of calculating the water management tariffs to be charged to water licence holders.

The 2011 price determination required additional NSW Government funds to support a number of pricing water sources. The determination assessed that the price increases required to recover the efficient costs of water management would result in an unacceptable step change to prices for those water sources. A price 'glide path' to full cost recovery was set, although in some cases full cost recovery was not achieved over the 2011 price period.

The relative cost recovery, set in the 2011 price determination for each pricing water source over the period 2011/12 to 2015/16, is outlined in Table 5.21.

**Table 5.21: Percentage of DPI Water allowed costs recovered by valley 2011/12 – 2014/15**

Pricing water source	2011/12	2012/13	2013/14 and 2014/15
<b>Regulated rivers</b>			
01. Border	95%	100%	100%
02. Gwydir	87%	100%	100%
03. Namoi	76%	89%	100%
04. Peel	48%	57%	66%
05. Lachlan	65%	75%	87%
06. Macquarie	78%	90%	100%
08. Murray	100%	100%	100%
09. Murrumbidgee	98%	100%	100%
10. North Coast	64%	71%	81%
11. Hunter	43%	50%	58%
12. South Coast	64%	73%	84%
<b>Unregulated rivers</b>			
04A. North West	66%	74%	85%
06A. Central West	86%	97%	100%
07. Far West	100%	100%	100%
08. Murray	82%	90%	100%
09. Murrumbidgee	55%	59%	66%
10. North Coast	100%	100%	100%
11. Hunter	100%	100%	100%
12. South Coast	100%	100%	100%

Pricing water source	2011/12	2012/13	2013/14 and 2014/15
<b>Groundwater</b>			
13. Inland	77%	83%	87%
14. Coastal	100%	100%	100%

*For analyses purposes the 2013/14 recovery levels are assumed to continue for 2014/15 and 2015/16, as per Appendix E of Review of Prices for Water Administration Ministerial Corporation, February 2011.*

Table 5.22 sets out the variance between the total user share of operating expenditure over the period 2011/12 to 2015/16 and the allowance made in the 2011 price determination.

**Table 5.22: User share of operating costs – actual versus forecast in 2011 price determination – 2011/12 to 2015/16**

Pricing water source	Actual user share of operating costs \$'000 (15/16)	Forecast user share operating costs in 2011 price determination \$'000 (15/16)	Variance \$ \$'000 (15/16)	Variance %
<b>Regulated rivers</b>				
01. Border	3,405	3,436	-31	-1%
02. Gwydir	4,572	4,814	-242	-5%
03. Namoi	4,880	5,126	-246	-5%
04. Peel	1,220	1,261	-41	-3%
05. Lachlan	10,636	10,489	147	1%
06. Macquarie	8,853	9,397	-544	-6%
07. Far West	–	–	–	–
08. Murray	22,883	23,819	-937	-4%
09. Murrumbidgee	19,491	21,526	-2,036	-9%
10. North Coast	445	392	54	14%
11. Hunter	7,719	7,595	125	2%
12. South Coast	1,298	673	625	93%
<b>Total regulated rivers</b>	<b>85,403</b>	<b>88,528</b>	<b>-3,125</b>	<b>-4%</b>
<b>Unregulated rivers</b>				
04A. North West	7,850	7,559	290	4%
06A. Central West	7,313	6,047	1,265	21%
07. Far West	6,219	6,138	81	1%
08. Murray	2,231	2,649	-418	-16%
09. Murrumbidgee	6,080	5,947	133	2%
10. North Coast	16,136	13,706	2,431	18%
11. Hunter	11,846	10,260	1,586	15%
12. South Coast	23,378	21,403	1,975	9%
<b>Total unregulated rivers</b>	<b>81,052</b>	<b>73,710</b>	<b>7,343</b>	<b>10%</b>

Pricing water source	Actual user share of operating costs \$'000 (15/16)	Forecast user share operating costs in 2011 price determination \$'000 (15/16)	Variance \$ \$'000 (15/16)	Variance %
<b>Groundwater</b>				
13. Inland	49,737	51,423	-1,685	-3%
14. Coastal	14,356	12,426	1,930	16%
<b>Total groundwater</b>	<b>64,094</b>	<b>63,848</b>	<b>245</b>	<b>0%</b>
<b>Total</b>	<b>230,549</b>	<b>226,086</b>	<b>4,463</b>	<b>2%</b>

The variances in user share above show the variances in the actual cost compared to the forecast cost allowed for in the 2011 price determination.

The average percentage user share of actual operating costs, compared to the user shares allowed for in the 2011 price determination, is shown in Table 5.23.

**Table 5.23: Actual versus IPART-allowed user share 2011/12 – 2014/15**

Pricing water source	Actual user share	2011 price determination
<b>Regulated rivers</b>		
01. Border	70%	69%
02. Gwydir	66%	66%
03. Namoi	72%	71%
04. Peel	75%	75%
05. Lachlan	73%	73%
06. Macquarie	71%	72%
07. Far West		
08. Murray	68%	69%
09. Murrumbidgee	63%	63%
10. North Coast	78%	76%
11. Hunter	79%	81%
12. South Coast	68%	71%
<b>Average regulated rivers</b>	<b>69%</b>	<b>69%</b>
<b>Unregulated rivers</b>		
04A. North West	74%	71%
06A. Central West	78%	78%
07. Far West	67%	66%
08. Murray	75%	73%
09. Murrumbidgee	73%	71%
10. North Coast	77%	75%
11. Hunter	78%	74%

Pricing water source	Actual user share	2011 price determination
12. South Coast	74%	70%
<b>Average unregulated rivers</b>	<b>75%</b>	<b>72%</b>
<b>Groundwater</b>		
13. Inland	91%	89%
14. Coastal	89%	85%
<b>Average groundwater</b>	<b>90%</b>	<b>88%</b>
<b>Average all water types</b>	<b>76%</b>	<b>75%</b>

As evident in the above tables, the percentage of user share of actual operating costs is closely aligned to the amount allowed for in the 2011 price determination.

#### Water consent transaction and water take measurement services

The operating expenditure for consent transactions is shown in Table 5.24.

**Table 5.24: Water consent transactions operating expenditure (\$'000 nominal)**

2011/12	2012/13	2013/14	2014/15
3,445	1,988	2,547	2,763

The operating expenditure for water take measurement services is set out in Table 5.25.

**Table 5.25: Water take measurement operating expenditure (\$'000 nominal)**

2011/12	2012/13	2013/14	2014/15
153	2,586	3,676	1,802

#### 5.2.2 Murray Darling Basin Authority and Dumaresq-Barwon Border Rivers Commission

The NSW Government is obligated to contribute to the costs of two inter-jurisdictional water management organisations – the Murray Darling Basin Authority (MDBA) and the Dumaresq-Barwon Borders Rivers Commission (DBBRC). The contributions support two functions of these businesses, being water delivery activities (the cost-recovery of which are the responsibility of WaterNSW), and water planning and management activities, which are the responsibility of DPI Water. The activities of these two inter-jurisdictional organisations are summarised in Table 5.26.

**Table 5.26: Activity summary of MDBA and DBBRC**

Murray Darling Basin Authority	Dumaresq-Barwon Borders River Commission
<ul style="list-style-type: none"> <li>• Operations of salt interception schemes.</li> <li>• River channel management.</li> <li>• Post water management.</li> <li>• Hydrometric services.</li> <li>• Water quality monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrometric services.</li> <li>• Groundwater assessment and monitoring.</li> <li>• Water quality and biological monitoring.</li> </ul>

In 2011 IPART determined that DPI Water could recover the user share of the contribution to the DBBRC, but not the full user share of the contribution to the MDBA. IPART allowed \$1.69 million (\$09/10) for MDBA expenditure each year to be included in the user share of revenue needs.

The contributions made by the NSW Government are the subject of continual scrutiny, to assess efficiency and effectiveness. As outlined in Section 6.4, the operating and capital costs of the MDBA have undergone a significant level of analysis and review. As part of this review the NSW Government significantly reduced its contribution to the MDBA in 2013/14, 2014/15 and 2015/16.

The actual level of contribution by the NSW Government to these water management organisations, and the comparison to those allowed for in the 2011 price determination, are set out in Tables 5.27 and 5.28 below.

**Table 5.27: Contributions to MDBA compared to 2011 price determination allowance (\$'000 nominal)**

	2011/12	2012/13	2013/14	2014/15	2015/16
NSW contribution*	35,800	13,500	9,300	18,900	24,700
Water planning and management activities component	18,714	13,359	1,290	5,891	10,091
Water planning and management activities component allowed for in the 2011 price determination	17,441	16,252	18,646	19,093	**19,571

\* The difference between the NSW contribution and the water planning and management component is the contribution made to river operations; this cost is borne by WaterNSW.

\*\* The allowed for costs for 2015/16 are those allowed for in 2014/15 adjusted for inflation.

**Table 5.28: Contributions to DBBRC compared to 2011 price determination allowance (\$'000 nominal)**

	2011/12	2012/13	2013/14	2014/15	2015/16
NSW contribution <sup>†</sup>	1,100	1,100	1,100	1,100	1,100
Water planning and management activities component	385	385	385	385	407
Water planning and management activities component allowed for in the 2011 price determination	425	410	426	436 <sup>3</sup>	<sup>††</sup> 4364

<sup>†</sup> The difference between the NSW contribution and the water planning and management component is the contribution made to river operations; this cost is borne by WaterNSW.

<sup>††</sup> The allowed for costs for 2015/16 are those allowed for in 2014/15 adjusted for inflation.



The user share of these contributions over the period is set out in Tables 5.29 and 5.30 below:

**Table 5.29: User share of contributions to MDBA 2011/12 – 2015/16 (\$'000 15/16)**

	Actual contribution	Allowed for contribution
Water planning and management contribution	52,643	95,589
User share	29,647	9,796
Percentage of user share	56%	10%

**Table 5.30: User share of contributions to DBBRC 2011/12 – 2015/16 (\$'000 15/16)**

	Actual contribution	Allowed for contribution
Water planning and management contribution	1,999	2,254
User share	1,347	1,536
Percentage of user share	67%	68%

### 5.2.3 Capital costs

The 2011 price determination included an allowance of \$7.1 million (\$2015/16) for total capital investment. DPI Water has invested \$15.0 million (\$2015/16) of capital, of which \$13.8 million (\$2015/16) will be funded by third parties.

An analysis of the capital investments made by DPI Water for its water planning and management services is shown in Table 5.31.

**Table 5.31: Capital Investments 2011/12 – 2015/16 (\$'000 15/16)**

	2012/13	2013/14	2014/15	Forecast 2015/16
Business and computing equipment	–	8	245	247
Infrastructure	1,373	406	120	10,741
Intangibles	1,528	601	569	3,481
Plant and equipment	552	35	366	492
Capital expenditure spend	3,453	1,049	1,300	14,960
Less external funding	–	–	–	-13,809
<b>Net capital expenditure</b>	<b>3,453</b>	<b>1,049</b>	<b>1,300</b>	<b>1,152</b>

The significant deliverables from the expenditure, including those forecast for 2015/16 (\$2015/16), include:

- Upgrade to systems for managing approvals, including aquifer interference, and systems reliability and auditability (\$1.3 million).
- Land title event handler, for updating information on holders or land titles including domestic and stock for approvals (\$286,000).
- Development of online order application systems (\$89,000).
- Improvements to conditions management, to respond to risks identified by independent counsel (\$97,000).

- Develop a data model for case management systems, to replace the current system (\$32,000).
- Acquisition/upgrade of a number of groundwater sensors, and water sampling and monitoring equipment (\$763,000).
- Upgrade to Billabong and Buronga salt interception schemes (\$295,000).
- Water meters for the southern valleys (\$8.3 million funded by Commonwealth).
- New groundwater monitoring bores (\$2.291 million special funding from NSW Government).
- Hydrometrics network – a total of \$1.182 million was spent on the hydrometric network over the period. When DPI Water was integrated into the Industry cluster minor refinement was made to the definition of capital, resulting in refurbishment costs, which had previously been treated as capital, being expensed as follows:
  - 2012/13 – \$55,000.
  - 2013/14 – \$592,000, of which \$352,000 was externally funded.
  - 2014/15 – \$1,220,000, of which \$186,000 externally funded.

An analysis of capital expenditure by year in nominal dollars is set out in Appendix A.

## 5.3 Funding of water management services

### 5.3.1 Water management services

This chapter sets out how revenue has varied from the anticipated amount in the 2011 price determination, and similarly how both the total and user share of the revenue needs building blocks have varied from those forecast. This section outlines how water management services have been funded over the period 2011/12 to 2014/15 (noting that revenue from water management charges for 2015/16 cannot be accurately forecast at the time of preparation of this submission).

#### Water access licence holders

Table 5.32 outlines the level of revenue earned against the average recoverable user share of the revenue needs (that is, operating costs, contributions to MDBA and DBBRC, and the allowance made for recovery of depreciation and return on the regulatory asset base).

**Table 5.32: Water management revenue versus user share of revenue needs by water source 2011/12 – 2014/15 (\$'000 15/16)**

Pricing water source	Recoverable proportion of revenue needs (\$'000 15/16)	Water management revenue (\$'000 15/16)	User share of revenue needs recovered (%)
<b>Regulated rivers</b>			
01. Border	3,969	3,425	86%
02. Gwydir	4,330	4,298	99%
03. Namoi	4,501	3,988	89%
04. Peel	740	543	73%
05. Lachlan	8,940	6,704	75%
06. Macquarie	8,297	7,205	87%
07. Far West	-	0	0%
08. Murray	22,816	20,783	91%
09. Murrumbidgee	18,915	19,173	101%
10. North Coast	330	213	64%
11. Hunter	3,647	2,949	81%
12. South Coast	936	327	35%
<b>Total regulated rivers</b>	<b>77,423</b>	<b>69,608</b>	<b>90%</b>
<b>Unregulated rivers</b>			
04A. North West	5,644	4,928	87%
06A. Central West	6,174	6,790	110%
07. Far West	6,684	5,195	78%
08. Murray	1,977	1,805	91%
09. Murrumbidgee	3,570	3,423	96%
10. North Coast	15,118	9,744	64%
11. Hunter	10,507	8,691	83%
12. South Coast	21,248	15,263	72%
<b>Total unregulated rivers</b>	<b>70,923</b>	<b>55,839</b>	<b>79%</b>
<b>Groundwater</b>			
13. Inland	35,235	30,752	87%
14. Coastal	12,603	8,213	65%
<b>Total Groundwater</b>	<b>47,804</b>	<b>38,965</b>	<b>82%</b>
<b>Total</b>	<b>196,184</b>	<b>164,412</b>	<b>84%</b>

The level of revenue is \$31.8 million (\$2015/16) less than the revenue needs incurred. Even if the user share of the contribution to MDBA above, that was allowed for in the price, was adjusted for (\$19.9 million), there would be a \$11.9 million (\$2015/16) shortfall.

Included in the revenue is the amount recovered for water access licences held by governments for environmental purposes.

An analysis of user share of revenue needs by year by pricing water source is set out in Appendix A.

Included in the revenue in Table 5.32 are the following share components held by WaterNSW and WAMC as at 1 July 2015.

**Table 5.33: Share Component held by Water NSW and WAMC as at 1 July 2015**

Licence holder	Regulated rivers			Unregulated rivers		Groundwater			Total
	Entitlement charge	Water take only	Total	Entitlement charge	Total	Entitlement charge	Minimum charge only	Total	
WaterNSW (Rural)	17	–	17	15,876	15,876	–	–	–	15,893
WaterNSW (Metropolitan)	–	–	–	987,000	987,000	100	–	100	987,100
WAMC	329,958	350,040	679,998	24,985	24,985	1,272	15,500	16,772	721,756
<b>Total</b>	<b>329,975</b>	<b>350,040</b>	<b>680,015</b>	<b>1,027,861</b>	<b>1,027,861</b>	<b>1,372</b>	<b>15,500</b>	<b>16,872</b>	<b>1,724,749</b>

## Government

The NSW Government's contribution to the revenue needs for water management is shown in Table 5.34.

**Table 5.34: Analysis of NSW Government contribution to water management services 2011/12 – 2014/15 (\$'000 15/16)**

Revenue source	\$'000
Government share of water management revenue needs	146,727
Community service obligation for pricing water sources below full cost recovery	21,409
Contributions to MDBA and DBBRC below that forecast	-47,716
Funding of under-recovered user share of revenue needs	28,911
Adverse revenue variance	2,861
<b>Total contribution over the period 1 July 2011 to 30 June 2015</b>	<b>152,676</b>
<b>Contribution as per 2011 price determination</b>	
Share of revenue needs	129,606
Community service obligation for pricing water sources below full cost recovery	18,907
<b>Additional government funding</b>	<b>4,166</b>

## Part C

### Pricing submission

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## 6 Future monopoly services and strategies

This chapter sets out DPI Water's service activities, strategies, services and benefits. For information about revenue needs for water planning and management activities see Chapter 7.

### 6.1 Length of determination

DPI Water proposes that the price determination period should be for four years from 1 July 2016 to 30 June 2020. This would provide a period of price stability for water access licence holders and align the subsequent pricing period for WAMC with that of WaterNSW. Any future reforms in the delivery of water services for NSW will benefit from this alignment, and the resulting ability to transition to new pricing arrangements at the same time.

### 6.2 Overview of monopoly services

DPI Water uses an activity structure for recording and reporting the cost of its water management activities. These activities are grouped into the following three service categories for pricing purposes.

- **Water management services** – where the user share of revenue needs is recovered by the water management charge. All but two of the activities in DPI Water's activity structure contribute to the water management charge.
- **Water consent transaction services** – required to process applications for transactions related to licences and approvals on regulated river, unregulated river and groundwater sources, which require the Minister's consent. One activity, water consent transactions (W09-01), is used to record costs relating to these transactions, which are recovered through consent transaction fees on a fee for service basis.
- **Water take measurement services** – including the provision of government owned meters and meter reading/water take assessment services. One activity, water take data collection (W03-01), is used to record costs relating to these services, which are recovered by meter service charges and meter reading/water take assessment charges on a fee for service basis.

DPI Water's future activity structure has been refined to improve the definition, accountability, recording and reporting of the water planning and management services. The future activities will be referenced with a W-code in place of the C-code in the current determination to make clear whether the activities being referred to are the current or the future activities. The 11 C-code activity groups containing 36 activities in the current determination have been reduced to 10 W-code activity groups containing 33 activities in the future activity structure.

There are service obligations that underpin the requirements for each of the activities in the activity structure. The service obligations for each of the 33 future activities are provided in Appendix D.

Details of the planned future services for the activities are outlined in Section 6.3 below. The details provided include strategies involved in delivering the future activity, changes from the existing service provided, the proposed future service level and its appropriateness, why the future water planning and management activity is required, and the risks that each activity



mitigates. A summary of the description of each activity, its outputs and its performance measures is provided in Appendix C.

### 6.2.1 New activity codes

The future W-code activities are grouped into the same activity groups as the C-code activities, with the one exception. C04, analytical services for water quality programs, will no longer exist as a separate activity group. C04 contained a single activity, water quality analysis. This will be incorporated as a sub-activity into three other activities – W01-03, surface water quality monitoring, W01-04, surface water algal monitoring, and W02-02, groundwater quality monitoring.

Table 6.1 below lists the future W-code activities and shows the mapping to the previous C-code activities. The table also shows the proposed user share for the W-code activity and user share for each of the C-code activities to which the future activity is mapped. An explanation of the mapping between the W-codes and the C-codes follows.

In activity groups W01, surface water monitoring, and W02, groundwater monitoring, the water monitoring assets management activity has been combined with the quantity monitoring activity to which the asset management relates. This is because maintenance and refurbishment tasks are carried out as part of the operation and data collection activities for each of these assets.

The data management function within DPI Water covers both quantity and quality information, so a single data management and reporting activity has been provided for each monitoring activity group for surface water and groundwater (W01-02 and W02-03).

A new activity W01-05, surface water ecological condition monitoring, has been added to surface water monitoring to reflect the new approach that has been adopted to standardise the monitoring and simplify the use of information for multiple ecological attributes of a water source.

In activity group W03, water take monitoring, a single activity has been provided for water take data collection (W03-01). This activity covers the services provided for both user-owned and government-owned meters where costs are recovered on a fee for service basis. The activity W03-02, water take data management and reporting, continues to be included in the water management charge.

Activity group W04, water modelling and impact assessment, has been simplified to include one activity for surface water modelling, one for groundwater modelling, and one for water resource accounting.

In activity group W05, water management implementation, the cost of the water regulation component of the trading and accounts management activity is already being recorded under water regulation management. The remaining component of trading and accounts management has been combined into the linked activity of W05-01, systems operation and water availability management. The other activities in this group directly map to the current C-code activities.

Planning for the use and operation of held environmental water will be captured as part of W05-03, environmental water management.

In activity group W06, water management planning, the activities have been restructured to reflect the service obligations for each of the planning activities. Water plan development has been split into coastal and inland (W06-01 and W06-02) to recognise the additional service obligations under the *Water Act 2007 (Commonwealth)* that apply to inland water sources.

Floodplain management plan development (W06-03), drainage management plan development (W06-04), and regional planning and management strategies (W06-05), previously recorded as part of water sharing plan development, have been separated out into their own activities. Floodplain management and drainage management are different service obligations under the

*Water Management Act 2000*. They are considered to have a significant legacy component, which will be recognised by a different user share for these activities.

Regional planning and management strategies (W06-05) is an activity driven by the recognition of the inter-connectedness and interdependent nature of different water sources and the need to develop strategies for making water available to support urban and economic growth.

Activity group W07, water management works, maps directly to C08-01 river management works. The only difference is that this activity will now contain costs relating to the operation of salt interception schemes.

Activity group W08, water regulation management, maps directly to the previous activities in C09, except that customer management, which was previously in licence administration, has been separated into its own activity W10-01, customer management.

Activity group W09, water consents transactions, contains the water consents transactions formerly recorded in C10-01 that are paid for on a fee for service basis.

Activity group W10, business and customer services, contains W10-01 the new customer management activity; W10-02, business governance and support, which maps directly to C11-02 business development; and W10-03, billing management, that maps to C11-01 financial administration activities from the current determination.

There is some minor reallocation of tasks between the activities in W10. For example, customer management activities, involving participation in the customer service committees, is to be recorded in W10-01; the development of reporting for DPI Water will be costed to W10-02; and W10-03 will record and report the billing and revenue collection costs for DPI Water.

**Table 6.1: Future activities and their relationship with activities in the previous determination**

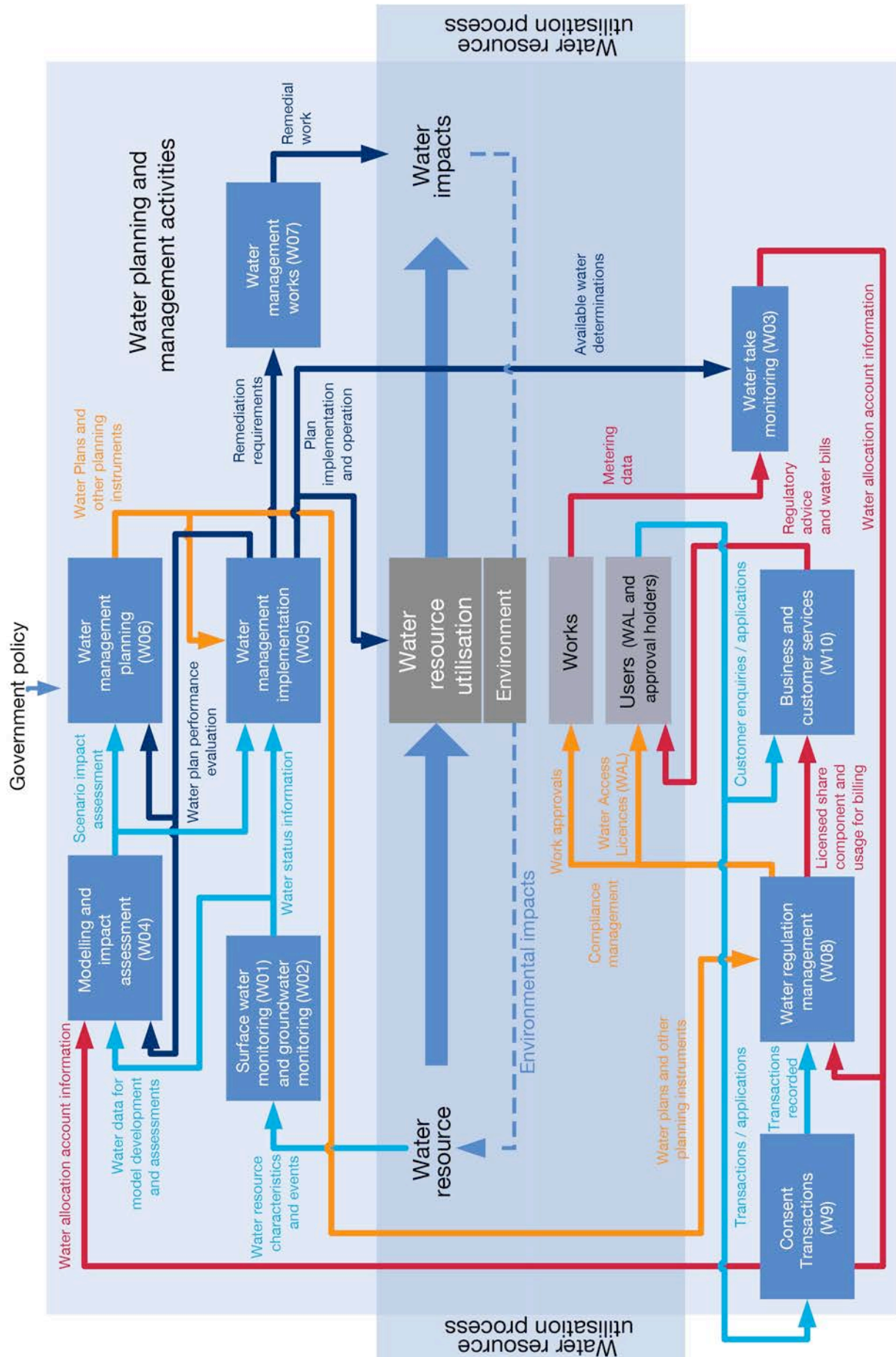
Code	Activity	User share	Mapped C-code activity (user share percentage)
<b>W01</b>	<b>Surface water monitoring</b>		
W01-01	Surface water quantity monitoring	70%	<ul style="list-style-type: none"> <li>• C01-01 Surface water quantity monitoring (70%)</li> <li>• C01-06 Surface water monitoring assets management (70%)</li> </ul>
W01-02	Surface water data management and reporting	50%	<ul style="list-style-type: none"> <li>• C01-02 Surface water quantity data management and reporting (50%)</li> <li>• C01-05 Surface water quality and biological database management (50%)</li> </ul>
W01-03	Surface water quality monitoring	50%	<ul style="list-style-type: none"> <li>• C01-03 Surface water quality monitoring (50%)</li> <li>• Part C04-01 Water quality analysis (50%)</li> </ul>
W01-04	Surface water algal monitoring	50%	<ul style="list-style-type: none"> <li>• C01-04 Surface water ecology, biology and algal monitoring (50%)</li> <li>• Part C04-01 Water quality analysis (50%)</li> </ul>
W01-05	Surface water ecological condition monitoring	50%	<ul style="list-style-type: none"> <li>• Part C01-04 Surface water ecology, biology and algal monitoring (50%)</li> <li>• Part C06-03 Plan performance monitoring and reporting (50%)</li> </ul>

Code	Activity	User share	Mapped C-code activity (user share percentage)
<b>W02</b>	<b>Groundwater monitoring</b>		
W02-01	Groundwater quantity monitoring	100%	<ul style="list-style-type: none"> <li>• C02-01 Groundwater quantity monitoring (100%)</li> <li>• C02-04 Groundwater monitoring assets management (100%)</li> </ul>
W02-02	Groundwater quality monitoring	100%	<ul style="list-style-type: none"> <li>• C02-02 Groundwater quality monitoring (100%)</li> <li>• Part C04-01 Water quality analysis (50%)</li> </ul>
W02-03	Groundwater data management and reporting	100%	<ul style="list-style-type: none"> <li>• C02-03 Groundwater database management (100%)</li> </ul>
<b>W03</b>	<b>Water take monitoring</b>		
W03-01	Water take data collection	100%	<ul style="list-style-type: none"> <li>• C03-01 Metering operations – user owned (100%),</li> <li>• C03-03 Metering operations – government owned (100%)</li> </ul>
W03-02	Water take data management and reporting	100%	<ul style="list-style-type: none"> <li>• C03-02 Metering data management (100%)</li> </ul>
<b>W04</b>	<b>Water modelling and impact assessment</b>		
W04-01	Surface water modelling	50%	<ul style="list-style-type: none"> <li>• C05-01 Water sharing/water management modelling (50%)</li> <li>• C05-02 Resource assessments (30%)</li> <li>• Part C05-03 Water balances and accounting (100%)</li> </ul>
W04-02	Groundwater modelling	100%	<ul style="list-style-type: none"> <li>• C05-04 Groundwater modelling (100%)</li> </ul>
W04-03	Water resource accounting	100%	<ul style="list-style-type: none"> <li>• Part C05-03 Water balances and accounting (100%)</li> </ul>
<b>W05</b>	<b>Water management implementation</b>		
W05-01	Systems operation and water availability management	100%	<ul style="list-style-type: none"> <li>• C06-01 Systems operation and water availability management (100%)</li> <li>• C06-02 Trading and accounts management (100%)</li> </ul>
W05-02	Blue-green algae management	50%	<ul style="list-style-type: none"> <li>• C06-04 Blue-green algae management (50%)</li> </ul>
W05-03	Environmental water management	0%	<ul style="list-style-type: none"> <li>• C06-05 Environmental water management (0%)</li> <li>• Part C07-03 Environmental water planning (0%)</li> </ul>
W05-04	Water plan performance assessment and evaluation	50%	<ul style="list-style-type: none"> <li>• C06-03 Plan performance monitoring and reporting (50%)</li> </ul>
<b>W06</b>	<b>Water management planning</b>		
W06-01	Water plan development (coastal)	70%	<ul style="list-style-type: none"> <li>• Part C07-01 Water sharing plan development (70%)</li> <li>• Part C07-05 Water industry regulation (30%)</li> </ul>
W06-02	Water plan development (inland)	70%	<ul style="list-style-type: none"> <li>• Part C07-01 Water sharing plan development (70%)</li> <li>• Part C07-05 Water industry regulation (30%)</li> </ul>
W06-03	Floodplain management plan development	0%	<ul style="list-style-type: none"> <li>• Part C07-01 Water sharing plan development (70%)</li> </ul>
W06-04	Drainage management plan development	0%	<ul style="list-style-type: none"> <li>• Part C07-01 Water sharing plan development (70%)</li> </ul>
W06-05	Regional planning and management strategies	70%	<ul style="list-style-type: none"> <li>• Part C07-01 Water sharing plan development (70%)</li> </ul>
W06-06	Development of water planning and regulatory framework	75%	<ul style="list-style-type: none"> <li>• C07-02 Operational planning (75%)</li> <li>• Part C07-05 Water industry regulation (30%)</li> </ul>
W06-07	Cross border and national commitments	50%	<ul style="list-style-type: none"> <li>• C07-04 Cross-border and national commitments (50%)</li> </ul>

Code	Activity	User share	Mapped C-code activity (user share percentage)
<b>W07</b>	<b>Water management works</b>		
W07-01	Water management works	50%	• C08-01 River management works (50%)
<b>W08</b>	<b>Water regulation management</b>		
W08-01	Regulation systems management	100%	• Part C09-01 Licence administration (100%)
W08-02	Consents management and licence conversion	100%	• C09-02 Licence conversion and entitlement specification (100%)
W08-03	Compliance management	100%	• C09-03 Compliance (100%)
W08-99	Water consents overhead	100%	• C09-04 Consent transaction overhead (100%)
<b>W09</b>	<b>Water consents transactions</b>		
W9-01	Water consents transactions	100%	• C10-01 Water consents transactions (100%)
<b>W10</b>	<b>Business and customer services</b>		
W10-01	Customer management	100%	• Part C09-01 Licence administration (100%)
W10-02	Business governance and support	70%	• C11-02 Business development (70%)
W10-03	Billing management	100%	• C11-01 Financial administration (100%)

The inter-relationship of these activities to each other and their role in delivering the key responsibilities and functions of DPI Water are shown in Figure 6.

Figure 6.1: Inter-relationship of DPI Water's monopoly service activities



### 6.2.2 User shares

The user shares proposed by DPI Water for the new W-code activities were independently reviewed by The Centre for International Economics (The CIE) and are consistent with existing user shares and impactor pays principles previously determined for the current C-code activities. Table 6.1 shows the mapping of the W-code activities to the current C-code activities and their user shares.

Most of the new W-code activities have a proposed user share that is the same as the components of the existing C-code activities that comprise the new activity. Where a new activity has been created, information is provided on the tasks included in that activity and the basis for the proposed user share.

#### W01 Surface water monitoring

W01, surface water monitoring, contains a new activity W01-05, surface water ecological condition monitoring. This activity involves collection and analysis of data on a wide range of parameters including hydrology, water use, water quality, land use, geomorphology, riparian vegetation, catchment disturbance and stream biota, as they relate to stress on the river. Part of the work program is to classify rivers according to their aquatic bioregions, hydrology and physical characteristics. This activity includes new approaches to monitoring water quality that will allow monitoring results to be transferred to other rivers of the same river type. This new approach facilitates improvements in the efficiency of water monitoring programs. The proposed user share of 50 per cent is consistent with previous determinations on surface water quality monitoring.

#### W02 Groundwater monitoring

The only change to W02, groundwater monitoring, compared to the existing C-code activities is the inclusion of analysis of water quality samples in W02-02, groundwater quality monitoring. It is proposed to retain user shares for groundwater monitoring activities at 100 per cent.

#### W03 Water take monitoring

W03-01, water take data collection, is proposed to continue to be recovered on a fee-for-service basis. W03-02, water take data management and reporting, aligns directly with the equivalent C-code activity C03-02, metering data management. It is proposed to retain the existing user share of 100 per cent.

#### W04 Water modelling and impact assessment

The restructured activities for W04, water modelling and impact assessment, includes a single activity W04-01 for surface water modelling. Most of this activity's cost relates to existing C-code activities with a user share of 50 per cent; and small components from activity C05-02, resource assessments, with a user share of 30 per cent, and C05-03, water balances and accounting, with a user share of 100 per cent. The proposed user share of 50 per cent for W04-01, surface water modelling, is consistent with the combined C-code activities. The user share for W04-02, groundwater modelling, is proposed to be kept at 100 per cent, which is consistent with the existing C-code activity.

The new activity W04-03, water resource accounting, relates to the development of annual general purpose water resource accounts to meet the NSW Government's commitments for water resource accounting. This includes:

- Population of account elements through water data analysis, modelling or quantification methods, including reporting of groundwater assessments.
- Provision of single point of truth data and reviews to meet multiple NSW and interstate reporting and accountability requirements.



- Reporting on water entitlements (including held environmental water), water trade (including inter-valley/interstate trade balances), water take (diversion compliance), and environmental water use (held and rules based).
- Provision of NSW data and technical support for the production of the Bureau of Meteorology (BoM) national water account; and provision of data and performance analyses supporting the water sharing plan (WSP) review process.

As the need for this activity is driven by water rights holders' use of water, and the government pays for held environmental water, the user share for this activity is proposed to be 100 per cent.

### **W05 Water management implementation**

Each of the four activities in W05, water management implementation, aligns with one or more components of current C-code activities that have the same user share. The proposed user shares are consistent with those determined for the current C-code activities.

### **W06 Water management planning**

W06, water management planning, has been restructured to align with statutory service obligations. The current C07-01, water sharing plan development, which has a user share of 70 per cent, has been distributed into five different activities:

- W06-01, water plan development (coastal), and W06-02, water plan development (inland), for which it is proposed the user share of 70 per cent is retained.
- W06-03, floodplain management plan development, and W06-04, drainage management plan development, for which a user share of zero per cent is proposed because both these activities are dealing with legacy issues and have significant community benefits.
- W06-05, regional planning and management strategies, for which a user share of 70 per cent is proposed.

W06-01 and W06-02 represent the majority of tasks currently comprising the existing C07-01, water sharing plan development. These two new W-code activities are largely equivalent in their purpose except that the inland activity includes *Water Act 2007 (Commonwealth)* service obligations. The separate coastal and inland water plan development activities will allow future identification of any difference in the level of planning cost resulting from additional service obligations for inland planning. No change to the existing user share of 70 per cent is proposed. This is because the inclusion of a minor cost from the existing C-code activity, water industry regulation, with a user share of 30 per cent, has been offset by the separation of planning tasks with a proposed user share of zero per cent being moved into the W06-03 and W06-04 activities.

The activity W06-03, floodplain management plan development, involves:

- Mapping of floodplain development, major flood flow-paths and flood-dependent ecosystems to better manage floodplain assets.
- Mapping of unobstructed floodway networks to identify effective passage of floodwaters, and maintain floodplain connectivity to protect and enhance flood-dependent ecosystems.
- Development of rules to determine where landholder flood protection works can and cannot be constructed.
- Provision of assessment criteria for regulating existing and future flood control works within floodway networks.

The current actions of property owners drive the need for floodplain management plans, but to a limited extent. Most of the infrastructure relating to floodplain management was constructed prior to 1997, and therefore most related costs are legacy costs. For this reason the proposed user share for the next determination is zero per cent.



The activity W06-04, drainage management plan development, identifies, for affected water management areas, the existing and natural hydrological regimes, existing drainage works and the way they are managed, and the ecological impacts and impacts on water quality, including cumulative impacts, of the existing drainage works. The plans may include provision for several types of activities to reduce the environmental risk associated with drainage infrastructure, such as:

- Modifying floodgates to enable the controlled tidal exchange of drain water with fresh or brackish estuarine water, to improve water quality in the drain and allow fish greater passage.
- Using water retention structures to reduce seepage of acidic groundwater into drains.
- Redesigning drains, such as filling in unnecessary drains or replacing deep drains that intercept groundwater with shallow drains, which remove only surface water.

Given that the drainage infrastructure to be modified under drainage management plans was primarily constructed prior to 1997, the associated costs are legacy costs. A user share of zero per cent is therefore proposed for this activity.

W06-05, regional planning and management strategies, is a key strategic component of water planning. It has been separated from the other activities formerly in C07-01, water sharing plan development, because its primary service obligation is different to W06-01 and W06-02. The objectives of regional planning and management strategies are to identify:

- The regional interdependence of water sources.
- Future bulk water requirements as a result of planned or forecast economic development.
- Instances where these requirements may not be able to be satisfied through trading in the water market; and how such requirements can be met if not through water trading.
- Planning requirements that may be necessary to protect existing water rights as a result of economic or urban development.

This activity was previously undertaken as part of C07-01, water sharing plan development. Therefore DPI Water is proposing that this activity have a 70 per cent user share, which is consistent with the existing activity.

The remaining water management planning activities, W06-06, development of water planning and regulatory framework, and W06-07, cross border and national commitments, align directly with existing C-code activities. It is proposed to retain the existing user shares for these activities, as shown in Table 6.1.

### **W07 Water management works**

W07-01, water management works, aligns directly to C08-01, river management works. It is proposed to retain the existing user share of 50 per cent.

### **W08 Water regulation management**

All activities in W08, water regulation management, align directly with existing C-code activities. It is proposed to retain the existing user share of 100 per cent for these activities.

### **W09 Water consents transactions**

W09, water consents transactions, will continue to be recovered on a fee for service basis.

### **W10 Business and customer services**

W10, business and customer services, contains the new activity W10-01, customer management. This activity covers all customer liaison activities, including responding to calls to licensing and compliance information lines, and producing communication and education materials such as website content and participation in customer forums. Most of this activity is

recorded as part of C09-01, licence administration, under the current determination. The tasks in this activity primarily relate to the servicing of water users' property rights and transactions, and other user-driven needs. The user share proposed for this activity is 100 per cent.

The remaining business and customer services activities, W10-02, business governance and support, and W10-03, billing management, align directly with existing C-code activities. It is proposed to retain the existing user shares for these activities.

### 6.2.3 Changes to licence type

The following additional categories of licences have been or are being established for use during the next determination period:

- Floodplain harvesting (regulated river) and floodplain harvesting (unregulated river).
- Major utility (Barnard) (regulated river).
- Major utility (Grahamstown) (unregulated river).
- Regulated river (environmental – RMIF).
- Salinity and water table management (groundwater).
- Supplementary Aboriginal environmental water access (unregulated river).
- Supplementary water environmental access (regulated river).
- Supplementary water (Lowbidgee) (regulated river).
- Supplementary water (storage) (groundwater).
- Unregulated river (A, B and C class).
- Unregulated river (regulated supply – local water utility) and unregulated river (regulated supply).
- Unregulated river (high flow).
- Unregulated river (special additional high flow).

Further information about each category is provided below.

#### **Floodplain harvesting (regulated river) and floodplain harvesting (unregulated river)**

Floodwaters provide a valuable source of water to local and downstream water users, and play an important role in replenishing floodplains, rivers, wetlands and groundwater. The unconstrained harvesting of water from floodplains reduces the amount of water reaching or returning to rivers. This decreases the amount of water available to meet downstream river health, wetland and floodplain needs, and can also affect the connectivity between the local floodplain wetlands and the river.

To address these risks, sections 57 and 57A of the *Water Management Act 2000* were amended in 2014 to include floodplain harvesting access licences, for regulated and unregulated rivers, as new categories of licences. Floodplain harvesting access licences will be determined according to the capability of the works that are to be used to extract water, will be issued in perpetuity, and will have compensation rights. Implementation of these licences is still being negotiated with stakeholders, and will proceed only when all licences in a pricing water source can be issued concurrently.

#### **Major utility (Barnard) (regulated river)**

DPI Water is proposing to create this licence type to ensure that licence holders do not pay twice for one extraction of water. This can occur when a licence holder extracts water from one water source, transfers that water to another water source and then extracts the transferred water from the second water source under another licence they also hold. An example of this is the Barnard scheme in the Hunter regulated river. Water is taken from the Barnard River under an access

licence held by AGL Macquarie. This water is physically transferred from the Barnard River to Glenbawn Dam and stored there for use by AGL Macquarie at a later date. DPI Water is proposing to create a unique category of licence (that is, a major utility (Barnard) access licence) for use in accounting for the extraction of transferred water.

#### **Major utility (Grahamstown) (unregulated river)**

DPI Water proposes potential changes to licenses held by the Hunter Water Corporation. Negotiations are currently in progress to address potential double counting of water taken from the Williams River and transferred to the Grahamstown Dam. (This situation is similar to the major utility (Barnard) licence outlined above.) These negotiations may result in the creation of a new licence category, major utility (Grahamstown) (unregulated river).

#### **Regulated river (environmental – RMIF<sup>1</sup>)**

Under the 2002 Snowy Water Inquiry Outcomes Implementation Deed the NSW, Victorian and Commonwealth Governments committed to providing up to 70 GL each year from the Snowy Scheme that would be available for environmental purposes in the River Murray. This water has now been realised through the funding of efficiency measures and water purchases via Water for Rivers.

To implement these arrangements DPI Water will be required to create a new 35 GL water access licence in the Murray regulated river water source. Additionally, changes to the NSW regulatory framework will be required to give effect to the new licence.

#### **Salinity and water table management (groundwater)**

Clause 4 of the *Water Management (General) Regulation 2011* was amended to include salinity and water table management access licences. These licences are defined as specific purpose access licences, which means the licence must be cancelled when the purpose for which the licence was issued ceases.

The licences have been created in a number of groundwater WSPs to combat the rising volume and effects of salinity in the Murray Darling Basin. They are one of the measures being taken as part of the salt interception scheme, which NSW has joined. Salt interception schemes are large-scale groundwater pumping and drainage projects that intercept saline water flows and dispose of them, generally by evaporation.

#### **Supplementary Aboriginal environmental water access (unregulated river)**

Schedule 3 of the *Water Management (General) Regulation 2011* was amended to include supplementary Aboriginal environmental water access licences. These licences were created specifically for inclusion in the WSP for the Barwon-Darling unregulated and alluvial water sources (2012) to support the Brewarrina Aboriginal fish traps (Baiaime's Ngunnhu).

#### **Supplementary water environmental access (regulated river)**

Schedule 3 of the *Water Management (General) Regulation 2011* was amended to include supplementary water environmental access licences, which are a new subcategory of supplementary water access licence. They were added to fill an administrative gap within the regulation, as every other category of access licence already had an environmental subcategory.

There are no instances of the granting of supplementary water environmental access licences in the state. If they are granted in the future, it is likely they will be granted to water environmental assets in regulated river water sources.

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<sup>1</sup> River Murray Increased Flows

### **Supplementary water (Lowbidgee) (regulated river)**

Schedule 3 of the *Water Management (General) Regulation 2011* was amended to include the supplementary water (Lowbidgee) access licence, which is a new subcategory of supplementary water access licence. This subcategory of licences has been created as a result of commencing the WSP for the Murrumbidgee regulated river water source (2003).

Water from regulated river water sources that was previously diverted for flood irrigation during periods of supplementary access in this WSP has been converted to supplementary water (Lowbidgee) access licences.

### **Supplementary water (storage) (groundwater)**

Schedule 3 of the *Water Management (General) Regulation 2011* was amended to include supplementary water (storage) access licences, which are a new subcategory of supplementary water access licence that allows water take from groundwater sources.

These licences will only be granted as a result of a controlled allocation order, to allow some water to be taken from the groundwater storage in porous rock water sources. This is because generally water users only access recharge within a groundwater source. However there is very little recharge that occurs for buried water sources as only small areas are outcropped. Porous rock water sources have large storage volumes and therefore some water take from storage is permitted. It will be limited to a cumulative volume of 0.002 per cent of storage.

### **Unregulated river (A, B and C class)**

Clause 4 of the *Water Management (General) Regulation 2011* was amended to create these new licence categories. Unregulated river (A class), unregulated river (B class) and unregulated river (C class) access licences are categories of access licence created as a result of commencing the WSP for the Barwon-Darling unregulated and alluvial water sources (2012).

The different categories of licence reflect that water can only be taken at specific flow levels. They are the same as unregulated river access licences, where each category of licence corresponds to an access rule that restricts take to particular flow classes.

### **Unregulated river (regulated supply – local water utility) and unregulated river (regulated supply)**

Clause 4 of the *Water Management (General) Regulation 2011* was amended to create new licence categories of unregulated river (regulated supply – local water utility) access licences and unregulated river (regulated supply) access licences. These licences are used to take water that has been diverted from a regulated water source under a regulated river access licence into an unregulated river water source.

The licences are defined as specific-purpose access licences, which means the licence must be cancelled when the purpose for which the licence was issued finishes.

### **Unregulated river (high flow)**

Clause 4 of the *Water Management (General) Regulation 2011* was amended to include unregulated river (high flow) access licences. Unregulated river (high flow) access licences result from the conversion of an existing unregulated river access licence according to rules in the relevant WSP. If water users convert to unregulated river (high flow) access licences, they benefit from obtaining a higher share component than they previously had, however they can only take during periods of high flow.

The higher share component is based on a conversion ratio, which ranges from 2.0 to 5.0, as specified in a dealing rule in the WSP. DPI Water encourages the conversion of access licences to unregulated river (high flow) access licences as it reduces the level of extraction from the river during low flows. The incentive for the licence holders to convert is the increased share, but the

licence holder needs to invest in the infrastructure necessary to capture the water take when it is available under this category of licence

### Unregulated river (special additional high flow)

Clause 4 of the *Water Management (General) Regulation 2011* was amended to include this licence category, which is different to unregulated river (high flow) access licences. Unregulated river (special additional high flow) access licences have arisen from the conversion of a *Water Act 1912* entitlement. This entitlement allowed water users to irrigate a larger parcel of land and was usually linked to an existing entitlement for a smaller parcel of land. They were historically issued under a lower fee scale than the existing entitlement that they were linked to.

Access to water under these access licences can only occur during extremely high flow events. It is therefore highly unlikely they will be used more than once a year, and unlikely they will be used every year.

## 6.3 Monopoly service activities

This section outlines the future water management activities. The details provided include strategies involved in delivering the future activity, changes from the existing service provided, the proposed future service level and its appropriateness, why the future water planning and management activity is required, and the risks that each activity mitigates.

### 6.3.1 Standards of service – W01 Surface water monitoring

W-code	Activity group name	Summary of activity
W01	Surface water monitoring	The collection and provision of quantity, quality, algal and ecological information for monitoring, use, assessment and management of surface water.

#### W01-01 Surface water quantity monitoring

W-code	Activity name	Summary of activity
W01-01	Surface water quantity monitoring	The provision of a surface water quantity monitoring system; including design, station calibration, data collection, processing, encoding, quality assurance and archiving from the networks of water monitoring stations; the delivery of near real time height and/or flow data from all telemetered sites to the corporate database; and the maintenance and operation of surface water monitoring stations.

### Service obligation changes and strategies for delivering the activity

The monitoring network has been progressively upgraded from dial-up landline communications to internet-based systems. This means that instead of water users having to access each station individually to gain data they can access it from DPI Water's website in real-time. Delivery of data through online products such as the website and smartphone apps provides the whole community with up-to-date data which improves customer accessibility and convenience.

As part of informing DPI Water's future services it has assessed and categorised hydrometric stations into two groups – mandatory (459 stations) and discretionary (75 stations). Mandatory stations provide data for developing and implementing water sharing plan rules, compliance of rules and licence conditions, water quality monitoring and water modelling. Discretionary stations provide data for other government agency purposes such as Bureau of Meteorology data requirements and are not costed to the water management charge in the next determination period.

DPI Water has also undertaken Australian Hydrographers Association technical skills certification to ensure data is being recorded by staff that are appropriately trained and qualified.

It has implemented a comprehensive water action management system to track and record incidences, issues and responses with regards to data collection, archiving and dissemination.

### Proposed changes to the activity

Since 2011 there has been a progressive shift to real-time data collection and delivery to the web. A risk-based approach has been adopted to focus resources and effort into delivering data and only maintaining mandatory stations, to meet customer and government needs.

The frequency of station maintenance visits and calibration is based on the need to undertake field validation of recorded real-time data. This improves the accuracy of data provided, which feeds into implementing WSP rules and provides users with more accurate streamflow condition information. The number of station visits also adopts a risk-based approach, where resources are increased to deliver accurate information and ensure station functionality at high-risk times such as low flow periods.

The network size and location of stations will continue to be refined, with the closure of non-essential hydrometric stations. The non-essential stations have been excluded from the DPI Water cost forecast. This ensures that the water management charge is costed only to essential (mandatory) stations to reflect customer and government water monitoring needs, and ensure an appropriate service level is delivered.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of stations for water management charge:	Number of visits per annum per station:
<ul style="list-style-type: none"> <li>Current: <ul style="list-style-type: none"> <li>DPI Water = 430.</li> <li>DBBRC<sup>2</sup> = 29.</li> </ul> </li> <li>Forecast: <ul style="list-style-type: none"> <li>DPI Water = 430.</li> <li>DBBRC = 29.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Current: average 4.8.</li> <li>Forecast: average 5.</li> </ul>

The service level is appropriate because all sites are required to deliver water management in NSW. An extensive review of the network has determined the network density and distribution required to deliver DPI Water's water management activities. Cost efficiency has been a key driver in these processes. The performance indicator is a measure of the average performance, with the actual performance being reflective of catchment and stream condition along with the stresses on user needs.

### The risks addressed or mitigated by the activity

Water information services are mandatory services that support water planning, management and regulation activities.

The network of surface water monitoring stations allows DPI Water to measure the distribution and availability of water for a range of commercial and community needs. Water sharing and water management plans require the regulator, water distribution and delivery organisations, irrigators and the broader community to have knowledge of the available water and its distribution.

For WSP implementation the volume of water in a system is required to be measured in real time and non-real time for water take to be allowed, and for the compliance and effectiveness of the plan to be managed. This knowledge and data is gathered through the hydrometric station network.

<sup>2</sup> Dumaresq-Barwon Border Rivers Commission



## W01-02 Surface water data management and reporting

W-code	Activity name	Summary of activity
W01-02	Surface water data management and reporting	The data management and reporting of surface water quantity, quality and biological information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.

### Service obligation changes and strategies for delivering the activity

There are a number of changes to standards and policies that have impacted the data management activities of DPI Water. The NSW Chief Scientist highlighted in her recent reports on coal seam gas related activities that there are a number of issues and expectations with regard to natural resources data in NSW. The general public have indicated they do not fully trust the data being made available by many sectors including government. As a result DPI Water has undertaken ISO 9000 accreditation for field data collection activities to demonstrate the quality and repeatability of measurements. Further enhancements to systems will be required, as the need for and the extent of ISO accreditation is likely to be expanded to include ISO 19157:2013 – Data Quality, ISO 15801:2009 – Document Management and ISO 27001:2013 – Database Security Management.

DPI Water maintains a number of data dissemination systems to cater for the various technologies and internet speed differences between urban and non-urban areas. It leads water agencies in Australia in making its data available and it will continue to innovate and expand in this area.

There is an increasing expectation of a greater number of sites and more frequent data being made available, and this results in higher demands on hardware, software and system monitoring. Technological changes and advances in both hardware and software have resulted in more than 85 per cent of sites producing data every hour as the minimum standard. To meet specific requested customer needs this has been increased at some sites to be as often as every five minutes.

### Proposed changes to the activity

These changes to standards and policies require DPI Water to develop improved data dissemination services, including data integration, spatial data integration, websites, smartphone apps, and new and improved systems. DPI Water will also improve the reliability of services, including ongoing hardware and software upgrades, asset management systems, data processing improvements, optimisation of data flows and network traffic, and new and improved systems.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of surface water sites subject to data management and meeting specific criteria: <ul style="list-style-type: none"> <li>Current: 1,245.</li> <li>Forecast: 1,245.</li> </ul>	Percentage telemetered sites with data available on internet at 9am each day: <ul style="list-style-type: none"> <li>Current: 95%.</li> <li>Forecast: 95%.</li> </ul> Percentage of DPI Water funded sites telemetered: <sup>3</sup> <ul style="list-style-type: none"> <li>Current: 90%.</li> <li>Forecast: 90%.</li> </ul>

The service level is appropriate because all sites are managed within the database, and the sites that are currently active require the majority of management effort. Data from sites is not discarded when a site is closed but retained for long-term trend analysis. Data from externally

<sup>3</sup> Of the 459 mandatory sites, 35 do not deliver time series data. Therefore the maximum achievable amount is 92 per cent of the network delivering time series data. This assumes that all time series data sites are telemetered.



funded and operated sites is expected to increase during the next determination, off-setting the number of sites that may be closed by DPI Water. Only sites producing information useful for water management are added to the database.

#### The risks addressed or mitigated by the activity

Water data enables proper planning and policies to be developed and tested, as well as supporting timely and targeted responses during major events.

Knowledge of upstream conditions and streamflow trends is essential for a number of water dependant industries, where knowledge of the quantity and quality of water is crucial to their management and investment decisions. Water data allows users to know what water is available at specific key sites where license conditions impact their ability to pump or not.

Water trading is dependent on knowing what water is available in the system and modelling possible future scenarios around water volumes in each location.

The determination of valley water allocations is dependent on water data, including current conditions and analysis of historic data for trend analysis.

A significant number of towns throughout rural NSW are dependent on streams or aquifers for their water supply. Knowledge of the conditions of aquifers and streams is crucial for their successful management.

### W01-03 Surface water quality monitoring

W-code	Activity name	Summary of activity
W01-03	Surface water quality monitoring	The provision of a surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.

#### Service obligation changes and strategies for delivering the activity

DPI Water is undertaking a program to develop regional surface water quality characteristics for NSW. This will improve reporting of water quality and river ecosystem health, ensuring that the data reflects the true condition of the resource. This activity is the major contributor to this work, providing the key long-term data that allows baselines to be established and trends to be monitored, and enabling the realistic setting of locally relevant regional water quality targets. The program then allows reporting against the new targets to provide realistic targeting of programs and policies to address water quality hot spots.

The Basin Plan requires reporting against targets within each inland valley across three altitudinal zones. It requires the preparation of Water Quality Management Plans for all NSW Basin surface waters. This activity will report water quality condition against identified and accepted targets and objectives for ecosystems, irrigation and recreation.

This information will provide the foundational information for required planning activities. Examples of these activities include identifying the causes of water quality degradation and present measures undertaken to address the risks to water quality; and providing a management plan that articulates river and catchment management actions to enable progress towards meeting water quality targets and objectives.

#### Proposed changes to the activity

The activity provides for the following activities:

- Monitoring of 125 surveillance sites for electrical conductivity, temperature, turbidity, total dissolved solids, major ions, dissolved oxygen, acidity/alkalinity (pH), phosphorus and nitrogen.

- Collecting baseline data on heavy metals and other potential contaminants across northern NSW as part of the NSW Water Monitoring Strategy.
- Assessing Menindee Lakes operational impacts.
- Monitoring real-time dissolved oxygen for environmental flow and blackwater management.
- Monitoring implementation of the NSW Cold Water Pollution Management Strategy.

There is an increasing need for real-time water quality management to measure, for example, dissolved oxygen and temperature. Dissolved oxygen monitoring is undertaken to inform management action that prevents the realisation of blackwater events. Such events can result in large-scale fish kills. Real-time temperature collection allows for the development of guidelines for cold-water pollution management.

The current output measures and performance indicators remain the same and are described below.

Output measure	Performance indicator
Number of tests per year: <ul style="list-style-type: none"> <li>• DPI Water = 30,120 per year.</li> <li>• MDBA = 5,144 per year.</li> <li>• DBBRC = 4,800 per year.</li> </ul>	Tests meeting quality standards (percentage of acceptable tests out of the total tests): <ul style="list-style-type: none"> <li>• 90%.</li> </ul> Speed of reporting of results (percentage of tests taken, processed, QA approved and coded for publication within 90 days): <ul style="list-style-type: none"> <li>• 90%.</li> </ul>

The service level is appropriate because this is the only state-wide water quality monitoring and assessment program in NSW. The program is required to report on the suitability of surface waters for activities such as the irrigation of crops, maintaining a healthy environment, recreational fishing, or sustaining the cultural and spiritual links of indigenous groups. The information generated from this program will allow development of realistic water quality targets to ensure river water quality is fit-for-purpose. The spatial representation of sites and the analytical tests undertaken provides the certainty that this program is assessing risks related to water management. The consideration of water quality objectives in water planning, and the reporting of water quality against targets, is required by both national and state policy and legislation.

#### The risks addressed or mitigated by the activity

Water quality is an important indicator of river health, and is impacted by river regulation, water extraction and other drivers (for example, change in geomorphology). Water quality impacts, particularly temperature, turbidity, salinity and dissolved oxygen may override any targeted environmental outcomes that are planned for by flow management and water access rules. The data is used to identify such areas and then develop management responses through conditions on works approvals or use of environmental flows and access rules.

The water quality program can be split into two areas. The first is ambient water quality monitoring, which allows more realistic regional water quality targets to be set and shows high-risk areas that require management action; evaluates performance against targets; and evaluates and reports against water quality targets in the Basin Plan.

The second is targeted water quality monitoring, including cold-water pollution and real-time dissolved oxygen. Cold water pollution is monitored using real-time data on temperature to set temperature targets (in accordance with cold water pollution guidelines) on WaterNSW works approvals, and then used to check compliance. The monitoring of real-time dissolved oxygen is concentrated in the southern Basin and provides real-time data on dissolved oxygen levels, which is used to guide the release of water to prevent blackwater events from occurring.

## W01-04 Surface water algal monitoring

W-code	Activity name	Summary of activity
W01-04	Surface water algal monitoring	The provision of a surface water algal monitoring program; including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees.

### Service obligation changes and strategies for delivering the activity

DPI Water is exploring new technology through collaborative projects with research institutions using remote sensing techniques. The aim of these programs is to extend monitoring capabilities and reduce response times, and therefore reduce the risk to the public from harmful algal blooms. The benefits of this new technology may not be realised until the end of the next determination. Current collaborative research programs include the development of an algal early warning system using remote sensing technology (with CSIRO Land and Water Flagship); and the development of on-line monitoring of cyanobacteria (with UNSW School of Civil and Environmental Engineering).

### Proposed changes to the activity

DPI Water only samples those sites for which it is responsible. Sampling effort has been devolved to those agencies responsible for management of a given water body. For example WaterNSW is responsible for monitoring in storages they manage.

The current output measures and performance indicators remain the same and are described below.

Output measure	Performance indicator
Number of sites monitored and tested for blue green algae: <ul style="list-style-type: none"> <li>Average 73 sites per month.</li> <li>Increase frequency when conditions require.</li> </ul>	Percentage of samples collected and analysed according to current standards and within agreed timeframe: <ul style="list-style-type: none"> <li>95%.</li> </ul>

The service level is appropriate because it provides for the collection of samples from locations where there are no other monitoring options. It also investigates new initiatives for continuous monitoring approaches, which may provide future efficiency improvements for this service.

### The risks addressed or mitigated by the activity

The sampling and analysis services provide regular monitoring and assessment of sites where recreation and water supply activities occur. Without such sampling, and subsequent rapid laboratory analysis, there will be no data to inform management responses to events such as potentially toxic blue-green algae, as required in W05-02. This may result in adverse health effects and the failure of DPI Water to exercise its duty of care.

## W01-05 Surface water ecological condition monitoring

W-code	Activity name	Summary of activity
W01-05	Surface water ecological condition monitoring	The provision of a surface water ecological condition monitoring system to assess the health of water sources; including design and application based on the River Condition Index for rivers, flood plains and wetlands.

### Service obligation changes and strategies for delivering the activity

Under this new activity DPI Water has developed a river condition reporting tool called the River Condition Index (RCI), which follows the standard set by the National Framework for the Assessment of River and Wetland Health (FARWH). The six components of the River Condition Index that are measured are hydrology, geomorphology, riparian, biota, disturbance and water quality.

River classification methods used in this activity follow the standards set out in the Australian National Aquatic Ecosystem (ANAE) classification and the High Ecological Value Aquatic Ecosystem classification.

### Proposed changes to the activity

The RCI is used to provide long-term reporting on river condition. This information is used so that management of alteration to flow can be undertaken with other natural resource planning measures. It provides contextual data to explain why some river systems may continue to decline in health and condition, despite the implementation of water sharing. In many river systems, flow alteration is not the main influence on river health.

While the program reports on river conditions across NSW, it has been designed so that most data is obtained from either desktop analysis, or from information collected by other programs, making it cost effective.

A further output from the program is the river classification. A classification of rivers under the ANAE framework allows rivers to be typed, and like types to be grouped. This data enables the flow response performance data collected under activity W05-04 to be transferred from one stream to another, where the stream is the same type.

The current output measures and performance indicators remain the same and are described below.

Output measure	Performance indicator
River condition index updated: <ul style="list-style-type: none"> <li>An updated report completed each year, outlining the attributes updated and the proportion of the state/water sources covered.</li> </ul>	Percentage of the state for which RCI is completed in current year: <ul style="list-style-type: none"> <li>10% completed each year.</li> <li>100% of all RCI completed for the state by the end of 10 years.</li> </ul>

The service level is appropriate because it takes an efficient, minimalist approach, with the program largely relying on sampling and data collection from other existing programs outside of this activity code. It reports at a state-wide scale, and is designed for updating over a 5-10 year timeframe, recognising that change in condition at a state scale operates over long time frames.

### The risks addressed or mitigated by the activity

This activity allows the root causes of river condition decline to be identified and monitored. There is often an assumption that flow extraction and water access rules will improve river health, and while this may be the case in many rivers, it is not necessarily true for all rivers. Water users may be unnecessarily impacted by flow rules where issues such as geomorphic change, for example, may be the primary cause of flow loss.

## 6.3.2 Standards of service – W02 Groundwater monitoring

W-code	Activity group name	Summary of activity
W02	Groundwater monitoring	The collection and provision of water level, pressure, flow and quality information for monitoring, use, assessment and management of groundwater.

### W02-01 Groundwater quantity monitoring

W-code	Activity name	Summary of activity
W02-01	Groundwater quantity monitoring	The provision of a groundwater level, pressure and flow monitoring system; including design, site calibration, data collection, entry, audit, quality assurance, archiving, and information provision; and the maintenance and operation of groundwater monitoring bores.

### Service obligation changes and strategies for delivering the activity

This activity meets the requirements of the *Water Management Act 2000* to implement monitoring equipment and a monitoring program, and to manage the condition of groundwater resources.

DPI Water is currently undergoing a review of its groundwater monitoring network and monitoring program to ensure it meets current needs in the most efficient way. The review will maximise the cost effectiveness through prioritisation and reduction in the total number of the visits per year, to optimise meeting the water management requirements. It proposes to change from reporting against the number of monitoring sites to reporting against the number of pipes being monitored. This is to better reflect the volume of work being done as many monitoring bore sites collect data from multiple pipes installed to different depths.

The standards of the monitoring tasks being completed are unchanged since the last determination. There will be minor changes in workflow to reflect changing technology.

### Proposed changes to the activity

The groundwater monitoring program aims to provide reliable and current data, at an appropriate range of scales and frequencies, to enable groundwater management decisions.

The NSW groundwater network has some 6,480 pipes, of which around 4,730 are incorporated in the current monitoring program. An additional 28 pipes have been commissioned in the coal basin areas of the state to address community concern about coal mining and coal seam gas developments.

There are no significant changes to the type or volume of work undertaken since the last determination. Monitoring frequency varies from automated continuous recording to manual recording, which occurs in a range from every four weeks through to once every two years, depending on need. Data is collected from various depths of up to 1,300 metres below surface level.

As part of this service DPI Water maintains and calibrates the groundwater monitoring network assets.

DPI Water is currently reviewing its monitoring program to ensure the program continues to address the state's monitoring requirements in the most efficient way. This review is evaluating the drivers for groundwater monitoring that influence the monitoring requirements for location and frequency.

DPI Water will continue to adopt a risk-based approach to collecting groundwater data. The frequency of monitoring and the number of pipes monitored will be higher in groundwater systems under greater risk of aquifer stress, and lower in those areas where the need for monitoring allows a reduction in the number of visits. The method by which each site is monitored is also being reviewed to optimise the cost effectiveness of meeting the revised monitoring requirement.

The proposed performance indicator recognises and more accurately captures this risk-based approach to the location and frequency of monitoring. The previous target required one reading per year of the complete monitoring network, however the work required to be undertaken significantly exceeded this requirement.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<p>The number of pipes from which data is collected (in the last 2 years):</p> <ul style="list-style-type: none"> <li>• Current: 4,736 pipes.</li> <li>• Forecast: 4,800 pipes.</li> </ul>	<p>Percentage of pipes monitored according to their scheduled frequency:</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul>

The service level is appropriate because groundwater processes are highly variable across different locations and at different times. Consequently data collection from groundwater systems must reflect the scales and frequencies at which these processes occur to inform an understanding of the impacts of groundwater extraction on the sustainability of the resources and dependent ecosystems.

#### The risks addressed or mitigated by the activity

The groundwater monitoring program enables the assessment and management of potential impacts on groundwater. Examples of possible impacts are those associated with the extraction of groundwater from water supply bores, or other aquifer interference activities such as mining and coal seam gas development.

Groundwater quantity data is also used to assess if water sharing plan performance indicators have been achieved, for example change in groundwater levels is managed within acceptable levels of impact.

With appropriate monitoring, government is able to maximise groundwater potential to support and provide for secure investment in the state. The data informs decisions by government, industry and the community on the long-term viability of the groundwater resources and its ability to support current and proposed future groundwater based development.

### W02-02 Groundwater quality monitoring

W-code	Activity name	Summary of activity
W02-02	Groundwater quality monitoring	The provision of a groundwater quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.

#### Service obligation changes and strategies for delivering the activity

The strategies affecting this activity are as for W02-01, groundwater quantity monitoring. Please see the W02-01 section for further information.

#### Proposed changes to the activity

The groundwater monitoring program aims to provide reliable and current data, at an appropriate range of scales and frequencies, to enable groundwater management decisions.

Groundwater quality within a system can be highly variable. Consequently water quality data collection from groundwater systems must be done at an appropriate scale to reflect this variation and to determine the water quality distribution in a given system.

DPI Water will continue to adopt a risk-based approach to water quality sampling. Pipes located in groundwater systems, where the risk of a change in groundwater quality would be detrimental to the productivity of industries reliant on the system, will be monitored more frequently. For example, water quality monitoring is more frequent in the mid-Murrumbidgee to assess and mitigate the impacts of salinity within the system.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
The number of pipes from which data is collected (in the last 2 years): <ul style="list-style-type: none"> <li>Current: 495 pipes.</li> <li>Forecast: 495 pipes.</li> </ul>	Percentage of pipes monitored according to their scheduled frequency: <ul style="list-style-type: none"> <li>90%.</li> </ul>

The service level is appropriate because it is the minimum service level required to obtain information on how water quality in different aquifers responds to water take. The current



program is targeting systems that are under hydraulic stress, but not all systems that have groundwater quality changes induced by water take are in the water quality monitoring program. The results obtained will be used to review the water quality monitoring requirements for regional groundwater quality management.

#### The risks addressed or mitigated by the activity

Water quality monitoring enables the effective management of groundwater extraction impacts, which are often interlinked with changes in groundwater level. For example the take of groundwater can lead to salt water intrusion.

As for W01-01, the groundwater monitoring program enables the assessment and management of potential impacts on groundwater. Examples of possible impacts are water supply bores or other aquifer interference activities such as mining and coal seam gas development.

### W02-03 Groundwater data management and reporting

W-code	Activity name	Summary of activity
W02-03	Groundwater data management and reporting	The data management and reporting of groundwater quantity and quality information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.

#### Service obligation changes and strategies for delivering the activity

The strategies affecting this activity are as for W01-02, surface water quantity, quality and biological data management and reporting. Please see the W01-02 section for further information.

#### Proposed changes to the activity

The proposed changes to this activity are as for W01-02, surface water quantity, quality and biological data management and reporting. Please see the W01-02 section for further information.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of active pipes subject to data management: • Current: 4,735. • Forecast: 5,000.	Percentage of active sites subject to data management: • Current: 98%. • Forecast: 98%.

The service level is appropriate because it provides necessary access to groundwater monitoring information that is being optimised for groundwater management. This optimisation is looking at the frequency and time criticality of data provision to satisfy resource management needs such as the responsiveness of systems to hydraulic stress. The data management function includes using and managing data collected from third parties to meet specific resource management needs.

#### The risks addressed or mitigated by the activity

The risks addressed or mitigated for groundwater by this activity are as for W01-02, surface water quantity, quality and biological data management and reporting. Please see the W01-02 section for further information.



### 6.3.3 Standards of service – W03 Water take monitoring

W-code	Activity group name	Summary of activity
<b>W03</b>	<b>Water take monitoring</b>	The provision of metering services, the collection of water take data and its recording on water allocation accounts for unregulated and groundwater licence holders.

#### W03-01 Water take data collection

W-code	Activity name	Summary of activity
W03-01	Water take data collection	The electronic and manual collection, transmission and initial recording of water take data from licence holders for unregulated and groundwater sources; and the operation and maintenance of government owned meter and telemetry facilities.

#### Service obligation changes and strategies for delivering the activity

Water take data collection includes the operation and maintenance of government owned meters and the collection of data from these meters by either telemetry or site visits. It also includes the collection by site visits of data from privately owned meters.

Water take is under review as part of the Water Take Measurement Strategy (WTMS), which is being developed to provide clarity and consistency to water users in regards to water take measurement devices required. This is discussed further in Section 6.6.

#### Proposed changes to the activity

The principles on which the WTMS is being developed include a risk-based approach to water take measurement. For larger water take capacity locations this will require more accurate and reliable, and consequently more costly, equipment. For lower water take capacity locations this will result in lower accuracy along with lower cost equipment. In this way the overall accuracy of measurement will be appropriate to address the level of risk at a cost effective price.

The activity needs to transition over time to meters that comply with national standards where accurate and reliable metering is required. It is likely that there will be an increase in the level of user meter reading and self-reporting as an alternative to agency meter reading. A reduction in agency metering of bores with very low or nil water take is also expected as a result of the water take strategy review (discussed in more detail in Section 4.4).

The rollout of the WTMS is a significant new activity extending into 2025/26. As the WTMS is implemented, the number of meters being read by DPI Water and attracting a meter reading charge is likely to be reduced in favour of user meter reading or telemetry.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of government owned and maintained meters: <ul style="list-style-type: none"> <li>• Current: 1,230 (groundwater = 625, unregulated = 605).</li> <li>• Forecast: 1,200 (groundwater = 600, unregulated = 600).</li> </ul> Number of sites with agency water take reading /assessments charged: <ul style="list-style-type: none"> <li>• Current: 3,002 (groundwater = 2,944, unregulated = 58).</li> <li>• Forecast: 3,300 (groundwater = 3,100, unregulated = 200).</li> </ul>	Percentage of government owned meters operational: <ul style="list-style-type: none"> <li>• Current: 89% are operating as expected.</li> <li>• Forecast: 95% are operating as expected.</li> </ul>

The service level is appropriate because the forecast output levels for government meters reflect some reductions as a result of the implementation of the WTMS, and the forecast output levels

for agency meter reading reflect the likely outcome of the cost benefit review of meter reading underway at the time of making this submission. The performance indicators reflect industry standards.

The measurement of water take is required to ensure that extractions are within the WSPs rules. Demand for water take data for unregulated coastal and inland sources is not a high priority at present but the new water take management strategy will provide a timetable for monitoring into these areas.

Government meters are installed to comply with metering standards that ensure ongoing accuracy. While this project is coming to an end, the concept will be extended to private owned meters.

The requirements of hydro-geologists for groundwater water take data are being met but further efficiencies on collecting data are expected.

#### The risks addressed or mitigated by the activity

Measurement of water take is essential to protecting the integrity and value of water rights, which include water access licences, basic landholder water rights, and environmental water rights. Without measurement many water licence holders might unintentionally or deliberately take more than they are allocated, resulting in less water being available to other water rights holders. The value of water access licences to the licence holders and to the NSW economy is demonstrated by the sale prices for water access licences and water allocations, and the level of market activity.

Water take data collection protects the integrity and value of water rights by providing water access licence holders with the information they need to voluntarily comply with limits to the volume of water they can take. This information also informs any action taken against users who take more than their share of water.

Data about water take provides information for water allocation decisions that maintain statutory water resource extraction limits and shares available water as intended under water sharing plans (WSPs). It provides information for modelling and assessment for water sharing planning; for the efficient operation of regulated rivers; and for irrigators who seek to manage their use of water to optimise crops and minimise costs.

This activity also allows water users to be billed based on water take rather than just licence size, and enables water allocation assignment or temporary trading to occur.

### W03-02 Water take data management and reporting

W-code	Activity name	Summary of activity
W03-02	Water take data management and reporting	The data management and reporting of water take for unregulated and groundwater sources including compilation, secure storage, management and publishing of data to authorised parties.

#### Service obligation changes and strategies for delivering the activity

Water take data obtained from both government and private meters by telemetry, on site readings by DPI Water, or users self-reporting, is stored and processed for populating water allocation accounts, billing, water resource accounting and a range of other uses. These service obligations remain unchanged.

#### Proposed changes to the activity

A range of processes and systems are currently used to receive, record and process water take data. These are not aligned and, as a result, require considerable manual data handling. Investment is required to upgrade its information systems and business processes to enable

more efficient and quality-assured data handling, and to implement new systems to support user meter readings.

DPI Water is in the process of extending its water allocation accounting systems to cover all unregulated river and groundwater licences, and open up licence holder online access to these water allocation accounts so they can check their account status at any time.

Additionally, the implementation of comprehensive water take measurement and its use in populating water allocation accounts will eventually enable two-part tariffs to be extended to all water licence holders.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<p>Issued share component with water take measured/assessed:</p> <ul style="list-style-type: none"> <li>Current: 3,488,300 (unregulated: 2,010,525 shares, groundwater: 1,477,775 shares).</li> <li>Future: 3,486,175 (unregulated: 2,010,525 shares, groundwater: 1,475,650 shares).</li> </ul>	<p>Percentage of issued share component with water take measured/assessed:</p> <ul style="list-style-type: none"> <li>Current: 70% (unregulated: 65%, groundwater: 78%).</li> <li>Future: 70% (unregulated: 65%, groundwater 78%).</li> </ul>

The service level is appropriate because the water take measurement strategy when implemented may result in an increase in the extraction sites having a take measurement. The sites currently read are for the larger users in the Murray Darling Basin and select coastal areas (Hawkesbury Nepean, and Upper Bega and Bemboka rivers).

Telemetry is being used in southern areas to monitor water take, compliance and meter accuracy. This technology will improve the quality of water take data and allow better management of the resource. At present it is used on government supplied meters but will have the potential to be installed on private works across the state, which are currently being manually read at a higher frequency.

#### The risks addressed or mitigated by the activity

Efficient information systems for receiving and processing water take data, together with up to date and accessible water allocation accounts for water access licence holders, will ensure the data can be used more rapidly and effectively. This will protect the integrity and value of all water rights.

In particular, water access licence holders will have real-time access to the up to date information they need to voluntarily comply with limits to the volume of water they can take. DPI Water will be able to more rapidly detect and take action against those who take more than their share of water.

Quality assured water take data will be available for modelling and assessment of WSPs, and for water allocation decisions, which maintain statutory water resource extraction limits and share available water as intended under WSPs.

### 6.3.4 Standards of service – W04 Water modelling and impact assessment

W-code	Activity group name	Summary of activity
<b>W04</b>	<b>Water modelling and impact assessment</b>	The development and use of water system models for water sharing and water management applications, resource impact and water balance assessments, and annual general purpose water resource accounts for NSW water sources.

#### W04-01 Surface water modelling

W-code	Activity name	Summary of activity
W04-01	Surface water modelling	The development, upgrade and application of surface water resource management models for use in water planning and to assess performance in terms of statutory requirements, interstate agreements, regional water supply optimisation and third party impacts on NSW stakeholders.

#### Service obligation changes and strategies for delivering the activity

DPI Water's modelling capability is sophisticated, and demand for information from models and for continuous improvement has been consistent for the past 15 years. Regular prioritisation of this work is necessary to meet the increasing demand with the available resources.

The models will continue to support water planning and development of WSPs under the *Water Management Act 2000*, as well as for NSW compliance assessment under the MDB Cap on diversions. In addition there are a number of requirements for the Basin Plan that necessitate the development and application of these models.

Long-term environmental watering schedules need to be developed and codified in the next generation of NSW water planning models. These represent a much more significant component of river system water balance than previously modelled. Transparent representation of environmental watering is required to protect the interests of other water users and to assess environmental outcomes.

NSW is implementing the licensing of floodplain harvesting water take under a Commonwealth funded project. While this form of water take has been implicitly included in NSW models to date, this project will formalise and codify floodplain harvesting within the water entitlements framework. The next generation of models will be required to represent this activity in a more detailed and explicit form.

#### Proposed changes to the activity

Models must be capable of scenario creation and analysis, in some cases for a significant number of options. They require iterative analysis and ongoing quality assurance checking, to ensure the information provided is robust and defensible. Additional models and scenarios are likely to be required for the next determination period.

The essential nature of the work in developing and applying river basin water planning models will not change. The rigour, transparency and defensibility of these models will however need to meet higher standards for Basin Plan implementation by 2019.

To meet the needs outlined above, and to improve model detail and meet new functional requirements, DPI Water has initiated a project to establish a contemporary and enduring software platform, based on the eWater Source modelling framework. This framework is COAG endorsed and used by most Australian jurisdictions.

The next generation of models being built for water management will include the following additional processes and detail:

- Environmental watering schedules.
- Floodplain harvesting.

- Surface-groundwater interaction.
- Interconnectivity of river basins.
- Salinity and water quality objectives and targets.
- Exploration of potential impacts of increased climate variability due to climate change.
- Up to date farm infrastructure and water entitlement distribution.

A key element of the eWater Source modelling environment is the application of model implementation guidelines to enable efficient, consistent and fit-for-purpose development of models. This will ensure that models are adequate and able to address the issues and questions as required. Given the scope of these models has increased with the Basin Plan, improved efficiency in modelling approaches is necessary to offset potential cost and resourcing increases.

NSW models developed for water resource plan (WRP) requirements under the Basin Plan will need to pass Murray Darling Basin Authority (MDBA) accreditation and independent peer review. These models will be held to a much more rigorous standard than previously applied. Best practice in modelling dictates that model design should match the level of detail required and the data available for that level of detail. External reviewers will evaluate the models in terms of technical standards and sound professional practice, as well as their fitness for purpose in addressing key water management questions.

NSW stakeholders will expect greater transparency in accepting these models as credible to evaluate performance of WRPs in meeting sustainable diversion limits established under the Basin Plan, and in identifying potential third-party impacts of plan options.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of models/analyses annually: • Current: 22 / 2,000. • Forecast: 26 / 2,800.	Percentage of surface water share component in NSW covered by models subject to annual assessments: • Current: 80% (90% regulated, 35% unregulated). • Forecast: 95% (100% regulated, 50% unregulated).

The service level is appropriate because it assesses the need for new capability in models for water planning and impact assessment. The activity provides consistent and diverse information from the models for input into plan developments and updates, and evaluates extractions against established statutory limits each year.

#### The risks addressed or mitigated by the activity

DPI Water uses water resource planning models to understand how river and groundwater systems respond to water management rules and extraction of water. These models are used to predict and assess the likely impacts of different water management scenarios on water resource availability and river flows through long-term variable climate sequences. Water models underpin the development of annual and long-term extraction limits established under water management plans, and are required for the assessment of NSW compliance with interstate water sharing agreements.

#### W04-02 Groundwater modelling

W-code	Activity name	Summary of activity
W04-02	Groundwater modelling	The development, upgrade and use of groundwater resource management models for water sharing and management applications, and for resource impact and balance assessments.

#### Service obligation changes and strategies for delivering the activity

The strategies for delivering this activity are as for W04-01, surface water modelling.

### Proposed changes to the activity

DPI Water complies with recognised practices for groundwater modelling. Australia has a long history of established industry accepted groundwater modelling guidelines that are periodically used to evaluate and classify models. The emphasis on fitness for purpose in model design and calibration applies as it does for surface water models.

Performance of these models may dictate periodic reviews in order to maintain confidence in their predictive capacity, or where additional data identifies potential improvements in how aquifer systems are conceptualised.

Given the increased focus on connectivity between surface and groundwater under the Basin Plan, it is important to identify all water balance components of a groundwater source, including exchanges with surface water systems, particularly where these are subject to change. These key elements are captured in the modelling guidelines, as well as in model documentation and formal annual reporting of all water balance components.

Advances in computer power and analytical approaches have provided the opportunity to build more robust and effective groundwater models. Future refinement and rebuilding of groundwater models will utilise new modelling technology as well as targeted data collection to improve stakeholder confidence in models.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of models/major aquifer analysis undertaken annually: • Current: 21 / 2,100. • Forecast: 22 / 2,200.	Percentage of groundwater share component subject to modelling assessment annually: • Current: 48%. • Forecast: 50%.

The service level is appropriate because the models developed are focussed on aquifers with priority water management requirements. They support DPI Water's requirement to oversee and review sustainable groundwater extraction across key NSW aquifer systems.

### The risks addressed or mitigated by the activity

DPI Water develops and applies regional groundwater models for assessment of sustainable levels of groundwater extraction. These models are updated annually to ensure their robustness in evaluating the performance of the groundwater sharing plans, including tracking of drawdown levels and rates against expectations under long-term extraction limits.

Groundwater models are used to evaluate the feasibility and potential impacts of groundwater trading and associated policies. DPI Water also provides expertise in assessing groundwater models developed for mining proposals, and the potential impacts on existing stakeholders and aquifer systems.

### W04-03 Water resource accounting

W-code	Activity name	Summary of activity
W04-03	Water resource accounting	The development and update of water resource accounts and information on NSW water sources, for use by external stakeholders, and for internal water planning, management and evaluation processes.

### Service obligation changes and strategies for delivering the activity

This is a newly established discipline that creates annual water accounting reports for key NSW managed water sources covered by WSPs, based on the Australian Water Accounting standards.

Consistent, repeatable and comparable water accounting reports have been developed based on the National Water Initiative principles outlined in the inter-government agreement. These



accounts have been built to best meet the likely standards that will be applied in evaluating (or auditing) future ongoing NSW reporting.

The reports and the associated disciplines around water accounting principles has enabled a robust foundation for a range of statutory reporting requirements under the Basin Plan, and are guiding water accounting and reporting systems development across a range of areas. These include environmental water use reporting, and MDB Cap (and future water resource plan extraction) compliance reporting.

### Proposed changes to the activity

The typical reporting and analysis obligations that will be undertaken include water audit monitoring report (MDB Cap and Basin Plan sustainable diversion limit compliance); annual water allocation trades; Bureau of Meteorology national water accounts (for Sydney, Canberra and the Murray Darling Basin); held (entitlement) environmental water update and consolidation; national water market system outputs; NSW extraction metering performance; and WSP reviews for Gwydir, Namoi, Macquarie, Lachlan, Murrumbidgee, Lower Murray and Lower Darling.

DPI Water also responds to multiple requests throughout the year for specific data, information, analysis or water accounting expertise. This results in a number of highly valuable information products through the application of the standards required for water resource accounting.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of outputs for water accounting reports, reporting obligations and required ad hoc: <ul style="list-style-type: none"> <li>• Current:               <ul style="list-style-type: none"> <li>○ 10 valleys.</li> <li>○ 9 analysis reports.</li> <li>○ 14 miscellaneous studies.</li> </ul> </li> <li>• Forecast:               <ul style="list-style-type: none"> <li>○ 17 valleys.</li> <li>○ 17 analysis reports.</li> <li>○ 20 miscellaneous studies.</li> </ul> </li> </ul>	Percentage of share component by water type, covered by the water accounting reports: <ul style="list-style-type: none"> <li>• Current:               <ul style="list-style-type: none"> <li>○ Regulated: 95%.</li> <li>○ Unregulated: 15%.</li> <li>○ Groundwater: 90%.</li> </ul> </li> <li>• Forecast:               <ul style="list-style-type: none"> <li>○ Regulated: 100%.</li> <li>○ Unregulated: 60%.</li> <li>○ Groundwater: 95%.</li> </ul> </li> </ul>

The service level is appropriate because it delivers coverage of priority reporting areas for water resource accounts, and provides key information to meet the state's reporting and information provision obligations.

### The risks addressed or mitigated by the activity

Establishing improved systems and further embedding water accounting will enhance access to water information, and the consistency and quality of this information.



### 6.3.5 Standards of service – W05 Water management implementation

W-code	Activity group name	Summary of activity
<b>W05</b>	<b>Water management implementation</b>	The preparation and implementation of the procedures and systems required to deliver the provisions of Water Sharing Plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.

#### W05-01 Systems operation and water availability management

W-code	Activity name	Summary of activity
W05-01	Systems operation and water availability management	The preparation and implementation of the procedures and systems required to deliver the provisions of water management plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.

#### Service obligation changes and strategies for delivering the activity

DPI Water will develop WRPs and modify existing WSPs to receive accreditation from the MDBA under the requirements of the Basin Plan. These changes will have a large impact on this activity.

The *Water Management Amendment Act 2014* also impacts this activity. It determines that the size of storage reserved is to be based on the worst drought that occurred prior to commencement of each WSP. This will affect water shares held for licences and the environment.

#### Proposed changes to the activity

WSP implementation project plans will continue to be developed for each functional area of DPI Water. This is more cost effective than the previous process of developing a comprehensive implementation program for each WSP.

Due to the reading of existing meters being expanded in groundwater areas, and new government meters being installed in some groundwater and unregulated river systems, DPI Water proposes enhancing and making available water allocation accounts for unregulated and groundwater licences where water take is measured. These accounts are operated by WaterNSW under a service agreement with DPI Water, and include a facility that allows them to be viewed by the licence holder via the internet. With this facility, water licence holders can see at any time how much water allocation they have remaining to use, taking account of the latest meter readings, and any carryover from previous water years.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>Annual compliance review on WaterNSW work approval conditions.</li> <li>Issue and communicate, at least monthly, available water determinations for all licence categories in all regulated water sources, and annual available water determinations for unregulated and groundwater sources.</li> <li>Contingency measures developed, on a needs basis in consultation with community, to minimise the impact of extraction, drought or flood.</li> </ul>	<p>Annual compliance review of WaterNSW submitted within three months of receiving input data from WaterNSW.</p> <p>Percentage of available water determinations issued and communicated on schedule:</p> <ul style="list-style-type: none"> <li>Current: 100%.</li> <li>Forecast: 100%.</li> </ul>

The service level is appropriate because it addresses customer needs and requests. For example, customers want available water determinations communicated, and contingency measures developed and implemented, for dealing with flood and drought conditions. This service also implements WSP and WRP rules, by developing and using tools and systems, which are critical to the success of achieving plan outcomes.

This service also includes the management of local extraction impacts in groundwater sources by developing and implementing assessment procedures and groundwater trading rules.

### The risks addressed or mitigated by the activity

This service enables customers to deal with drought and flood conditions by implementing mitigation strategies. It secures equitable sharing of water for water users and the environment while abating any unintended impacts on users. This is achieved by fulfilling DPI Water's legislative responsibility to monitor WaterNSW compliance with their work approval conditions and ensuring groundwater is managed to agreed acceptable levels of impact.

Tools and systems will be developed and implemented for WRPs under the Basin Plan and WSPs, which is essential to achieving plan outcomes. For example, supply measures will be implemented so the same environmental outcomes will be achieved using less water. This efficiency gain may result in the limit imposed on water take, referred to as the sustainable diversion limit, being increased.

## W05-02 Blue-green algae management

W-code	Activity name	Summary of activity
W05-02	Blue-green algae management	The provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans.

### Service obligation changes and strategies for delivering the activity

It is anticipated that blue-green algae response management will be incorporated as a chapter in the State Emergency Response Plan. This will commit DPI Water to adhere to certain response protocols to protect public safety in the event of a potentially toxic blue-green algal bloom.

### Proposed changes to the activity

DPI Water's role is to provide state coordination of the management response and to keep all stakeholders up to date. Management response has been devolved to the agency responsible for the management of the water body where the bloom occurs.

DPI Water will liaise with other agencies involved in algal management in fresh and marine water to ensure the response to any bloom is consistent across NSW and provides adequate risk minimisation. It will perform a knowledge broker role, and provide training and algal management resource material for water managers. It will also identify and collaborate in research to provide new information to enhance algal management.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Algal risk management plans for each region are implemented: <ul style="list-style-type: none"> <li>• Current: 9 regional risk management plans in operation.</li> <li>• Forecast: All risk management plans reviewed and updated as required.</li> </ul>	Percentage of reports meeting weekly timeframe to regional algal coordinating committees and state algal coordinator of alert levels based on algal data: <ul style="list-style-type: none"> <li>• Current: 100%.</li> <li>• Forecast: 100%.</li> </ul> Actions implemented in accordance with algal risk management plan and guidelines: <ul style="list-style-type: none"> <li>• Current: 100%.</li> <li>• Forecast: 100%.</li> </ul>

The service level is appropriate because it provides the necessary risk management strategies for potentially toxic blue-green algae blooms while devolving operational actions to the agency responsible for management of the water body where the bloom occurs.

### The risks addressed or mitigated by the activity

The increased frequency of blooms of potentially toxic blue-green algae is largely a result of river regulation, and the presence of dams and weirs.

Toxic species of blue-green algae present a direct risk to human and livestock health from both high-dose short-term exposure (for example skin rashes) and long-term exposure (for example organ damage). Ingestion by livestock of toxic algae can lead to animal death, and in coastal areas blooms have required fishery and oyster closures to prevent human ingestion of toxins. It is for this reason that management of blue-green algae blooms is being incorporated into the State Emergency Response Plan.

Each region of NSW has a strategy in place to manage the response to blooms, including media releases, warning signs, and sampling and notification protocols. These ensure the incidence of direct contact by humans is minimised, and that landholders and irrigators are notified, via media, of blooms in water bodies they have access to.

### W05-03 Environmental water management

W-code	Activity name	Summary of activity
W05-03	Environmental water management	The development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes.

### Service obligation changes and strategies for delivering the activity

DPI Water will develop water resource plans (WRPs) and modify environmental water rules in existing WSPs where necessary, in order to receive accreditation under the requirements stated in the Basin Plan. These changes will have a large impact on this activity and increase the required effort.

The *Water Management Act 2000* defines three broad types of water: planned environmental water, adaptive environmental water and licenced environmental water (that is, held environmental water). The volume of environmental water has increased substantially in NSW and resulted in increased activity for DPI Water.

The Office of Environment and Heritage (OEH) manages the NSW adaptive and licenced environmental water portfolio and DPI Water manages the planned environmental water through WSP rules. Additionally, DPI Water contributes to the development of annual watering plans and delivery of adaptive and held environmental water, through the Ministerial appointed roles in the NSW environmental water advisory groups and via multi-jurisdictional water committees in the western regulated rivers.

DPI Water is also responsible for setting the schedules of Snowy Hydro environmental flow targets for implementing the Snowy Water Initiative. DPI Water manages the initiative on behalf of the NSW, Victorian and Commonwealth Governments.

The OEH has the lead role in the development of long-term environmental water plans (LTEWPs) in nine water sources in the Murray Darling Basin. DPI Water also has a co-development and concurrence approval role for the development of LTEWPs as part of Basin Plan implementation.

### Proposed changes to the activity

DPI Water will continue to improve the structural governance of environmental water management in NSW, which will deliver a more effective and coordinated effort across government agencies managing water in NSW.

A significant increase in activity will be due to the growing amount of licenced environmental water in NSW. This will lead to a focus on the strategic development of valley based environmental water strategies.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>Schedule of Snowy Hydro environmental flow targets.</li> <li>Review adaptive environmental water use plans.</li> </ul>	<ul style="list-style-type: none"> <li>The Snowy Hydro environmental flow target schedule issued by 13 February annually.</li> </ul>
Contribute to the development of: <ul style="list-style-type: none"> <li>Five annual watering plans in the western regulated rivers.</li> <li>Nine LTEWPs, which includes approval from the Minister for Lands and Water.</li> </ul>	<ul style="list-style-type: none"> <li>Review five adaptive environmental water use plans.</li> <li>Contribute to developing five annual watering plans in the western regulated rivers.</li> <li>Nine LTEWPs approved by the Minister for Lands and Water.</li> </ul>

The service level is appropriate because it will establish and deliver the mechanisms needed to achieve an integrated approach to the delivery of all environmental water (planned, adaptive and held water) to maximise environmental outcomes with the available water.

#### The risks addressed or mitigated by the activity

Environmental water management has become a larger and more complex work area than previously due to distributed environmental water management responsibilities. The strategies and water plans being co-developed by DPI Water and other agencies will address this challenge.

There is also limited water available to rehabilitate stressed rivers and wetlands, so watering plans are necessary to provide maximum environmental benefits with the water available.

In the future determination a much larger level of environmental water entitlement will exist, which will increase the workload for this activity.

#### W05-04 Water plan performance assessment and evaluation

W-code	Activity name	Summary of activity
W05-04	Water plan performance assessment and evaluation	The assessment, audit and evaluation of the water management plans' appropriateness, efficiency and effectiveness in achieving economic, social and environmental objectives.

#### Service obligation changes and strategies for delivering the activity

DPI Water has recently completed a water sharing science strategy that details the priority areas for performance monitoring and assessment, as well as the consultation and communication process with stakeholders.

Standards and templates for evaluating WSPs have been developed during the current determination period, and implementing evaluations will be a key feature of the next determination period.

#### Proposed changes to the activity

Water plans contain rules and conditions that are designed to achieve economic, social and environmental objectives that support local economic prosperity, community water requirements and environmental health. Each plan has a unique set of rules that are tailored to the local needs and conditions of that catchment. Ongoing monitoring and evaluation of the rules in plans is essential to ensure that these objectives are being achieved, and to provide reliable, defensible advice if changes need to be made.

All plan ecological objectives have performance indicators to measure them. For WSPs that manage water on regulated rivers, the rules and objectives assessed include the adequacy of supplementary water access, transparency and translucency flow rules, base flows, and the use

of environmental water allowances. For unregulated rivers, these include low and high flow access rules, as well as trading rules.

There will be 82 WSPs (prior to their merger into larger consolidated plans) in place across NSW by 2016, incorporating several hundred water sources. DPI Water has a prioritisation system that identifies high priority plan evaluation issues, through its WSP science strategy. Each issue is reviewed against the criteria and the project cycle is reviewed and managed by the WSP science review committee.

The outcomes are communicated effectively to a wide range of stakeholders including water managers, water users and water user associations, other sections of the NSW Government, other state and federal government agencies, non-government natural resource management agencies, and the broader scientific community.

At commencement, each new project will create a project evaluation report, which will be completed when the project ends. This information will be used as part of each WSP's 5-year and 10-year evaluations. The WSP evaluations focus on measuring effectiveness and appropriateness.

Future direction for WSP evaluation will include design of contextual performance indicators, which pick up the contribution of WSPs to broader economic and social outcomes.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of valleys being assessed under the performance and assessment strategy: • Current: 7. • Forecast: 24.	Percentage of plans incorporated into ecological performance and assessment programs: • Current: 30%. • Forecast: 100%.
Number of plan audits completed (5 yearly): • Current: 10. • Forecast: 32.	Percentage of plans audited within statutory requirement: • Current: 30%. • Forecast: 100%.
Number of plan evaluations completed: • Current: 0. • Forecast: 17.	Percentage of plans evaluated that have come to term: • Current: 0%. • Forecast: 100%.

The service level is appropriate, as evaluation of plans has had less activity over the last period, because very few plans had come to term. During the next determination many plans will come to term, and will require evaluation to determine if they have been operating effectively and achieving their outcomes.

The plan performance program has developed a targeted approach, which focuses on contentious rules identified by water users and water planners, and as an outcome of plan evaluation.

#### The risks addressed or mitigated by the activity

Performance and evaluation of WSPs is a critical part of the planning cycle. Without science to guide management and evaluation, water extraction risks being unsustainable, which impacts on river system health and may lead to unnecessary economic impacts on important water industries.

The development of the water planning science strategy has directed performance and assessment of WSPs to those rules which water users regard as important, and which may be contentious and/or potentially have unintended economic impacts. Without this performance and assessment work and subsequent evaluation, there is no capacity for defensible change and adaptive management.

### 6.3.6 Standards of service – W06 water management planning

W-code	Activity group name	Summary of activity
W06	Water management planning	The development, review, amendment, and extension or replacement of water management plans, regional planning and management strategies, and development of the water planning and regulatory framework.

#### W06-01 Water plan development (coastal)

W-code	Activity name	Summary of activity
W06-01	Water plan development (coastal)	The development, review, amendment, and extension or replacement of water management plans, and the consultation activities associated with developing these plans for coastal water sources.

#### Service obligation changes and strategies for delivering the activity

Requirements for WSPs are specified in the *Water Management Act 2000*. Although broad rules haven't changed there have been some changes to improve efficiency and provide water take flexibility. These are outlined below.

#### Proposed changes to the activity

DPI Water is amalgamating small WSPs into larger WSPs to achieve cost savings in the plan development process. Community consultation will continue to be undertaken as part of the development and review of WSPs to ensure the delivery of quality products that meet customer needs.

DPI Water continually revises the WSP development processes and their implementation to improve efficiency. At the end of the current determination period, 26 WSPs will be in operation covering the entire coast of NSW. By the end of the future determination period there will be a total of 25 WSPs in operation on the coast, due to one WSP being merged into an existing WSP. During this period five WSPs will be reviewed and replaced or extended. A further seven plans will be reviewed only, and will be replaced or extended in the determination which will follow the 2016 determination. The entire coast will remain covered by WSPs.

The output measure is appropriate because it recognises the different planning processes required when a plan is being developed for the first time, as opposed to when it is being replaced.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>5 WSPs will be reviewed and replaced/extended.</li> <li>7 WSPs will be reviewed.</li> <li>1 WSP will be reviewed and merged into an existing WSP.</li> </ul>	Cumulative percentage of forecast WSPs being reviewed, replaced/extended or merged: <ul style="list-style-type: none"> <li>100%.</li> </ul>

The service level is appropriate because it will deliver WSPs, which will provide the statutory arrangements for water sharing in NSW.

#### The risks addressed or mitigated by the activity

Water plan development activities are needed to deliver statutory water sharing arrangements and provide a statutory framework for sharing water access in NSW. WSPs provide clarity and security for water users by specifying the sharing arrangements between the environment and water users, and also between the different types of water users.



## W06-02 Water plan development (inland)

W-code	Activity name	Summary of activity
W06-02	Water plan development (inland)	The development, review, amendment, and extension or replacement of water management plans; the development of additional planning instruments to comply with the Commonwealth Water Act; and the consultation activities associated with developing these plans for inland water sources.

### Service obligation changes and strategies for delivering the activity

Requirements for WSPs are specified in the *Water Management Act 2000*. Although broad rules haven't changed there have been some changes to improve efficiency and provide water take flexibility. These are outlined below.

In February 2014 DPI Water signed up to implement the Basin Plan. To satisfy this agreement DPI Water will develop WRPs and modify existing WSPs to receive accreditation under the requirements stated in the Basin Plan.

### Proposed changes to the activity

WSPs are being merged, with small WSPs being amalgamated into larger ones, to achieve cost savings in the plan development process. Community consultation will continue to be undertaken as part of the development and review of WSPs to ensure the delivery of quality products that meet customer needs.

DPI Water continually revises WSP development processes and their implementation to improve efficiency. The Commonwealth funds WRP development.

The output measure for this activity is appropriate because it recognises different planning processes depending on whether a plan is being replaced, or is a different type of plan, such as a WRP. At the end of the current determination period 32 WSPs will be in operation. By the end of the future determination period there will be a total of 29 inland WSPs operating. This is because three WSPs will be merged into existing WSPs. Eight WSPs will be reviewed and replaced or extended. A further two WSPs will be reviewed only, and will be replaced or extended in the determination which will follow the 2016 determination. All other plans (16) that fall into the Basin Plan district will be reviewed as part of the WRP process. DPI Water will also complete 22 WRPs.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>8 WSPs will be reviewed and replaced/extended.</li> <li>2 WSPs will be reviewed.</li> <li>3 WSPs will be reviewed and merged.</li> <li>22 WRPs will be completed.</li> </ul>	<p>Cumulative percentage of forecast WSPs being reviewed, replaced/extended or merged:</p> <ul style="list-style-type: none"> <li>100%.</li> </ul> <p>Cumulative percentage of forecast WRPs being completed:</p> <ul style="list-style-type: none"> <li>100%.</li> </ul>

The service level is appropriate because it will deliver WSPs, which will provide the statutory arrangements for water sharing in NSW.

### The risks addressed or mitigated by the activity

Water plan development activities are needed to deliver statutory water sharing arrangements and provide a statutory framework for sharing water access in the NSW portion of the Murray Darling Basin. WSPs provide clarity and security for water users by specifying the sharing arrangements between the environment and water users, and also between the different types of water users.



## W06-03 Floodplain management plan development

W-code	Activity name	Summary of activity
W06-03	Floodplain management plan development	The development, review, amendment, and extension or replacement of Floodplain Management Plans, in collaboration with the Office of Environment and Heritage.

### Service obligation changes and strategies for delivering the activity

Requirements for Floodplain Management Plans (FMPs) are specified in the *Water Management Act 2000*, and the broad rules have not changed since the previous determination.

### Proposed changes to the activity

Developing FMPs allows DPI Water to roll out an efficient system for regulating the construction of works on floodplains, and to therefore manage the impacts of these works on flood pathways. FMPs streamline the approval process for flood works.

The output measure assesses DPI Water's ability to undertake priority FMP development tasks. Community consultation will be undertaken as part of the development and review of FMPs, to ensure quality products are being delivered that meet customer needs. At the end of the current determination period DPI Water plans to have 20 FMPs operating. This includes the commencement of the Gwydir Valley FMP in the year 2015/16. By the end of the future determination period there will be 16 FMPs operating, as five new FMPs will commence and nine existing FMPs will be repealed.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>5 new FMPs will be developed.</li> </ul>	Cumulative percentage of forecast FMPs being completed: <ul style="list-style-type: none"> <li>100%.</li> </ul>

The service level is appropriate because it will deliver FMPs, which will set the framework for determining where floodplain works can be constructed, and protect ecological and cultural assets. A large proportion of this activity will be Commonwealth funded.

### The risks addressed or mitigated by the activity

FMPs are needed to provide clarity over where flood works can be constructed on the floodplain, and to manage the risk to life and property from the effects of flooding. FMPs also develop rules to maintain floodplain connectivity to flood-dependent ecological and cultural assets on the floodplain.

## W06-04 Drainage management plan development

W-code	Activity name	Summary of activity
W06-04	Drainage management plan development	The development, review, amendment, and extension or replacement of Drainage Management Plans, to address water quality problems associated with drainage systems.

### Service obligation changes and strategies for delivering the activity

Requirements for Drainage Management Plans (DMPs) are specified in the *Water Management Act 2000* and have not changed.

### Proposed changes to the activity

DMPs streamline the process for issuing drainage work approvals and will be developed in collaboration with DPI Fisheries if required.

There are currently no DMPs in progress or scheduled for development as this is a lower priority than the development of WSPs, WRPs and FMPs. This priority may change over the course of the determination, particularly if the state government decides it is a priority, and it is therefore listed as an activity and cost code.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
• 0 DMPs will be developed.	• N/A

The service level is appropriate because it assesses DPI Water's ability to undertake drainage management planning tasks. These tasks include the development, review and evaluation of DMPs and community consultation on rules.

#### The risks addressed or mitigated by the activity

When needed, DMPs provide rules to mitigate ecological and water quality impacts, including cumulative impacts, from drainage works in a given area. DMPs will seek to manage environmental impacts such as fish kills, which can occur from the mobilisation of contaminants through drains.

### W06-05 Regional planning and management strategies

W-code	Activity name	Summary of activity
W06-05	Regional planning and management strategies	The development, evaluation and review of regional water strategies, metropolitan water plans and other planning instruments, including the associated stakeholder engagement.

#### Service obligation changes and strategies for delivering the activity

The *State Infrastructure Strategy Update 2014* identified the need for critical water infrastructure projects to be delivered in priority areas of NSW. This strategy requires DPI Water to maintain and improve the catchment needs assessment framework to support decisions on infrastructure investment priorities. These activities support longer-term economic and social outcomes that depend on reliable water supplies.

Regional water strategies will establish the overarching framework and priorities to manage water resources for regional and metropolitan communities throughout NSW, and facilitate consistency between various plans required under the *Water Management Act 2000*, the Murray Darling Basin Plan, *NSW 2021*, and the *State Infrastructure Strategy 2012*. Using improved hydrologic and economic modelling linked with environmental risk assessment, the strategies will guide priorities for potential investment in infrastructure and non-infrastructure solutions to address changing water needs and climate variability.

DPI Water is also responsible for leading metropolitan water planning for greater Sydney, in line with Goal 21 of *NSW 2021* (secure potable water supplies). In 2011 DPI Water's role (through the Metropolitan Water Directorate) was expanded to include planning for the lower Hunter region<sup>4</sup>. Metropolitan water plans are strategic, non-statutory plans that identify supply and demand measures to secure water supplies supporting population and business growth, including contingency measures for drought, and supporting environmental flow objectives. The metropolitan water plans are special purpose plans within the regional water strategy framework, and their delivery will help meet the objectives and priorities of the regional water strategies.

<sup>4</sup> The development of the 2014 Lower Hunter Water Plan was funded directly by Hunter Water Corporation. When the NSW Government approved this plan in January 2014, it also approved in-principle that the costs for the monitoring, evaluation and review of the plan would be funded by Hunter Water Corporation and recovered from its customers through future IPART pricing determinations.

### Proposed changes to the activity

Regional water strategies reflect an evolution in DPI Water's approach to planning, using the latest modelling and least-cost planning tools. They integrate hydrologic, economic and environmental risk assessment to manage water resources at a regional scale. They also provide the overarching strategic direction and integration for related special-purpose plans, such as WSPs and inputs to infrastructure planning. Stakeholder engagement is integral to the planning process to ensure the plans meet the regions' needs.

Regional planning will include strategies designed to achieve economic, social and environmental objectives that support regional economic prosperity, community water requirements and environmental health. The outcomes of this activity will support the development of business cases, where cost-effective opportunities are identified to improve economic returns from productive water use.

Metropolitan water plans secure cost-effective water supplies for growth and drought security in greater Sydney and the lower Hunter, meeting the needs of a growing population and the business and service sectors through a mix of supply and demand measures. These two plans are already in existence and will be reviewed.

Ongoing monitoring and evaluation of the efficiency, effectiveness and appropriateness of these strategies and plans will guide adaptive management to ensure their objectives are achieved.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
<ul style="list-style-type: none"> <li>2 regional water strategies (metropolitan water plans) will be reviewed.</li> <li>6 new regional water strategies will be completed.</li> </ul>	<p>Cumulative percentage of forecast metropolitan water plans being reviewed:</p> <ul style="list-style-type: none"> <li>100%.</li> </ul> <p>Cumulative percentage of forecast regional water strategies being completed:</p> <ul style="list-style-type: none"> <li>100%.</li> </ul>

The service level is appropriate because it meets the following requirements:

- Regional water strategies, which provide an overarching framework and direction for water management in a region, and must be consistent with obligations for related special purpose plans under the Basin Plan, *Water Management Act 2000*, etc.
- Metropolitan water planning, which is undertaken in accordance with the COAG-endorsed National Urban Water Planning Principles.
- Evaluations, which are undertaken in accordance with the NSW Government Evaluation Framework (2013).

### The risks addressed or mitigated by the activity

Strategic regional planning considers the potential economic impact of water availability and mitigates the risk of over- or under-investment in water assets, and therefore benefits all water users in the region. The strategies will consider options to address areas of market failure and improve environmental outcomes, and will provide strategic inputs to WSPs, which provide clarity to water users regarding their share of available water.

Metropolitan water plans mitigate the risk of insufficient water being available to meet the needs of urban communities due to long-term growth or future droughts. Using a least-cost planning approach, these plans also mitigate the risk of over- or under-investment in water assets.

The regional strategies and plans will optimise opportunities to use existing assets and potentially invest in water efficiency initiatives or new infrastructure to improve water reliability, where needed, at the least cost to water users.

## W06-06 Development of water planning and regulatory framework

W-code	Activity name	Summary of activity
W06-06	Development of water planning and regulatory framework	The development of the operational and regulatory requirements and rules for water access.

### Service obligation changes and strategies for delivering the activity

While there are no set standards for this activity, there are factors that instigate the development of new policies, strategies and regulatory instruments (such as legislative amendment packages, new regulations and orders) in response to community and water user concerns and issues.

### Proposed changes to the activity

This activity oversees the development of operational and regulatory frameworks, which guide WSPs, WRP, FMPs and DMPs, in response to community concerns, legislative requirements and Basin Plan requirements. It also develops regulatory instruments that provide a clear and consistent approach to regulating water sharing and access, such as access licence conditions and access licence dealing principles.

The *Water Management Amendment Act 2014* has increased the efficiency of regulating water users, as well as increased flexibility for users to take water. Further amendments to the *Water Management Act 2000* to improve the regulation function are proposed for 2016/17.

Consideration of the need to continue to decrease 'red tape' will be one of the drivers for the next round of amendments.

Community consultation will be undertaken as part of developing regulatory frameworks and instruments to ensure quality products are being delivered that meet customer and community needs.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of regulatory instruments and policies developed or amended according to an annual forecast: • Forecast: on an annual needs basis.	Percentage of annual forecast frameworks and regulatory instruments delivered according to schedule: • Forecast: 100%.

The service level is appropriate because it reflects changing community concerns and priorities, which set the direction for regulation development. This approach allows DPI Water to be flexible and responsive to customer and community issues, and to develop the most appropriate and relevant regulatory instruments.

### The risks addressed or mitigated by the activity

This activity sets the framework for transparent operation and decision making with regard to water sharing and access. Regulatory frameworks and instruments seek to balance economic, social and environmental outcomes. They also seek to reduce red tape, improve operational efficiency and provide appropriate compliance mechanisms.

## W06-07 Cross border and national commitments

W-code	Activity name	Summary of activity
W06-07	Cross border and national commitments	The development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments.

### Service obligation changes and strategies for delivering the activity

The standards for this activity are specified in documents such as the Murray Darling Basin Agreement, *Border Rivers Act 1947*, National Water Initiative and Council of Australian

Governments water reform framework. These are subject to change over time as a result of new intergovernmental agreements.

### Proposed changes to the activity

There is currently a Border Rivers intergovernmental agreement and Basin Plan agreement for managing cross-border and national commitments. The Border Rivers agreement is being revised and by the end of the determination period it will be redeveloped along with related legislation. The Basin Plan agreement may also be modified, with amendments made to any related legislation.

Operational efficiencies for the sharing and delivery of water in the Border Rivers will be sought through the streamlining of institutional arrangements.

NSW will fulfil the requirements of the Basin Plan implementation agreement while mitigating third-party impacts to NSW licence holders.

A strategic management plan is being revised for the Great Artesian Basin (GAB) in consultation with other jurisdictions and coordinated under the Great Artesian Basin Senior Officials Committee (GABSOC). The GABSOC is accountable to the Commonwealth parliamentary secretary for water and the GAB jurisdictional water ministers.

Community consultation will be undertaken as part of developing the intergovernmental agreements and through representation on community consultation committees. This will aim to ensure that the interests of NSW are considered.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Full participation in interstate processes to manage water.	Compliance with key interstate agreements: <ul style="list-style-type: none"> <li>• 100%.</li> </ul>

The service level is appropriate because it reflects the changing requirements that are needed to meet inter-jurisdictional obligations.

### The risks addressed or mitigated by the activity

This activity protects NSW interests and ensures NSW users are not disadvantaged. Implementation of a nationally agreed water reform agenda ensures NSW water users are managed consistently with other water users across the country. This provides a stable business environment for NSW licence holders. DPI Water representation at key advisory and stakeholder meetings is essential to ensure the interests of NSW licence holders are adequately represented. DPI Water will report transparently on NSW compliance with national agreements.

## 6.3.7 Standards of service – W07 Water management works

W-code	Activity name	Summary of activity
<b>W07</b>	<b>Water management works</b>	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.

### W07-01 Water management works

W-code	Activity name	Summary of activity
W07-01	Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.

### Service obligation changes and strategies for delivering the activity

There are no changes in standards or policy that affect this service.

### Proposed changes to the activity

This service reduces erosion and salinity impacts, and restores riverbank stability. Erosion impacts are addressed by restoring river frontage through structural erosion controls, such as log and rock revetment, fencing to exclude stock and protect revegetation, and assistance with off-stream stock watering and planting of local native species. Salinity impacts on surface water are mitigated by the operation of salt interception schemes.

A risk-based approach has been adopted for this service, which means that resources and effort are focused on high priority areas.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
High priority areas of erosion identified and remediated: • Current: 90%. • Forecast: 90%. Maintain salinity (EC <sup>5</sup> ) credits for NSW.	Channel output capacity at Tumut maintained at 9,200ML/day.

The service level is appropriate because the forecasts for planned high priority areas change on an annual basis due to weather conditions. For example, riverbank erosion may increase significantly in flood years. This means that in a given year the workload could double as planned high priority areas increase compared with the previous year. The service level is therefore appropriate as it meets work needs on a yearly basis without requiring resources when less work is required.

### The risks addressed or mitigated by the activity

This service reduces erosion and salinity impacts and restores riverbank stability, which is essential for maintaining a healthy river system, and also protects life and property from the effects of flooding.

## 6.3.8 Standards of service – W08 Water regulation management

W-code	Activity name	Summary of activity
<b>W08</b>	<b>Water regulation management</b>	The development, operation and management of the administration of licences, approvals, their associated transactions and compliance management and enforcement.

### W08-01 Regulation systems management

W-code	Activity name	Summary of activity
W08-01	Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.

### Service obligation changes and strategies for delivering the activity

No major policy changes likely to have a significant impact on this activity are known at this stage. Major legislative changes are the most likely source of significant policy change and this is almost certain to occur at some point during the future determination period. Emerging natural resource management issues (for example coal seam gas) are another potential source of demand for enhancements and modifications to regulatory systems.

The Department of Premier and Cabinet promotes better regulation through its quality regulatory services initiative, which specifies five reforms for implementation by all NSW regulators. DPI Water regulatory systems provide services that address these reforms. Its online water

<sup>5</sup> Electrical conductivity credits



applications service provides a basic electronic transaction service for key transaction types. Its management information system reports provide improved clarity in processing timeframes and provide basic support for a greater focus on regulatory outcomes. Substantial ongoing investment will be required before DPI Water can offer all its applications online, provide the necessary support to users and deliver effective regulatory outcomes.

In addition, existing regulatory systems will continue to require maintenance. System users report issues for resolution and proposed enhancements, and request administrative actions through our online Water Regulatory Services Helpdesk.

### Proposed changes to the activity

The activities are proposed to meet 'quality regulatory services initiative' objectives and improve DPI Water's capacity to comply with the principles of the *Water Management Act 2000*. These changes will require new capital funding.

DPI Water will increase the use of online water applications for approval extension transactions. This will require a combination of system enhancements and communication to customers, and will reduce costs and improve customer convenience.

A mapping capability will be added to online applications to enhance the ability of customers to effectively communicate the natural resource management details of their applications. During the application process, customers will be given simple tools to accurately identify the proposed location for new irrigation works or changed locations for existing works. Outcome documents provided to the customer will include clear map representations of the approved work locations. DPI Water will improve the workflow and reporting capabilities of water transaction applications systems.

The Water Live smartphone app will be enhanced to add customer alerts. Examples include temporary water restrictions, available water determinations, and the reporting of water meter readings.

A customer relationship management system will also be implemented. This will facilitate greater use of online services by customers and improve targeting of communication activities.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of applications received online: • Current: 2,000. • Forecast: 2,500.	Percentage of all applications received online: • Current: 33%. • Forecast: 42%.

The service level is appropriate because, by making available internet-based customer licensing and approval information, and on-line application facilities, DPI Water continues to improve its regulatory systems management. This will improve convenience for customers and reduce application costs through the increased availability of on-line applications.

### The risks addressed or mitigated by the activity

DPI Water is data rich and this data can help to improve the quality and efficiency of application processing, natural resource management and reporting. Current systems provide a basic level of support to users with some components providing more advanced support. Improving system capability will allow system users to more efficiently access and use available data. The outcome will be better and more efficient assessments and water access licences, and approvals that do a better job of promoting water trading and sustaining the resource.



## W08-02 Consents management and licence conversion

W-code	Activity name	Summary of activity
W08-02	Consents management and licence conversion	The transcribing of water sharing provisions into licence conditions and the conversion of licences to the Water Management Act.

### Service obligation changes and strategies for delivering the activity

When WSPs are made for the first time for a water source, all *Water Act 1912* licences for the water source are converted to water access licences and approvals under the *Water Management Act 2000*. This requires the relevant aspects of the old licences to be transferred to the new water access licences and approvals. DPI Water also needs to investigate and confirm the correct holders and/or tenancy arrangements for approximately 20 per cent of converted licences, and record security interests on about 50 per cent of converted licences where the financial risks to affected parties warrant it. The security interests arose from the land benefitted under the *Water Act 1912* licences.

Each WSP includes mandatory conditions, which are imposed on water access licences and approvals covered by the plan. To do this the mandatory conditions, which may be expressed in general terms, have to be expressed in terminology appropriate for licence/approval conditions, then notified to the individual licence/approval holder and recorded on registers in accordance with procedures set out in the Act. This occurs whenever a WSP is made and also when they are remade at 10-yearly intervals.

### Proposed changes to the activity

This activity will continue to deliver services as for the previous determination, until all WSPs are gazetted and the conversion of all licences is completed.

Registration of any security interest by financial institutions on water access licences (WAL) will be facilitated. The WAL titles will be released on completion of verification and registration of any security interest.

Approved licence conditions that arise from WSPs will be uploaded, and conditions notices that inform WAL and approval holders of their obligations will be mailed.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Annual number of licences recorded on the public register, plus number of access licence and approvals with updated conditions: <ul style="list-style-type: none"> <li>Current: All licences recorded on public register.</li> <li>Forecast: All licences recorded on public register – the number varies from year to year.</li> </ul>	Percentage of access licences and changes to licence details recorded on the public register within two months of implementation or update of sharing plan: <ul style="list-style-type: none"> <li>Current: 90%.</li> <li>Forecast: 90%.</li> </ul>

The service level is appropriate because the service levels are constrained by the legislative requirements of providing a minimum time for recording of tenancy and security interests.

### The risks addressed or mitigated by the activity

This activity ensures that entitlements are granted and security interests are registered to the rightful owners and financial institutions respectively. In addition, more WALs are available for trading, increasing water market activity and enhancing the value of water. The implementation of WSP conditions will result in the better protection of water sources and improve river health, as well as providing greater security for licence holders

## W08-03 Compliance management

W-code	Activity name	Summary of activity
W08-03	Compliance management	The on-ground and remote monitoring activities (including investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions.

### Service obligation changes and strategies for delivering the activity

The overall aim of DPI Water's compliance program is to improve the level of voluntary compliance. This is expected to result in a reduction in breach reports and a reduced need to take stronger enforcement actions such as prosecutions and penalty notices. There will be more emphasis on onsite audits, advice, warnings and general education initiatives.

DPI Water will achieve this by continuing to implement its compliance policy, which has been amended to reflect a more risk-based and outcome-focused approach. This includes community education and engagement to promote voluntary compliance; monitoring water resource activities across the state according to risk to deploy proactive programs and to identify potential breaches in a timely manner; investigating alleged breaches; taking appropriate action when a breach occurs; and review and reporting.

### Proposed changes to the activity

DPI Water aims to improve outcomes under this activity by increasing and improving targeted onsite audits, with a focus on encouraging voluntary compliance. This will be achieved by helping water users better understand the meaning and purpose of their rights, conditions and obligations under licences and approvals.

Other improvements planned include expanding email communication with licence/approval holders, improving website usability, and improving information systems for recording, tracking and reporting the processing of identified potential breaches.

DPI Water will record and use customer enquiry data to identify areas to target with education programs. It will also expand staff training to Certificate IV level of competency and increase the role of licensing staff in compliance. Furthermore it will continue to develop its approach to strategically investigating and prosecuting serious breaches.

One promising area of development is monitoring through remote sensing. DPI Water has been investigating the use of remote sensing data (satellite imagery, aerial photography, etc) for detecting potential breaches. It is currently working with other state agencies to make use of the recently available Landsat 8 data. Data for the entire state will be downloaded every 16 days and analysed to detect potential unlawful take and use of water, which would then be further investigated. Trials of this remote sensing system are underway. It is anticipated that this strategy will result in a more efficient way of comprehensively monitoring for large-scale unlawful take and use of water.

Additionally, DPI Water needs to develop staff training, systems and procedures to address emerging areas such as the widespread installation of water meters with the capacity to transmit data. This will require new arrangements for responding to real-time information on the potential or impending use of water in excess of that allowed, both in terms of volume and timing.

Further staff training is also required to address the regulation of water take associated with emerging industries, and the licensing and monitoring of floodplain harvesting water take. It is estimated that about 450 new licences will be issued, which will result in the need for increased monitoring and enforcement to protect entitlements.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of breach reports received:	Percentage of non-basic landholder rights approvals audited each year:
• Current: 600.	• 2%.
• Forecast: 600.	Percentage of properties audited that comply with their licence and approval conditions (excluding those audited as part of investigating an alleged breach):
	• 90%.
	Percentage of breach reports risk assessed within 14 days of receipt:
	• 90%.
	Percentage of all cases finalised within six months:
	• 70%.

The service level is appropriate because the focus on education, detection and auditing are expected to reduce the level of non-compliance amongst licensed water users.

#### The risks addressed or mitigated by the activity

Research undertaken on stakeholder views suggests that less than 40 per cent of water users believe DPI Water's approach to compliance is adequate, and a large portion of the community think they can take water illegally. This represents a significant risk to the water rights system.

Without effective compliance and enforcement, it will be difficult to optimise the economic and social outcomes from non-urban water resources. DPI Water's water management activities are undermined by illegal water extraction. It needs to visibly demonstrate that it measures and enforces compliance to address these perceptions and provide water users with confidence that it manages compliance for all users.

The education aspects of this activity seek to inform users, increase the level of voluntary compliance achieved, and underpin enforcement activities.

#### W08-99 Water consents overhead

W-code	Activity name	Summary of activity
W08-99	Water consents overhead	The fixed legal and regulatory overhead costs associated with water consents transactions, required by IPART to be listed separately for transparency.

This activity is the overhead cost associated with processing water consent transactions and paid for by government. It has no output measures or performance indicators, and is included here for transparency.

#### 6.3.9 Standards of service – W09 Water consents transactions

W-code	Activity name	Summary of activity
W09	Water consents transactions	The technical requirements for, and administration of, water consents transactions.

#### W9-01 Water consents transactions

W-code	Activity name	Summary of activity
W9-01	Water consents transactions	Transactions undertaken on a fee for service basis; including dealings, assessments, changes to conditions and new applications for water licences and approvals.

### Service obligation changes and strategies for delivering the activity

The total number of consent transactions varies highly from year to year due to factors beyond the control of DPI Water. In dry years the number of many types of transactions jumps, and in wetter years their numbers drop dramatically. Also, the numbers of approvals expiring is not evenly distributed and as a result there is a large variation in approval extensions to be processed each year.

DPI Water has moved to a more flexible workforce that can shift between processing consents, and working on compliance related activities (audits, customer education and potential breach investigations) depending on the conditions at the time. In years with high consent transaction numbers, compliance action is limited to potential high-risk breaches. In years with low numbers of consent transactions, staff are deployed to deliver a more complete compliance program covering audits, education and addressing lower-risk potential breaches.

### Proposed changes to the activity

Delivery of consent transaction services by DPI Water is driven by a new business planning framework that ensures activities and services are strategically aligned with NSW Government priorities; outcomes focused, measureable and reportable; targeted to better meet the needs and expectations of our customers and stakeholders; and achievable with our current and future resources.

During the next determination period DPI Water aims to repeal the *Water Act 1912* so that all users can be regulated under the *Water Management Act 2000*. It will also implement the *Water Management Amendment Act 2014*.

Various policy changes will occur, including reforms for establishing private water corporations; introducing a new water bore drillers' licensing system; and formulating policies for managing communal bores for existing and new dealings.

The training of staff to enable a more flexible workforce that can shift between processing consents, and working on compliance related activities, which began in the current determination period will continue to be implemented in the forward determination period. There will be a priority on completing the roll-out of the Certificate IV regulation qualification to all targeted staff.

DPI Water will also continue the work done in the current determination to meet customer communication, engagement and education priorities.

In the forward determination period DPI Water will continue to make more consent transaction services available online. This will include enabling customers to submit applications for basic landholder rights bores and dams online; providing online forms to enable licence and approval holders to update their details and apply to surrender licence and approvals electronically; and enabling multiple online payment methods for consent transactions.

DPI Water finalised and published its new customer service charter on its website in April 2014. This charter is publicly reported on, against the consent transaction performance indicators, on the website every six months. During the forward determination period it will also publicly report against the consent transaction performance indicators on its website every six months.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of applications processed: • Current: 6,000. • Forecast: Process all applications received.	<p>Percentage of applications for licence dealings assignment of shares (71Q) processed within 20 days:</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul> <p>Percentage of applications for new access licences processed within 40 days:</p> <ul style="list-style-type: none"> <li>• 80%.</li> </ul> <p>Percentage of applications for water management work and use approvals processed within 60 days:</p> <ul style="list-style-type: none"> <li>• 80%.</li> </ul> <p>Percentage of applications to extend a water management work approval processed within 20 days:</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul> <p>Percentage of applications for an approval for a bore for domestic and stock rights processed within 10 days:</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul> <p>Percentage of legal searches completed within the preferred processing time frame:</p> <ul style="list-style-type: none"> <li>• 95%.</li> </ul>

The service level is appropriate because it provides customers with expected timeframes for processing different types of application. Performance against these timeframes is reported on the website every six months.

#### The risks addressed or mitigated by the activity

This activity is needed to meet statutory obligations under the *Water Management Act 2000*. The assessment of applications minimises the impact of new works and licences, and ensures water rights are protected and environmental considerations are taken into account.

### 6.3.10 Standards of service – W10 Business and customer services

W-code	Activity group name	Summary of activity
W10	Business and customer services	The customer, business and revenue collection services supporting the operation of DPI Water.

#### W10-01 Customer management

W-code	Activity name	Summary of activity
W10-01	Customer management	All customer liaison activities; including responding to calls to licensing and compliance information lines; and producing communication and education materials such as website content and participation in customer forums.

#### Service obligation changes and strategies for delivering the activity

There are currently no anticipated changes in standards or policy, so the focus will be on improving productivity with the available systems.

The *NSW 2021* plan includes two goals relevant to this activity – to restore trust in state and local government as a service provider (goal 30) and to improve government transparency by increasing access to government information (goal 31). This activity will address these goals.

#### Proposed changes to the activity

Customer service activities help to inform people about their rights and responsibilities, and to manage water sustainably and participate in the water market, and are reported publically twice a year.

DPI Water is scoping a customer relationship management system (CRM) that will enable enhancements to customer service, including managing the correct information required to

answer customer enquiries, managing customer interactions, and improving accessibility to information for operational staff to ensure they provide accurate and consistent information.

Outstanding legacy issues relating to incorrect data will be addressed by a data quality project. This project will develop data entry standards and an information management policy to ensure future customer data management enables and supports high-quality customer management.

DPI Water will continue to provide customers with local decentralised services in regional sites for all aspects of water management and transactions.

Proposed changes to education activities include publishing new and updated web content according to a proposed new web information architecture; developing relevant interactive tools where appropriate; publishing information resources to support changes in legislation, regulations or orders; and using social research to identify customer needs and preferences for developing and providing these resources.

DPI Water will implement the following efficiency or effectiveness initiatives. It will investigate options and ideas on how it can gather information and report on customer satisfaction. It will develop a discussion paper on good practices on feedback gathering and use this to deliver targeted feedback mechanisms. It will continually review feedback received to improve service delivery.

The current customer service charter will be reviewed to determine if further services should be added. This will provide staff with the opportunity to provide input and take ownership, and also provide the opportunity to improve our current service level agreements.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of enquiries <ul style="list-style-type: none"> <li>• Current: 10,000.</li> <li>• Forecast: 10,000.</li> </ul>	Percentage of enquiries directly responded to at the time of the call or email: <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: Maintain or improve current status.</li> </ul>

The service level is appropriate because it is responding to customer driven requirements for information about their rights and responsibilities, and to manage water sustainably and participate in the water market.

#### The risks addressed or mitigated by the activity

This activity addresses dissatisfaction with customer service and mitigates complaints in the early stages. It also provides early intervention or prevention of non-compliance activities by educating water users.

### W10-02 Business governance and support

W-code	Activity name	Summary of activity
W10-02	Business governance and support	The business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART.

#### Service obligation changes and strategies for delivering the activity

Business governance and support will comply with NSW Government financial management policy. This includes NSW Treasury policy papers and guidelines, such as TPP 15-01: Accounting Policy: Financial Reporting Code for NSW General Government Sector Entities, TPP 13-03: Total Asset Management (TAM) Submission Requirements, and TPP 12-03: Risk Management Toolkit for the NSW Public Sector.



The outcomes of the NSW Bulk Water Reforms may lead to changed requirements in relation to business support services. However, as these outcomes are not known, this submission assumes that all existing services continue to be provided at the existing level.

### Proposed changes to the activity

This activity provides essential support for the effective delivery of water planning and management. While there are no proposed changes to this activity, a 1.5 per cent efficiency dividend will be implemented on business governance and support resources over the future determination period to ensure efficient service delivery.

A key responsibility is to report on pricing for the IPART determination and to prepare the Annual Information Returns to IPART. Due to increased cost of reporting required to meet external reporting requirements, DPI Water is seeking a streamlining of the performance reporting as required in Appendix L of the current determination.

Closer alignment between DPI Water's government monopoly services and internal financial accounting structures is proposed. Part of this involves a review (currently underway) of the legal and financial relationship between DPI Water and the Water Administration Ministerial Corporation.

Issues relating to DPI Water being discussed at WaterNSW customer service committee meetings will be received and considered, and participation and follow-up will be provided as appropriate.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Output measures: <ul style="list-style-type: none"> <li>Annual reporting to IPART and ACCC.</li> <li>Annual performance reporting to customers.</li> </ul>	Annual reporting within agreed timeline from end of financial year: <ul style="list-style-type: none"> <li>Reporting to IPART and ACCC: within 4 months.</li> <li>Reporting to customers: within 6 months.</li> </ul>

The service level is appropriate because the proposed performance indicators reflect appropriate and necessary accountability to customers (water users), the regulatory authority (IPART) and the NSW Government.

### The risks addressed or mitigated by the activity

This activity provides the business systems and processes that support organisation-wide governance and performance reporting.

## W10-03 Billing management

W-code	Activity name	Summary of activity
W10-03	Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.

### Service obligation changes and strategies for delivering the activity

This activity provides billing management for accounts issued for DPI Water, and its billing and collection agent WaterNSW. The service level agreement with WaterNSW is managed under this activity. The two organisations together agree on the contracted services to be delivered and the debt management strategy to be implemented.

DPI Water incorporates IPART's determination rules into the billing program to ensure accuracy. It also makes sure that process changes (for example the water licensing system and water take measurement) do not impact on the accuracy of bills issued.



### Proposed changes to the activity

DPI Water will continue to develop processes that minimise the impact of any policy and system changes on billing accuracy. It ensures that an open and transparent methodology is applied to all transactions that may impact the data that underpins customers' bills.

DPI Water maximises collected revenue through the timely application of billing rules in line with IPART's determination. It responds promptly to any queries relating to bill accuracy and price application. It also provides all financial information to internal and external stakeholders relating to billed amounts, statements, reports, etc, that use billing data. This improved efficiency is achieved by having one coordinating point of contact for all actions that may impact on the data used for billing.

The forecast output measures and performance indicators are described below.

Output measure	Performance indicator
Number of bills issued: • Current: 65,000. • Forecast: 65,000.	Percentage of billing revenue collected within 3 months of the bills being issued: • Current: 93%. • Forecast: 95%.

The service level is appropriate because it focuses on the timely issuing of bills.

### The risks addressed or mitigated by the activity

This activity collects revenue due to DPI Water by issuing accurate and timely bills to customers.

## 6.4 Murray Darling Basin Authority and Dumaresq-Barwon Border Rivers Commission

### 6.4.1 Murray Darling Basin Authority

The *Water Management Act 2000*, the *Independent Pricing and Regulatory Tribunal Act 1992* and the Independent Pricing and Regulatory Tribunal (Water Services) Order 2004, together make WAMC<sup>6</sup> the supplier of services relating to the making available or supplying of water in NSW, and declare these services to be government monopoly services. These services include NSW commitments through the Murray Darling Basin Joint Venture.

The Joint Venture is an interjurisdictional unincorporated body with a work program under the control and direction of the Murray Darling Basin Ministerial Council. The NSW Minister for Lands and Water, who is also the Minister responsible for WAMC, represents NSW on the council and enters into commitments on behalf of NSW.

While implementation of the Basin Plan is fully funded by the Commonwealth Government, the MDBA Joint Programs are cost shared between partner jurisdictions. The Joint Programs include projects relating to river operations, managed in NSW by WaterNSW, and water management activities, managed in NSW by DPI Water. For more information on the MDBA see Section 3.1.

The water management component of the MDBA Joint Programs relates to protection of NSW interests economically and environmentally, and the integration of Joint Programs with the NSW policy and legislative framework. Under the National Water Initiative and IPART impactor pays principles, a proportion of the cost of these activities is recoverable from water users in the WAMC price determination, which is implemented by DPI Water. The balance of the costs is borne by the NSW Government.

<sup>6</sup> For more information on WAMC see Section 3.2.3.

NSW makes funding contributions to the MDBA Joint Programs costs, and therefore actively seeks to ensure that the projects are essential and delivered efficiently. The NSW Government was concerned about the growing expenditure needs of the MDBA and reduced its total contribution to the Joint Programs from \$35.8 million in 2011/12, to \$12.4 million in 2012/13, \$9.3 million in 2013/14 and \$18.9 million in 2014/15. The government was instrumental in the conduct of efficiency reviews during 2013 and 2014 to satisfy the partner governments of the efficiency of the program.

The MDB Ministerial Council efficiency review included independent cost efficiency assessments of River Murray Operations, Salinity Management, the Living Murray program, Joint Programs governance and the inter-jurisdictional cost share arrangements. The River Murray Operations, which are managed by WaterNSW, are not included in this submission.

### **General Review of Salinity Management**

Salinity in the Basin is a long-standing and significant issue affecting all MDBA partner jurisdictions. Joint effort and investment have reduced River Murray salinity and achieved the agreed salinity target since 2010.

The Salinity Management review found that excessive salinity remains a risk under all scenarios, and requires active management, including using salt interception schemes (SIS).

The review found that cost savings were achievable by modifying SIS operations in line with reduced river salinities from Basin Plan environmental flows. This approach would still meet the agreed target. A trial of more responsive SIS is being proposed as part of the new Basin Salinity Management Strategy (2030) to go before the Ministerial Council in October 2015.

### **Review of The Living Murray program**

The Living Murray program manages the water entitlements purchased to restore and rehabilitate six iconic environmental sites in the Murray valley. This includes the construction and operation of works to enhance the efficiency of environmental watering at many of the sites, and the modelling, planning and monitoring necessary to support the delivery of this water.

The review found that streamlining coordination procedures and adjusting the water entitlement portfolio could find cost savings. Work on identifying cost efficiencies and improving effectiveness is continuing.

### **Review of governance and institutional arrangements**

The governance review of Joint Programs recommended repealing elements of the Water Regulations 2008 (made under the *Water Act 2007 (Commonwealth)*). This would reinforce the role of the MDBA as an agent to the states, and provide the MDB Ministerial Council with line-of-sight management of the Joint Programs. The arrangements would then be codified with a MDB Ministerial Council statement of intent and a service level agreement between the MDB Ministerial Council and the MDBA.

### **Review of the MDB Agreement cost sharing arrangements**

The cost sharing arrangements determine each state's contribution to the costs of the MDBA in managing, on their behalf, the water storage and supply functions (river operations); operating the salinity interception schemes; undertaking Basin relevant natural resources programs (water management); developing and preparing policy advice to the MDB Ministerial Council; and providing secretariat functions. The review found that the current formulas for cost sharing were appropriate.

The MDB Ministerial Council has also agreed to other structural and efficiency savings, gained by ceasing activities that were Basin Plan functions, modifying program designs to deliver similar

outcomes at reduced cost, and reducing the frequency of compliance audits in areas with low risk.

### **Other mechanisms to ensure program efficiency**

Other arrangements in place to ensure Joint Programs expenditure is efficient include the following:

- The major components of the Joint Programs focus largely on the continued delivery of longstanding, well-defined and accepted resource management targets. These include the sharing and delivery of water in the River Murray system, an agreed maximum level of salinity in the River Murray, and restoration of iconic riparian environmental assets.
- The MDBA governance structure includes an inter-jurisdictional committee, the Review of Joint Programs Taskforce, created specifically to critically review projects. The taskforce is overseeing work designed to ensure that the Joint Programs are regulator-ready. That is, that they are consistent with NWI requirements for best practice water pricing and standards for ACCC-regulated water authorities.
- Existing programs are subject to efficiency and effectiveness assessments undertaken by the taskforce as part of annual corporate planning and budget processes.
- All new projects are subject to cost-benefit analysis, and jurisdictions can step outside the cost sharing arrangements if they believe particular projects are not cost efficient.
- Programs endorsed by the taskforce are subject to further review by the Basin Officials Committee, prior to final consideration and approval by the MDB Ministerial Council.

Proposed MDBA Joint Programs expenditure is scheduled by the MDB Ministerial Council through a 4-year rolling corporate plan process. NSW, however, only agrees funding on a year-to-year basis, allowing independent annual review by this jurisdiction of the project portfolio before further funds are committed.

Through these processes NSW has agreed to a contribution to Joint Programs expenditure in 2015/16 of \$24.7 million, rising from \$18.9 million in 2014/15. Of this, \$10.1 million for water planning and management activities is counted in the DPI Water revenue needs. While the MDBA Corporate Plan reflects the intention for Joint Programs expenditure out to 2018/19 to be even higher than 2015/16, NSW has only committed to the 2015/16 grant at this stage. More information on the past contributions to MDBA is contained in Section 5.2.2.

Mapping only those components of the \$10.1 million Joint Programs water planning and management activities that comply with the NWI pricing principles to the equivalent water management activities for DPI Water yields an 'in principle' user share in 2015/16 of \$5.5 million. Only \$1.8 million (\$2015/16) is currently factored into water management charges.

The current MDBA Corporate Plan outlines the proposed Joint Programs budget out to 2018/19. The Corporate Plan provides relevant information on the MDBA activities. The total NSW share of the proposed expenditure, and the calculated water management component of that expenditure, is shown in Appendix J. Information on the cost included in the revenue needs for the water management charge is provided in Section 7.3.2.

MDBA expenditure on water management programs is reasonably stable over the years, at a level similar to the 2015/16 programs. While the 2019/20 Joint Programs budget has not yet been set and NSW has not formally committed funding beyond 2015/16, the submission proposes \$5.5 million per annum (\$2015/16) as the estimate of the user share of revenue needs throughout the determination period. This has been factored into the proposed water management charge calculations and bill impacts have been assessed on this basis.

### 6.4.2 Dumaresq-Barwon Border Rivers Commission

The Dumaresq-Barwon Border Rivers Commission (DBBRC) was created by the NSW and Queensland Governments to control and coordinate the water available from the border rivers of the two states. DBBRC is funded by contributions from these governments. Its main functions are to:

- Determine the anticipated quantity of water available from the system and notify the states of the amount of water they may divert and use.
- Control the construction, operation and maintenance of works under its remit.

WAMC, and therefore DPI Water, is authorised under section 20 of the *New South Wales-Queensland Border Rivers Act 1947* to exercise the powers and fulfil the obligations of a controlling authority. A controlling authority has the power to direct the holder of any licence, permit, authority or approval to cease or reduce any diversions of water from the Dumaresq Storage and the Carrier Rivers (certain parts of the Dumaresq, Macintyre and Barwon Rivers), as necessary. The NSW Government contributions associated with the water planning and management activities of these functions have historically been included in the costs recovered from water access licence holders by DPI Water. Appendix J contains details of the contributions to DBBRC.

## 6.5 Basin Plan activities

In February 2014, NSW signed the following two Basin Plan agreements with the Commonwealth:

- Inter-governmental agreement (IGA) – Implementing Water Reform in the Murray Darling Basin.
- National Partnership Agreement (NPA) – Implementing Water Reform in the Murray-Darling Basin.

Under the NPA, NSW will be eligible for a total of \$80.166 million in Commonwealth funding to implement the Basin Plan. Each year the Commonwealth pays the NSW Government an annual progress payment, following assessment of the state's achievements against agreed performance milestones.

In January 2014 the NSW Government assigned DPI Water as the lead agency for Basin Plan implementation. This includes coordinating provision of information required by the MDBA. As a result DPI Water prepared a program to:

- Set out the key tasks and responsibilities to meet NSW Basin obligations.
- Coordinate distribution of Basin Plan funding to be received by NSW.

The program will be delivered by the following sub-projects:

- Sustainable diversion limit (SDL) implementation.
- Environmental water planning.
- Environmental outcome monitoring.
- Surface water modelling development and application.
- Water quality and salinity management plans.
- WRPs.
- SDL adjustment – business cases.

The majority of the six-year program budget is for staff, contractor and consultant input to the sub-projects, either in DPI Water or across its five partner agencies. Funding agreements are in place with Office of Environment and Heritage and WaterNSW; and memorandums of

understanding have been developed with DPI Agriculture, DPI Fisheries and Local Land Services.

DPI Water has employed the equivalent of six full-time employees from specialist DPI Water staff to work on the sub-projects. The program will be funded by Commonwealth funds for the period of the next determination. This has been factored into the DPI Water revenue needs for the water management charge.

## 6.6 Water take strategy

The NSW Government is committed to maintaining the value and integrity of consumptive and environmental water rights. Water take measurement protects the integrity and value of water rights by:

- Providing water access licence holders with the information they need to comply with limits to the volume of water they can take.
- Providing information to enable agency officers to take action against those who take more than their share of water.
- Providing information for water allocation decisions that maintain statutory water resource diversion limits and share available water as intended under WSPs.
- Providing information for modelling and assessment for water sharing planning.
- Providing information for the efficient operation of regulated rivers, reducing losses and improving delivery of water orders.
- Enabling water users to be invoiced based on water take rather than just licence size, as required by pricing regulators.
- Enabling water allocation assignment (temporary trading).

Under the National Framework for Non-Urban Water Metering, the NSW Government is working to ensure measurement of water take is sufficiently reliable, accurate and comprehensive across all of NSW to achieve these objectives.

The approach to doing this has been evolving over recent years in response to growing competition for water and rapidly changing technology. This has led to a situation of uncertainty about what measurement technology is needed in different circumstances, who should be responsible for maintaining that technology, and how the data gathered from it will be used. While there is strong evidence of broad in-principle water user support for accurate measurement, there is also evidence of water user concern about the detail of what future requirements might be, and how they will impact them financially.

In response to this uncertainty, DPI Water is developing a new strategy for measuring take of water under water access licences during 2015/16, which will set out cost effective requirements for measuring water take. The strategy will address the kinds of meters required in different circumstances, what will happen to existing meters, who will own and be responsible for meters, and how the information will be used. It will include use of water take assessments where the cost benefit does not warrant a meter. Methods for assessments include estimates using low cost (but less accurate) flow meter alternatives such as pump power consumption, and certification of zero take where works are inoperable or removed.

The new strategy will apply to water take measurement under water access licences from regulated rivers, unregulated rivers and groundwater across the whole of NSW. It will not address metering within irrigation corporations, private irrigation districts, trusts, and urban water supply systems, though measurement at the headworks of such entities will be included. It will also not apply to measuring water taken under basic landholder water rights.



The water take measurement strategy will be progressively applied during the period of the next determination in a way that allows customers adequate time to make changes where needed, and for the required business processes and information systems to be developed and implemented. More information on this strategy is provided at Section 4.4.

## 6.7 Water monitoring strategy for coal basins in NSW

DPI Water actively monitors water quantity and quality. Strategies and approaches are adjusted appropriately as needs emerge or decline over time. For example, in 2012, DPI Water responded to the emergence of the coal seam gas (CSG) industry by expanding monitoring to the areas potentially affected, upgrading a number of monitoring bores to provide real-time data, and expanding river water quality monitoring.

In 2015, DPI Water implemented the water monitoring framework to meet commitments in the NSW Gas Plan, and the community expectation for increased monitoring of potential water impacts by industry. A component of this is the water monitoring strategy for coal basins in NSW, which expands the existing monitoring and information generation activities by:

- Drilling new bores in strategic locations, to monitor groundwater in deeper geological strata across eight priority areas.
- Continuing to expand the water quality monitoring program in CSG and coal mining areas.
- Using industry water data, including through the development of a standard reporting framework.
- Growing the function and capacity of existing water modelling and analysis, including the understanding of cumulative impacts.
- Making water data, information and knowledge products available to the community.

Construction has begun on new deep groundwater monitoring bores. Bores have been completed and equipped with real-time monitoring equipment in the Hunter Valley, and the Spring Ridge and Gunnedah areas of the Namoi valley. These are currently undergoing testing and when completed this data will come online. In addition, DPI Water has enhanced its ability to provide real-time data to the community by increasing the number of existing monitoring bores equipped to provide data via the Our Water website and the Water Live smartphone app.

The NSW Government has committed capital funding for the establishment of new monitoring bores over the period 2015/16 to 2019/20. The number and location of the bores will be determined through a rigorous assessment of hydrogeology, current and potential resource development, and an inventory of existing industry water monitoring.

A further expansion to the surface and groundwater quality monitoring programs, targeting the aquifers and rivers identified as the most sensitive and potentially at risk from water quality and quantity impacts, is also planned.

The expanded drilling and water quality monitoring programs will create new data that establishes baseline conditions for aquifers and rivers in the target basins. The data will be used to undertake risk assessment, cumulative impact modelling, and ongoing reviews of the water impacts, including any impacts from CSG and mining activities.

## 6.8 Controlled allocations

The NSW Government signed off the Aquifer Interference Policy (AIP) in September 2012. DPI Water will need additional funding to implement this policy, and will use the additional revenue generated from the Controlled Allocation of Unassigned Water program for this purpose.

Full implementation of the AIP will require DPI Water to complete the following additional tasks:

- Develop an aquifer interference implementation manual.

- Prepare and coordinate relevant amendments to the *Water Management Act 2000*.
- Monitor and review the AIP.
- Develop a managed aquifer recharge policy and a return flows policy.
- Consider the need for alternate regulatory arrangements for the extraction of saline water.
- Amend WSPs to include relevant provisions for mining related issues in unregulated rivers and groundwater, to ensure consistency with the AIP.
- Provide policy, legal and WSP related input into DPI Water's advice for the assessment of mining and CSG proposals.
- Conduct future controlled allocation programs.
- Enhance the hydrometric capacity with additional groundwater monitoring bores and connected surface water monitoring stations.
- Enhance the hydrogeological modelling coverage and assessment capacity.
- Update and review existing groundwater recharge and long-term average annual extraction limit calculations.
- Enhance the ecologic evaluation capacity.
- Enhance the fluvial geomorphological capacity.
- Update and review the classification of highly productive groundwater sources.
- Develop tools for updating highly productive groundwater mapping and verification processes, where the mapped classification is disputed.
- Enhance the capacity for coordinating assessments of major mining and CSG projects.
- Develop guidelines and checklists to define what is required of proponents.
- Enhance the compliance capacity to ensure approval conditions can be monitored and enforced.

## 6.9 Communication and consultation

Communication and consultation to inform DPI Water's pricing submission to IPART was driven by the expectations and needs of our customers, stakeholders, staff and IPART.

In its report on DPI Water's 2009/10 pricing submission, IPART broadly recommended mechanisms to facilitate greater consultation and public reporting on our major initiatives, performance, expenditure and revenue.

To address this recommendation and better meet customer and stakeholder needs, DPI Water published and consulted on three fact sheets:

- Fact sheet 1: An overview of the Office of Water and the 2015/16 IPART price determination process.
- Fact sheet 2: The activities and performance of the Office of Water 2011–14.
- Fact sheet 3: Proposed pricing structure and activities of the Office of Water for 2016–20.

The fact sheets were promoted and distributed to over 200 stakeholders from the irrigation, agriculture, mining and quarrying industries, and water utility, Aboriginal, environment and community sectors. DPI Water arranged for its industry and sector contacts to forward this information to their customers and stakeholders to achieve widespread distribution.

The information was presented at meetings with members of the NSW Irrigators Council, WaterNSW customer service committees, WaterNSW (Metropolitan), Hunter Water and the NSW Office of the Environment and Heritage. Meetings were also held with WaterNSW to ensure full transparency in planning for service delivery, costs and prices during the ongoing NSW Government Bulk Water Review.



To ensure all water users were provided with an opportunity to review the information and have their say on DPI Water performance and pricing, the Deputy Director General Water issued a media release on 22 June 2015 inviting feedback to inform this submission by 31 July 2015.

The mail out of a letter and the third fact sheet to all 35,000 non-government water licence holders supported this announcement. A quick link was also published on the homepage of the DPI Water website to make it easy for users to locate the fact sheets online.

A dedicated email address was established for customers and stakeholders to provide feedback to [water.pricing@dpi.nsw.gov.au](mailto:water.pricing@dpi.nsw.gov.au). The media release, mail-out, stakeholder emails, website homepage quick link, billing flyer information and meetings generated 102 feedback emails to this account. All emails received an auto-reply to acknowledge receipt of the feedback and were provided to the project team to be taken into account in preparing the DPI Water pricing submission to IPART. Key feedback themes were addressed through answers to frequently asked questions published on our website.

These key themes are outlined in Table 6.2 below.

**Table 6.2: Community consultation key themes**

Theme	Submissions
Clearer communication needed and online services	6
Disability and pensioner concessions	3
Double dipping cost issues	2
Efficiency rewards granted lower charges	1
Fixed prices are too high/review of fixed charges necessary *	26
Flat rates across all users	2
Forecast water take (against)	1
Forecast water take (supportive)	3
Increased compliance service	3
Keep charges as is	1
Keep two part tariff	1
Minimum annual charge increase (against)	5
Minimum annual charge increase (supportive)	0
No charge for zero entitlement	2
No fixed charge and only usage fee (particularly in low risk areas with minimal management)	6
No services provided and DPI Water staff never seen	10
Other	18
Peel valley expenses	3
Quality issues	1
Users shouldn't pay for public good aspects	2
Small user exemption or lower charges **	14
Tidal user exemption or review of charges	5
Trading cost prohibitive	1
WaterNSW/DPI Water fees and charges consolidated	2

*\* This includes stakeholders mentioning that they have not accessed their water allocation due to periods of drought or no flow or because they are keeping their water licence as an asset and therefore feel that they should be charged a lower fixed annual fee in these periods of no take.*

*\*\* This includes the perspective that major water users should be charged more compared with small water users as they are seen to be the largest impactors.*

To further explore these key themes and seek a snapshot of customer and stakeholder views on DPI Water's performance and pricing, a phone survey of 400 people was conducted in June by independent market research consultants. The survey sought feedback from a broad range of water users and industry stakeholders, and found:

- Awareness of DPI Water and its functions was high (81 per cent), with almost all respondents being aware that they pay their water charges to DPI Water (98 per cent).
- Different categories of licence holders pay charges differently through 1-part and 2-part tariffs.
- Most respondents considered the fixed/variable structure of charges to be appropriate.
- Most preferred a low-proportion fixed and high-proportion variable tariff structure.
- Water licencing and compliance was considered to be the most important service and is the service that respondents were most satisfied with.
- A majority of respondents reported a level of dissatisfaction with DPI Water, with 61 per cent giving a six or under rating out of 10.
- The main reason for dissatisfaction with DPI Water was the agency's perceived lack of a public profile (17 per cent).
- Most respondents were not familiar with the DPI Water website, and email and phone surveys were the most preferred methods of contact.
- The majority of respondents did not raise any issues with current charges (34 per cent) while nine per cent wanted charges to be reduced.

DPI Water recognises the vital role its staff play in communicating and consulting with customers and stakeholders. To ensure they were equipped to assist water users to participate in IPART's review of water management charges, DPI Water staff were provided with email updates to alert them to the review, and communication and consultation activities.

Staff were encouraged to assist customers or stakeholders to access the detailed information on DPI Water's website and email feedback or questions to [water.pricing@dpi.nsw.gov.au](mailto:water.pricing@dpi.nsw.gov.au).

A key message reiterated throughout communication and consultation on DPI Water's pricing submission to IPART is that this isn't the only opportunity for customers and stakeholders to have their say. DPI Water has actively promoted the IPART consultation process in emails, publications and meetings. An IPART representative was consulted to ensure this information was accurate.

In August 2012 IPART published a research report into customer engagement on prices for monopoly services. This report provides clear guidance on IPART's expectations of regulated water businesses in relation to customer engagement for price reviews. Following is an analysis of DPI Water's submission engagement against IPART's guidance and expectations of regulated water businesses.

**Table 6.3: How DPI Water's submission engagement addresses IPART's guidance and expectations of regulated water businesses**

IPART's guidance and expectations	DPI Water's response
<ul style="list-style-type: none"> <li>• Provide evidence of the customer engagement they have undertaken in relation to their proposed discretionary expenditure.</li> <li>• Provide evidence of the customer engagement they have undertaken on proposed changes to price structure.</li> </ul>	<p>Customers have been engaged on DPI Water's proposed discretionary expenditure through consultation on fact sheet 3 (<i>proposed pricing structure and activities of the Office of Water for 2016–20</i>).</p> <p>This fact sheet outlines our proposed approach to service delivery, costs and pricing from 1 July 2016. It includes options to review expenditure on discretionary services, such as the number and location of gauging stations, and price structure, such as increasing the minimum charge, and basing costs on forecast water take rather than entitlement.</p> <p>Fact sheet 3 was mailed to all 35,000 non-government water licence holders, published on DPI Water's website, presented to key stakeholder groups, and emailed to over 200 key stakeholders.</p> <p>Feedback on our proposed approach to service delivery, costs and pricing was invited by 31 July to inform our pricing submission to IPART.</p>
<ul style="list-style-type: none"> <li>• Undertake good practice customer engagement.</li> </ul>	<p>Good practice engagement requires genuine, open, two-way, ongoing communication with customers and stakeholders.</p> <p>DPI Water has done this through implementing communication and consultation activities that:</p> <ul style="list-style-type: none"> <li>• Provide detailed plain English information on historical and proposed services, costs and prices.</li> <li>• Sought feedback within a timeframe that enabled feedback to be genuinely taken into account in finalising this pricing submission to IPART.</li> <li>• Were extensively promoted to ensure the majority of customers had an opportunity to engage with DPI Water.</li> <li>• Were varied in order to meet the differing needs of different types of customers and stakeholders.</li> <li>• Were flexible and responsive to customer and stakeholder needs. For example the majority of phone survey respondents were not familiar with our website so a letter and fact sheet 3 was mailed to 35,000 licence holders to support online communication.</li> <li>• Are ongoing.</li> </ul> <p>DPI Water has actively promoted engagement opportunities beyond September 2015 when this submission is due to IPART, to encourage maximum customer participation in the review.</p>
<ul style="list-style-type: none"> <li>• Engage with their customers for price reviews early (that is, prior to submitting a price proposal).</li> </ul>	<p>Primary engagement activities were implemented before 31 July to allow sufficient time for customer feedback to be taken into account before DPI Water's pricing submission was finalised for government approval.</p>
<ul style="list-style-type: none"> <li>• Provide, along with their price proposal, a separate, short, plain English summary of their proposal that contains a clear statement of its customer impacts.</li> </ul>	<p>A plain English summary of DPI Water's pricing submission to IPART has been prepared, provided to IPART with this submission, and published.</p>

## 7 Water planning and management revenue needs

This chapter sets out DPI Water's revenue needs for water planning and management activities. For further information on the service activities, strategies, services and benefits see Chapter 6.

### 7.1 Introduction

The revenue needs for DPI Water's price regulated water planning and management activities include the following:

- Water management services – revenue needs recovered through charges levied on a water licence.
- Water consent transaction services – revenue needs recovered through fees for the issue, trade and amendment of water access licences, water allocations and water approvals.
- Water take measurement services – revenue needs recovered through charges for meter reading or alternative water take measurement, government owned meter service, and ancillary charges.

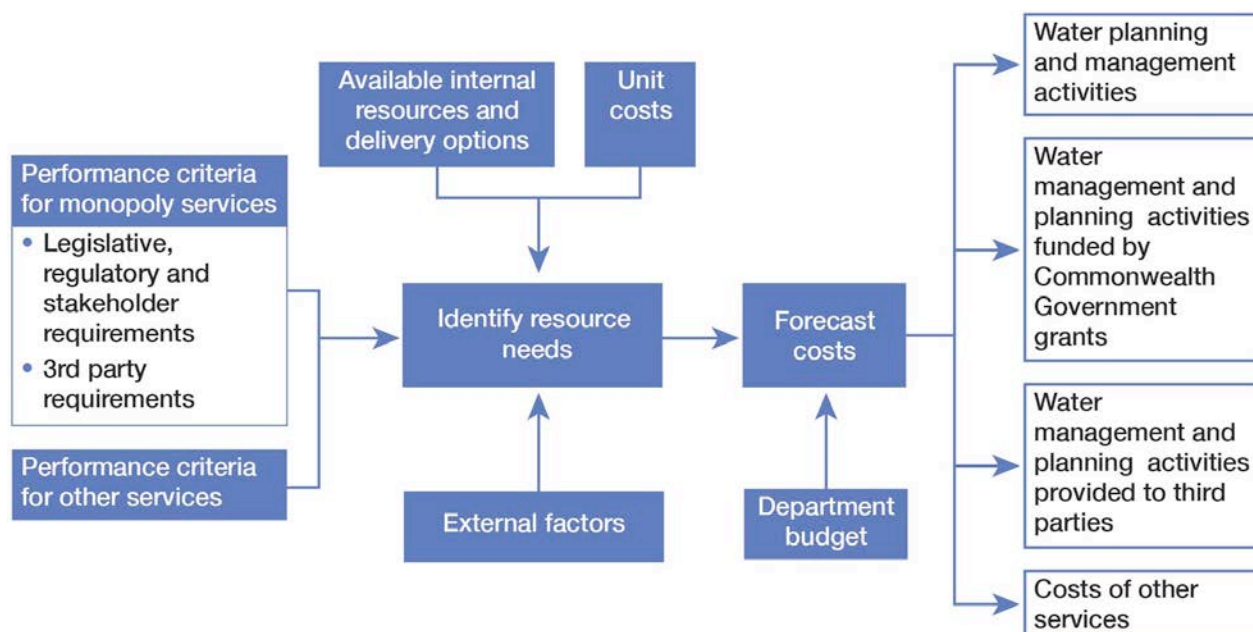
#### 7.1.1 Scope of revenue needs

DPI Water provides price regulated water planning and management activities. The operating and capital funding needs of these activities are received from water licence holders, together with funds from Commonwealth Government grants and fee for service revenue from customers.

In previous price submissions, information on the scope of water planning and management activities funded by grants and fee for service revenue has not been provided. In the interests of transparency to customers and stakeholders, DPI Water considers it important that the scope of this work, which is undertaken at no cost to water licence holders, be provided.

### 7.2 Revenue needs for water planning and management activities

DPI Water's approach to forecasting the operating cost of water planning and management activities is shown in Figure 7.1.

**Figure 7.1: Forecasting approach for operating costs**

### 7.2.1 Future operating costs for water planning and management activities

A summary of the forecast operating costs for water planning and management activities is provided in Table 7.1.

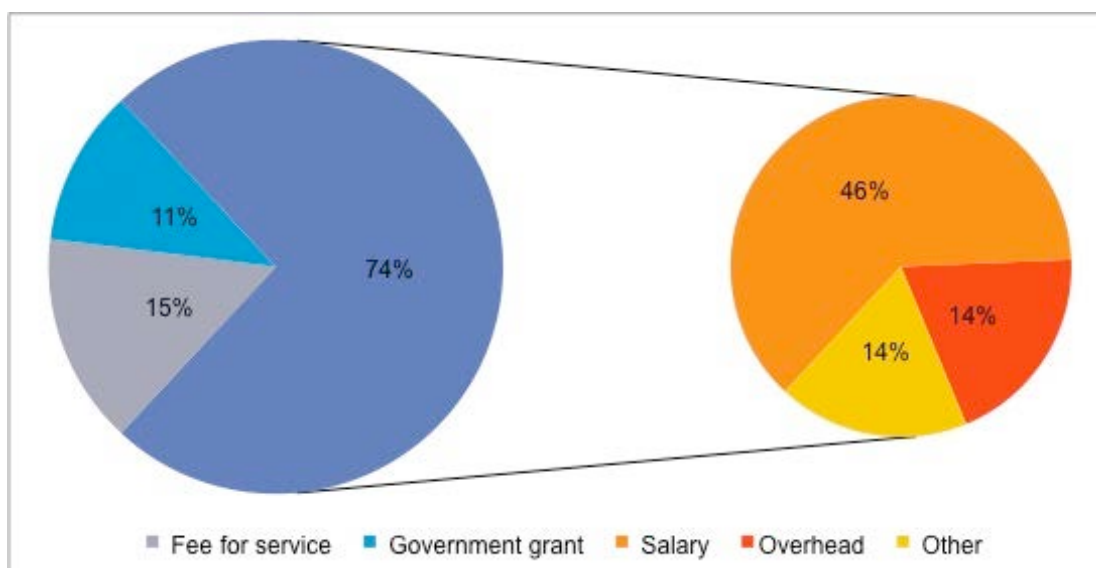
**Table 7.1: Forecasting approach for operating costs (\$'000 15/16)**

	2016/17	2017/18	2018/19	2019/20	Total
<b>Price regulated services</b>					
Water management services	52,193	52,035	51,066	49,428	204,722
Water consent transaction services	2,071	2,071	2,071	2,071	8,284
Water take measurement services	1,125	1,278	1,245	1,245	4,883
<b>Other services</b>					
Costs funded by Commonwealth Government grants	26,869	10,529	8,639	7,416	53,453
Costs recovered via fee for service	12,645	12,641	12,659	12,565	50,420
<b>Total operating costs of water planning and management activities</b>	<b>96,903</b>	<b>78,554</b>	<b>75,680</b>	<b>72,725</b>	<b>321,762</b>

DPI Water's cost forecasts for water planning and management activities have three components:

- Remuneration, including salary on-costs, such as annual leave, long service leave, superannuation and workers compensation.
- Other (non-remuneration) costs, such as travel, contractors and consumable equipment.
- Overheads.

The percentage amounts of these components for operating costs are shown in Figure 7.2.

**Figure 7.2: Analysis of DPI Water's operating costs for water planning and management activities**

The staff levels (as full time equivalents (FTEs)) included in the forecast costs for water planning and management activities for the forecast cost period are shown in Table 7.2.

**Table 7.2: Forecast total staffing (FTE) for water planning and management activities**

	2016/17	2017/18	2018/19	2019/20
Water management services	287	291	293	289
Water consent transaction services	17	17	17	17
Water take management services	1	1	1	1
Fee for service	55	55	55	55
Government grant	62	48	46	40
<b>Total</b>	<b>422</b>	<b>412</b>	<b>412</b>	<b>402</b>

These amounts represent approximately 70 per cent of DPI Water's total staff.

#### **Water planning and management activities funded by Commonwealth Government grants**

The forecast funding to DPI Water from Commonwealth Government grants for water planning and management activities over the period 2016/17 to 2019/20 is shown in Table 7.3.

**Table 7.3: Forecast Commonwealth Government grant funding for water planning and management activities**

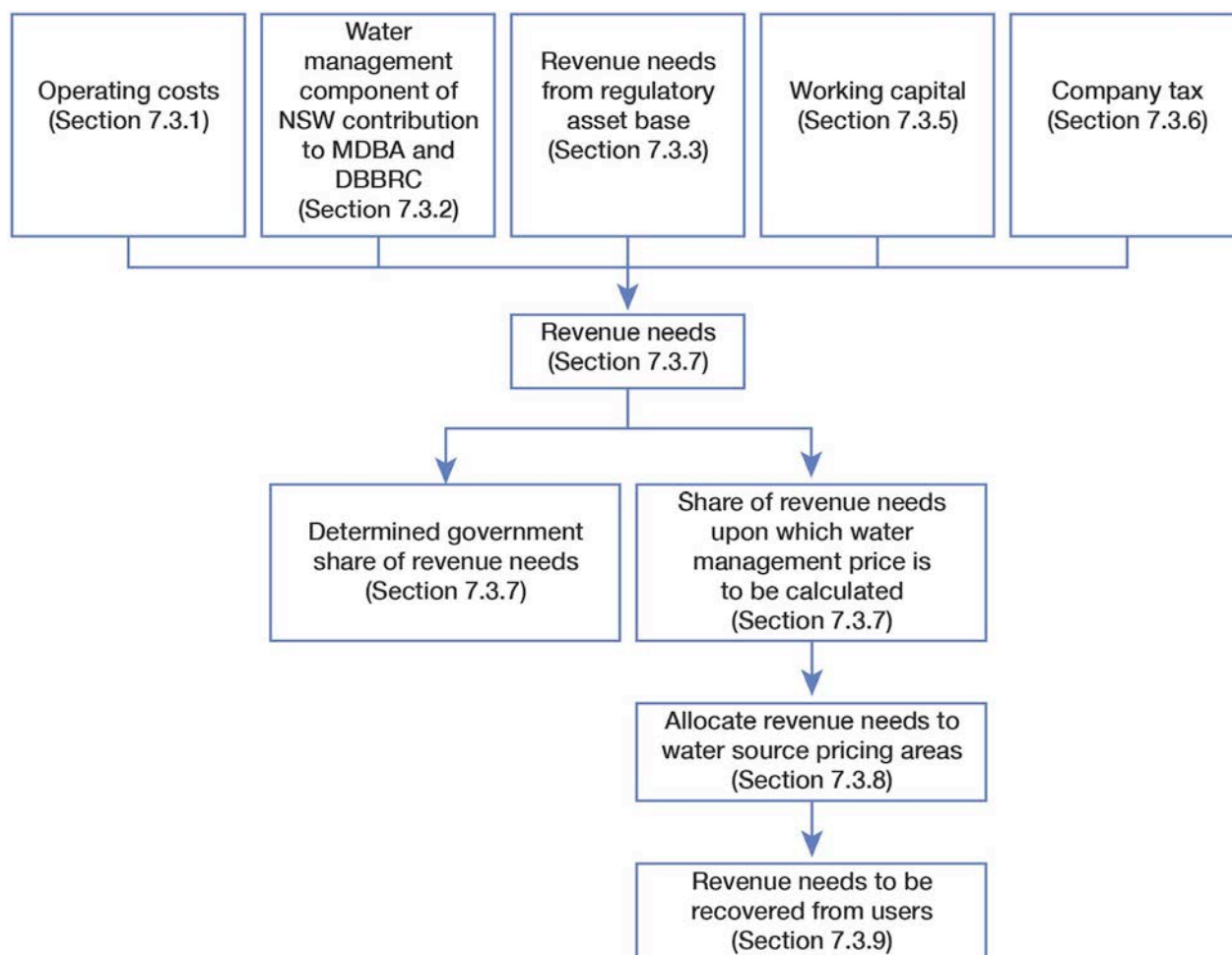
	2016/17		2017/18		2018/19		2019/20		Total	
	FTE	\$'000 (15/16)	FTE	\$'000 (15/16)	FTE	\$'000 (15/16)	FTE	\$'000 (15/16)	FTE	\$'000 (15/16)
Basin Plan	40	7,515	41	7,685	41	7,224	36	6,702	158	29,626
Healthy Flood Plains	17	18,298	2	1,871					18	20,169
Aboriginal Water Initiative	5	1,041	5	972	5	914	4	714	19	3,641
<b>Total</b>	<b>62</b>	<b>28,687</b>	<b>48</b>	<b>10,529</b>	<b>46</b>	<b>8,638</b>	<b>40</b>	<b>7,415</b>	<b>195</b>	<b>53,451</b>

**Water planning and management activities provided to third parties**

The costs of fee for service water planning and management activities are paid for by revenue received from those customers.

**7.3 Water management services**

DPI Water has established its revenue needs for pricing water management services using the building blocks shown in Figure 7.3.

**Figure 7.3: Revenue needs building blocks**



The activity definitions for the period commencing 1 July 2016 have been refined (see Section 6.2). The future activities are defined with a W-code and the current activities by a C-code. The majority of the C-codes can be mapped directly to a future W-code. However there are some C-code activities that are aligned to more than one W-code.

The relationship between the existing activity C-codes and the proposed activity W-codes is shown in Table 6.1. An example showing the 2014/15 actual costs and the 2015/16 budget for price regulated water management services under the current C-code and the forecast W-code is provided at Appendix F.

### 7.3.1 Operating costs

An analysis of the operating costs for water management services, by activity group and water type, for the period 1 July 2016 to 30 June 2020 is shown in Table 7.4.

**Table 7.4: Operating costs by activity group and water type (\$'000 15/16)**

Activity group	Regulated rivers	Unregulated rivers	Groundwater	Total
W01 Surface water monitoring	12,528	27,959		40,487
W02 Groundwater monitoring			16,270	16,270
W03 Water take monitoring		587	465	1,052
W04 Water modelling and impact assessment	10,273	4,064	3,333	17,671
W05 Water management implementation	20,513	3,841	6,517	30,870
W06 Water management planning	22,194	16,111	5,775	44,080
W07 Water management works	3,783			3,783
W08 Water regulation management	8,999	13,086	8,143	30,228
W10 Business and customer services	10,357	5,723	4,201	20,281
<b>Total</b>	<b>88,647</b>	<b>71,371</b>	<b>44,704</b>	<b>204,722</b>

Appendix F provides the forecast operating costs by activity for water management services for each year 2016/17 to 2020/21

### Remuneration costs

Remuneration costs are 41 per cent of DPI Water's forecast operating costs of water management services. The staff levels included in the forecast costs for water management services for the future determination period are shown in Table 7.5.

**Table 7.5: Forecast average FTE levels**

	2016/17	2017/18	2018/19	2019/20
Water management services	287	291	293	289

Staff costs have been forecast using a value for one full-time equivalent staff, costed at the average cost rate for each operations group. This equals 1,533 hours per year, which are the standard working hours of each individual<sup>1</sup>.

<sup>1</sup> 1,533 hours takes account of leave entitlements.

## Non-remuneration costs

Non-remuneration costs are for the acquisition of items and payment for activities that are specific to projects, such as costs of travel or use of external service providers. The direct costs of such items are recorded against the relevant task in a project. Each task is coded for the relevant water management activity.

## Overheads

Overheads are costed to projects in the same way as remuneration costs. This is at a unit rate for the hours worked by staff for the project. A single overhead rate is used for all staff.

In the 2011 determination DPI Water was responsible for its own overhead services, the efficient costs of which were included in the price. DPI Water is now part of the Department of Industry and overhead services are centrally coordinated. Full cost recovery requires that an appropriate overhead component be recovered in the price.

The services required by DPI Water to support its business are similar to those required in the last determination, and include:

- Governance.
- Legal.
- Economics.
- Human resources.
- Finance and knowledge management.
- Corporate strategy and communications.
- Business and technology services.
- Corporate operations.
- Policy coordination.

As required under NWI pricing principles<sup>2</sup>, costs associated with supporting Ministerial or Parliamentary services, and high-level policy development, have been excluded

In 2011 the costs of motor vehicles were treated as an overhead cost. In the forecast period these will be allocated directly to the appropriate project on a per kilometre basis, in line with Department of Industry practice.

The Department of Industry has made an activity based assessment of the costs that are attributable to DPI Water for the overhead services provided. A range of drivers of the need for service have been adopted, including:

- The proportion of specific staff that provide the majority of their time to supporting DPI Water, including their support and occupancy costs.
- An assessment of the fully absorbed average cost of a team supporting DPI Water.
- The proportion of DPI Water's FTEs to the total for the Department of Industry.

The resulting fully absorbed total cost of the services provided is \$17.18 million (\$2015/16). Added to this are the costs of premises and the leases for DPI Water's desktop computers, giving a total cost of \$21.977 million (\$2015/16). This converts to a unit rate of \$24.35 per hour (\$2015/16). The comparable allowed cost in the 2011 price determination was \$27.43 (\$2009/10) per hour, or \$31.80 per hour in \$15/16. The proposed rate is a real reduction of 23 per cent on the rate set in 2011.

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<sup>2</sup> *National Water Initiative Pricing Principals, paragraph 67 (ii a).*

## Efficiency factor

An efficiency saving of 1.5 per cent per annum has been built into the total forecast operating costs for the years 2017/18, 2018/19 and 2019/20. DPI Water also proposes an efficiency factor on the 2016/17 cost forecasts equal to the inflation adjustment from 2015/16 to 2016/17. That is, the costs included in this submission as \$2015/16 will also be the costs as \$2016/17.

## Summary

DPI Water is proposing an efficient level of operating costs for its water management services across the proposed price period, which delivers the appropriate level of service for its monopoly service activities.

### 7.3.2 NSW Government contributions to Murray Darling Basin Authority and Dumaresq-Barwon Borders River Commission

The roles of the Murray Darling Basin Authority (MDBA) and the Dumaresq-Barwon Borders River Commission (DBBRC), within the framework of water management services in NSW, are outlined in Chapters 3 and 6.

The forecast NSW Government contribution to the MDBA and the DBBRC, relating to water management over the period 1 July 2016 to 30 June 2020, is shown in Table 7.6.

**Table 7.6: Forecast NSW Government contribution to MDBA and DBBRC (\$'000 15/16)**

	2016/17	2017/18	2018/19	2019/20	Total
MDBA	9,623	9,388	9,159	8,935	37,105
DBBRC	396	364	358	349	1,466

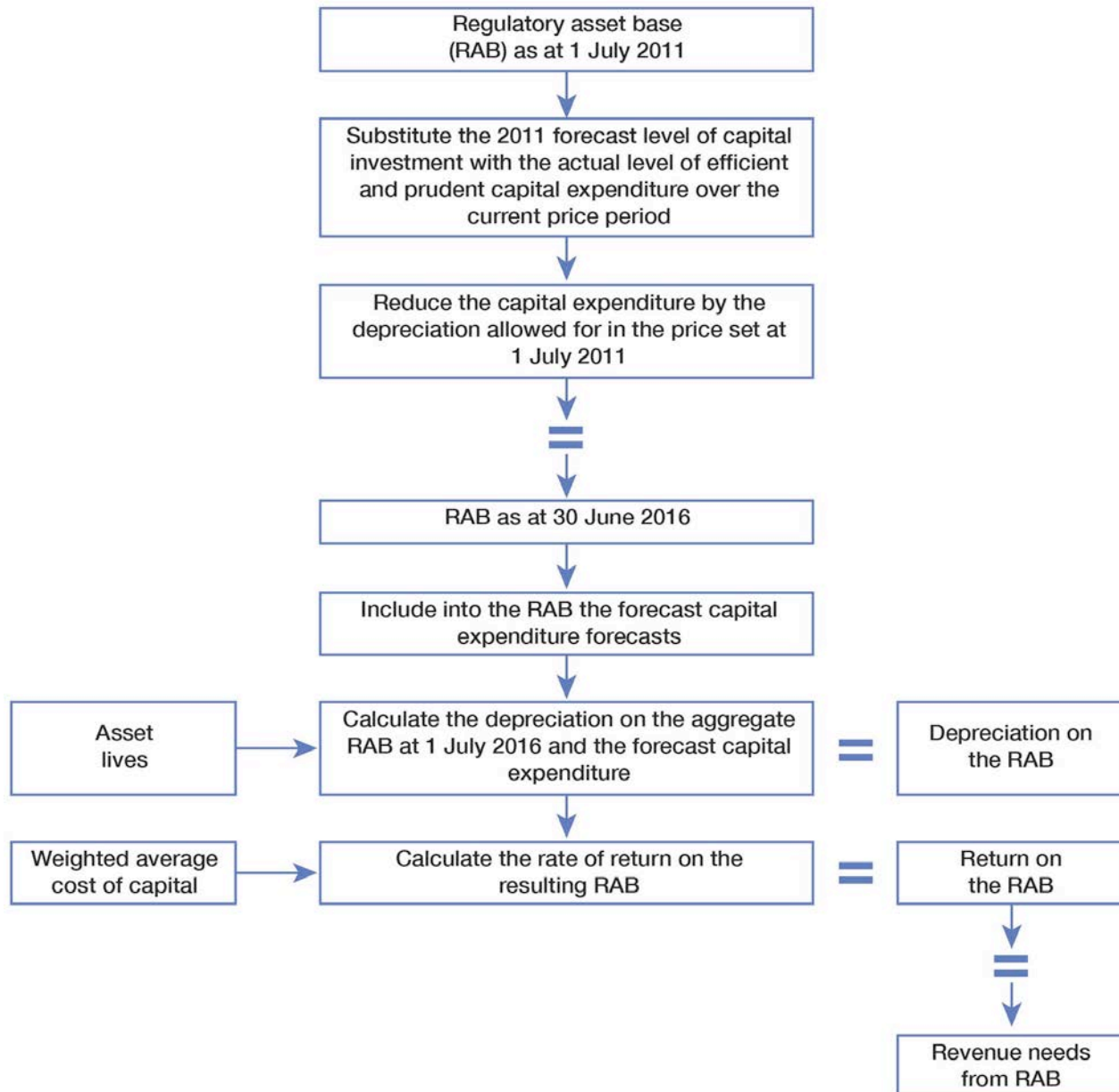
The NSW Government has yet to confirm the contribution to be made to the MDBA for the years after 2015/16. However, it should be noted that the current level of contribution is significantly below historical levels. A conservative approach has been adopted in setting the forecast contribution from the NSW Government for 2017, 2018, 2019 and 2020, with the contribution being retained at the 2015/16 nominal level.

### 7.3.3 Regulatory asset base

The regulatory pricing framework does not provide funds for capital investment. However this framework recognises that price regulated businesses should receive in revenue:

- The value of its capital investment over the life of the asset – depreciation.
- A commercial return on the regulatory value of its capital investment – return on the regulatory asset base (RAB). The level of return earned is a function of the weighted average cost of capital (WACC) (see Section 7.6).

The regulatory pricing framework's approach to calculating the revenue needs related to the RAB are shown in Figure 7.4.

**Figure 7.4: Revenue needs relating to the RAB****RAB at 1 July 2016**

The RAB at 1 July 2011 was set at zero. DPI Water's capital investment over the period 1 July 2011 to 30 June 2016 is set out in Chapter 5 and totals \$6.95 million (\$'000 2015/16). Adopting the above regulatory pricing framework results in a RAB at 1 July 2016 of \$6.34 million (\$'000 2015/16).

**Forecast capital investment**

As part of its asset management framework, DPI Water has developed an expenditure program of capital needs to support its water management services. As with operating costs, the capital program receives external funding from two sources. These are grants, mainly from the Commonwealth Government, and funds from external parties for the water management services DPI Water provides to them. A summary of the program is shown in Table 7.7.

**Table 7.7: Capital expenditure funding (\$'000 15/16)**

	2016/17	2017/18	218/19	2019/20	Total
Capital program	3,776	5,428	5,215	5,529	19,948
External funding					
Third party	-135	-457	-425	-48	-1,065
Grants	-2,450	-1,000	0	0	-3,450
<b>Net capital expenditure</b>	<b>1,191</b>	<b>3,972</b>	<b>4,789</b>	<b>5,481</b>	<b>15,433</b>

The major outcomes from this program, and the relevant capital investment driver of that expenditure, are shown in Table 7.8.

**Table 7.8: Capital expenditure outcomes (\$'000 15/16)**

Project	Expenditure driver	Cost	External and grant funding
Enhancements to the system for water access licences	Asset and service reliability	1,225	
Development of systems to support the water take strategy	Asset and service reliability	1,020	
Replacement of water models to assess water take impacts	Asset and service reliability	3,400	3,400
Installation of 305 water take meters in the southern unregulated rivers and groundwater areas	Government program	50	50
KWiQM database enhancements of the data management system, for the storage, analysis, display and dissemination of the sample and analysis data generated by water quality monitoring	Asset and service reliability	150	
Replacement server equipment and data migration	Asset and service reliability	470	90
Laboratory equipment	Asset and service reliability	990	
Equipment	Asset and service reliability	1,495	975
Groundwater monitoring network	Asset and service reliability	13,780	
Asset management system	Asset and service reliability	50	

Two of IPART's nominated capital investment drivers relate to the capital investment required for the business to comply with either existing or new mandatory standards. An example is a retail water business meeting legislated environmental standards for wastewater. However, there are no such mandatory standards for water management activities.

Another of the nominated capital investment drivers is growth. Growth would only be applicable to water management in environmental management, and there is no such growth anticipated in the next determination period.

Therefore, DPI Water's capital program can only be linked to one of the remaining nominated capital investment drivers, which is government programs. This driver can be defined as:

- Capital investments required to fulfil government policy, assets and service reliability.
- Capital investments to maintain the delivery of water management services at the required performance standards, or discretionary standards.

- Capital investments to meet internal or customer driven service performance levels.

Depreciation has been set at the rate to write off capital investments over their economic life. DPI Water has adopted asset lives, as used by the Department of Industry for financial reporting, and outlined in Appendix F

Adjusting the opening RAB for the forecast capital expenditure results in a proposed regulatory asset base as at 30 June 2020 of \$20.95 million (\$2015/16).

### 7.3.4 Existing asset network

DPI Water operates two major infrastructure networks to support its water management services – groundwater monitoring bores and surface water hydrometric stations.

The 2011 price determination established a zero RAB as at 1 July 2011. As a result there is currently no revenue from water access licence holders to support these two infrastructure networks, both of which are critical components of DPI Water's water management services.

These infrastructure networks have been developed over a long period of time. Therefore the extent of financial records to support the costs and level of contributed funds from third parties to construct, refurbish and upgrade these networks is, in some cases, limited.

While no further information is available concerning the historical costs or the level of funds contributed by third parties, DPI Water has additional information on the use and value of these networks, in particular the following:

- Both networks were the subject of an independent valuation to fair value<sup>3</sup> as at March 2014. These valuations were undertaken in accordance with Australian Accounting Standards and the outcomes outlined in DPI Water's financial reports.
- As part of preparing information for this submission, an analysis of the functions of these two networks was undertaken, to clearly identify the assets and service levels required from these networks to provide the required information to support water management services.

### Groundwater monitoring bores

DPI Water has 6,480 groundwater pipes located around the state. Of these, 4,730 are actively monitored to support water management services (see Chapter 6 under activity W02, groundwater monitoring). DPI Water is responsible for 4,629 of the monitored pipes.

The replacement and fair value of the groundwater pipes, which are required to provide water management services and are the responsibility of DPI Water, and extrapolation of fair value to 1 July 2016, is shown in Table 7.9.

**Table 7.9: Replacement and fair value of groundwater pipes (\$'000 15/16)**

	Replacement value at March 2014 (\$'000)	Fair value at March 2014 (\$'000)	Average remaining life at March 2014 (years)	Estimated fair value at 1 July 2016 (\$'000)
Equipment	43,789	18,169	0.3	4,975
Infrastructure	212,997	50,610	11.5	41,025
<b>Total</b>	<b>256,786</b>	<b>68,779</b>	<b>–</b>	<b>46,000</b>

<sup>3</sup> Fair value is defined in Australian Accounting Standard 13 Fair Value Measurement as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at a measurement date.

### Surface water hydrometric stations

DPI Water provides information from its hydrometric network to third parties. Some individual hydrometric stations have this sole purpose, while others provide information for both third parties and water management services.

DPI Water has 900 hydrometric stations, of which 742 have been identified as contributing critical information for water management. Of these, 300 are fully paid for and 91 are part paid for by fee for service customers such as WaterNSW. Twenty-nine are paid for by the DBBRC.

For the revised service level for W01-01, DPI Water water management services fully pay for 322 and part pay for 91 (see Chapter 6 under activity W01, surface water monitoring).

The replacement and fair value of the surface water hydrometric network, which is attributed to providing water management services and is the responsibility of DPI Water, and extrapolation of fair value to 1 July 2016, is shown in Table 7.10.

**Table 7.10: Replacement and fair value of hydrometric network (\$'000 15/16)**

	Replacement value at March 2014 (\$'000)	Fair value at March 2014 (\$'000)	Remaining life at March 2014 (years)	Estimated fair value at 1 July 2016 (\$'000)
Equipment	3,504	1,514	2.9	375
Infrastructure	5,597	1,121	9.1	869
<b>Total</b>	<b>9,101</b>	<b>2,635</b>	<b>–</b>	<b>1,244</b>

### 7.3.5 Working capital

The IPART pricing regulatory framework includes working capital within its revenue needs. Working capital reflects the cash needs of a business, where operating and capital expenditures are incurred prior to the resulting revenue. The Department of Industry has a 30-day payment period to its suppliers, including suppliers to DPI Water, and this has been adopted. Currently 93 per cent of revenue is collected within 90 days, and this time frame has been used to establish an average collection period for debtors.

The allocation of this element of the building block across pricing water sources is based upon the spread of forecast expenditures. The WACC is the factor used to calculate the cost of working capital needs (see Section 7.6).

### 7.3.6 Tax building block

In December 2011, IPART issued a Final Decision on the incorporation of company taxation in pricing determinations. This Final Decision applies only to NSW price regulated water businesses.

The outcomes from this Final Decision were to 'more accurately estimate tax liability that would be achievable by a similar well managed privately owned business'.

The Final Decision required that real pre-tax WACC should be adopted and a separate tax revenue needs building block be included. This building block includes the following elements:

- The tax liability calculated on costs and revenues of regulated business activities. Cash and asset contributions that contribute to regulated activities are included in the assessment of tax.
- Tax depreciation based on existing financial modelling of tax depreciation adjusted to remove unregulated activities.



- Interest payments based on the same assumptions that are used to estimate the WACC (gearing, nominal risk-free rate and the debt margin). The interest rate is applied to the average of the opening and closing RAB in each year.
- Expected tax losses rolled forward, but will start from a zero base (that is, accumulated losses prior to the transition will be disregarded). Actual tax losses are not factored into regulatory determinations.

The monopoly service activities under the Independent Pricing and Regulatory Tribunal (Water Services) Order 2004 are undertaken by the Water Administration Ministerial Corporation (WAMC)<sup>4</sup>. WAMC is constituted under the *Water Management Act 2000* and is deemed to be a not-for-profit enterprise. It is not subject to the NSW Commercial Policy Framework and hence is not subject to the Tax Equivalent Regime. Under section 372 of the *Water Management Act 2000*, a specific delegation exists covering the delegation of WAMC's functions to DPI Water. The potential implications of taxation on WAMC to date have not been considered.

While being a not-for-profit enterprise does not, in itself, exclude the need to establish a tax revenue building block for pricing purposes, there are a number of practical constraints in achieving this:

- Costs and revenue of the regulated business – The pricing principles adopted allocate the revenue needs of WAMC's monopoly water management activities between those that form the basis of the prices to be charged to water access licence holders, and those that reflect the impact of the community at large on water management and are funded by NSW Government on behalf of the community.

In addition to this contribution, the NSW Government is also required to fund any under-recovery of revenue needs resulting from prices being set below full cost recovery (in the 2011 price determination this was 10 per cent on a net present value (NPV) basis), plus any over-spend resulting from a risk-based needs assessment. NSW Government funding to cover these costs is provided to DPI Water, not WAMC. It follows that the costs in WAMC, being the total cost of water management services, far exceed the revenue, being the revenue from water access licence holders only. Therefore, adopting commercial principles, WAMC has a zero tax liability.

- Tax depreciation – Since WAMC is not liable for income tax or tax equivalency, depreciation rates for tax have not been established.
- Interest payments – DPI Water undertakes the water management services under delegation from WAMC. In turn DPI Water as a NSW Government entity does not borrow funds. Any borrowing required, such as to support capital investment, is undertaken at a whole of government level, and it is therefore not possible to assess the level of interest paid.

In conclusion, DPI Water considers there is no sound basis upon which a tax building block can be included in the revenue needs.

### 7.3.7 Revenue needs

#### Share of revenue needs between users and NSW Government

IPART's regulatory pricing framework acknowledges that both water access licence holders and the community have an impact on water management services. To reflect this, IPART has established a proportion of the costs of each activity that should be paid by government, with the balance to be recovered from the water access licence holders.

DPI Water has refined its activity definitions and has proposed appropriate allocations of the cost of these activities between users and government (see Section 6.2.2).

<sup>4</sup> For more information on WAMC see Section 3.2.3.

The user and the government revenue need for each building block for the period 1 July 2016 to 30 June 2020 is shown in Table 7.11.

**Table 7.11: User and government revenue need by building block (\$'000 15/16)**

Revenue need building block	Total	Government share	User share	User share as % of total
Water management services operating costs	204,722	50,204	154,518	75%
NSW Government contribution to MDBA	37,105	16,529	20,576	55%
NSW Government contribution to DBBRC	1,466	466	1,000	68%
Depreciation on the regulatory asset base	4,435	1,132	3,303	74%
Rate of return on the regulatory asset base	2,026	432	1,594	79%
Working capital	429	106	323	75%
Taxation	-	-	-	
<b>Total</b>	<b>250,183</b>	<b>68,689</b>	<b>181,314</b>	<b>72%</b>

The user share for 2013/14, as set in the 2011 price determination, was 75 per cent.

### 7.3.8 Allocation of revenue needs to pricing water sources

#### Cost drivers for allocation of capital and operating costs

DPI Water forecasts, records and reports costs by each water management activity it performs. As most of these activities are performed on a state-wide basis, operating and capital costs are initially forecast for the whole state. They are then allocated to pricing water sources (a combination of water type and location) using a cost driver for each water management activity. The principle of using cost drivers was accepted by IPART for the current pricing determination.

The cost drivers represent a transparent allocation of cost based on the involvement of the specified driver in each pricing water source. The cost drivers used for allocating historical costs for C-code activities during the current determination are included at Appendix B.

In DPI Water's preparation of forecast costs and revenue needs for the next determination period, cost drivers were reviewed to ensure their appropriateness for allocation of costs for the revised W-code activities. As a result of this review, 10 of the 33 W-code activities have the same cost driver as the current C-code activities. The remainder, which includes eight new activities, have new or revised cost drivers.

The cost driver used is informed by the characteristics of each water management activity. There are activities such as water monitoring that are physically located in a pricing area. The drivers for these activities relate to the physical activity in the pricing water source. There are other state-wide or centralised activities for which administrative drivers are required for the allocation of costs to pricing water sources.

For example, water monitoring activities, such as the operation and maintenance of hydrometric stations, have a significant component of the work physically undertaken in the pricing area; whereas water management planning and licensing are administrative activities that are largely centralised and share costs.

The complete revised set of cost drivers for the W-code activities, with the rationale for the cost driver, is included at Appendix E. This includes the cost driver for the C-code equivalent to the new activity alongside each of the new cost drivers, and a summary assessment of the change and the reason for the change. Examples of how cost drivers have been reviewed for this submission are described below.

An example of an activity primarily carried out on location in the pricing area, is surface water quantity monitoring. The current cost driver for surface water quantity monitoring (currently C01-01 and in future W01-01) is the number and location of hydrometric stations. Surface water quantity monitoring is a significant part of the water management cost. The cost driver for this activity has been subject to thorough investigation to ensure appropriate allocation of costs.

The investigation identified the following:

- The relative cost for a hydrometric station can range from 0.1 to 1.6 times the standard flow monitoring station. In the 2009 submission to IPART, all water sources were assumed to have the same average cost per station.
- The reason each station is needed varies significantly between water sources. For example some water sources contain a much higher proportion of stations for flood monitoring. A station solely for flood monitoring is not considered to be a service obligation under the IPART (Water Services) Order 2004 (see Appendix D for a list of the service obligations for each of the water planning and management activities).
- There are currently 91 sites where WaterNSW pays for the flow monitoring functionality for a station, but additional functionality on that station for automated quality monitoring (such as salinity) forms part of the water management cost. This cost was not separately identified or allocated to the relevant water sources for the 2009 submission to IPART.
- Hydrometric stations are currently allocated to the water type based on the regulated or unregulated classification of the river where the station is located. When the water management requirement for each station was reviewed, it was found that a number of stations had a different water type assigned than the water type driving the requirement for the station.

As a result of these findings, DPI Water undertook a review for this submission to determine the hydrometric stations to be costed to each water source. The review involved identifying:

- The criteria to determine the mandatory requirement for a hydrometric station for the purpose of making available water (in compliance with the IPART (Water Services) Order 2004).
- The hydrometric stations required under each criterion.
- The functionality and relative cost for each station.
- Who currently pays for each station, and whether DPI Water pays for part of the functionality of the station.
- The water type (based on impactor pays) for each hydrometric station to be included in the water management cost.

The conclusions from this review process are:

- A reduced number of hydrometric stations (534 reduced to 430) will be included in the water management cost, for which users pay their share via the water management charge.
- An update to the water type to pay for each station, where some stations were changed from unregulated to regulated water type (for example the Murrumbidgee) and some changed from regulated to unregulated (for example the Lachlan).
- The cost driver for allocating the cost of hydrometric stations will be the relative cost of the hydrometric stations for the impactor water source (instead of the number of stations and category of river where the station is located).

Another example of an activity physically linked to a pricing water source is surface water quality monitoring (currently C01-03 and in future W01-03). The current activity only includes the collection of samples and the encoding of results. The cost driver used for allocation of costs is the number of sampling events at key sites. The future activity includes the analytical laboratory services currently in C04-01. The set of tests undertaken is tailored to the monitoring requirements of each site. The new activity therefore involves the collection, analysis, validation and encoding of the results of the monitoring. To take account of this change, the cost driver for surface water quality monitoring has been revised to the number of quality tests processed.

As for hydrometric stations, the cost of a water quality test is currently allocated to the water type, based on the regulated or unregulated classification of the river where the test samples are taken. When the water management requirement for sets of tests was reviewed, it was found that some sets of tests had a different water type assigned than the water type driving the requirement for the tests. For example, water tests on some of the unregulated flows in the Murrumbidgee valley are for monitoring and managing water quality in the regulated system. The water type allocation for the water quality tests to be included in the water management cost has therefore been revised to allocate the costs to the appropriate water type based on impactor pays.

In the 2009 submission to IPART, 'entitlement' was used as a component of, or as the full cost driver for, 12 of the water planning and management activities contributing costs for the water management charge. The 'entitlement' used was the quantity of share component for entitlement charge licences. Entitlement was used in the cost driver because no other suitable cost driver could be identified at the time. The driver for the activity cost was considered to be extraction of water, and, as there were no forecast estimates of water take available for unregulated rivers and groundwater at that time, entitlement was considered to be a suitable substitute for allocating cost. The 2011 IPART review was critical of this choice, but no alternative was found during that determination process.

In its review of cost drivers for future activities, DPI Water has identified that there are better drivers for allocating cost for most of the activities that used entitlement. The proportion of share component for entitlement charge licences in a pricing water source varies considerably across the state, and between regulated and unregulated water sources. The water take activation of share component also varies significantly from water source to water source. To address the entitlement cost allocation issue for this submission, DPI Water has:

- Identified activity specific cost drivers to replace entitlement where this can be justified.
- Used forecast 'total water take' for allocating cost, where water take is a driver for the activity and no alternative activity-specific information is available on which to base the allocation of costs to pricing water sources. Total water take is the total of measured water take and estimated water take; that is the volume of measured water take for entitlement charge licences on a 2-part tariff and water take charge only licences, and the estimated water take for the other entitlement charge licences on a 1-part tariff.

Total water take is used as a component of, or as the full cost driver for, seven of the future activities. Using total water take reduces the cost allocation to pricing water sources where activation of share component is low, such as the Lachlan, Peel, North Coast and South Coast regulated water sources, and for most unregulated water sources with the exception of Far West and South Coast. For activity W03-02, water take data management and reporting, measured water take has been used for allocating cost to pricing water sources.

Existing C-code activities using entitlement for cost allocation include four of the current five activities for water management planning. In the future W-code activity framework there are seven activities for water management planning. It is proposed that four of these (W06-01, W06-02, W06-06 and W06-07) will use relevant sub-sets of total water take for cost allocation. Water

planning is an administrative activity, where planning approaches or planning components that may have taken a large quantity of staff time to develop in one water source, can then be applied to other similar water sources. The annual cost for each pricing water source varies from year to year depending on the planning cycle or work required to address water management issues for that pricing water source.

At the time of this submission there are 70 water sharing plans (WSPs) in operation and 12 in preparation. Some plans apply to one water type, others to two or three water types. Going forward, WSPs will be merged to reduce the number of plans to 54 by the end of the future determination period. There is currently inadequate information to make it practicable to differentiate the planning cost by pricing water source. In the future determination period there will be separate inland and coastal cost recording and reporting implemented for water plan development (W06-01 and W06-02). Consequently forecast costs for the four future water planning activities have been allocated on the forecast total water take in each pricing water source. This cost sharing approach is consistent with National Water Initiative (NWI) principle 5, where it is not practicable to differentiate the planning cost by pricing water source.

Another example of entitlement being replaced as the cost driver is water modelling. In this submission, DPI Water has developed new cost drivers based on the development, maintenance, use and complexity of the number of water system models for each pricing water source. The revised cost driver for groundwater modelling results in a greater allocation of modelling costs to inland groundwater.

Water regulation activities will continue to use the number of licences as the primary driver for allocating cost to each pricing water source. The one change relates to W08-03, compliance management, where analysis found that the general profile of compliance breaches is consistent with the number of licences in each pricing area, modified by a non-compliance risk factor for each water type, and the level of competition for water in the pricing area. The risk of non-compliance is higher for inland water sources.

W10-01, customer management, has been separated from C09-01, licence administration. The new cost driver used for allocation of this cost is the number of customers rather than the number of licences because there is a difference between the average number of licences held per customer for each water type: 1.9 for regulated, 1.4 for unregulated and 1.2 for groundwater customers.

Where the existing cost drivers have been retained, the data used in those cost drivers has been updated to be consistent with the forecast service level planned for the activity. For example, the cost driver for W05-01, systems operation and water availability management, is water operations complexity. This uses a two-stage allocation, based first on the number of staff working on each water type, and then an assessment of the operational complexity of each pricing water source. There will be an increased number of staff working on this activity for groundwater in the future determination period. The data in the cost driver has been revised to reflect this. The operational complexity has also been revised based on the experience gained during the current determination period.

### **Cost drivers for allocation of MDBA costs**

The NSW share of the Murray Darling Basin Authority (MDBA) Joint Programs of work paid for by the NSW annual contribution to MDBA is analysed to determine:

- The program components that qualify as a water management monopoly service under the IPART (Water Services) Order 2004.
- The program components that are water planning and management activities, and therefore qualify for inclusion in the water management charge.



- The relevant DPI Water activity that aligns with each water management and planning task that qualifies under the IPART (Water Services) Order 2004.
- The user share of cost (calculated using the user share for the relevant aligned DPI Water activity) to be recovered from users in the water management charge.

A significant proportion of the tasks in the MDBA Joint Programs are to address the downstream impacts of water extraction in NSW. This includes The Living Murray planning and condition monitoring, and the operation of salt interceptions schemes (see Appendix J for a listing of the 2015/16 program of activities). As a result of this, the total surface water take for inland water sources is used as the cost driver, to allocate the user share of the NSW contribution to MDBA to inland pricing water sources.

The impact of this cost allocation is that the increased user share of the cost of the contribution to MDBA has the largest impact on those pricing water sources that have a large water take, such as the Murrumbidgee, Murray and Gwydir valleys.

### Cost drivers for allocation of DBBRC costs

The program of work paid for by the NSW annual contribution to the Dumaresq-Barwon Border Rivers Commission (DBBRC) is analysed to determine the relevant DPI Water activity that aligns with each DBBRC task. The user share for the relevant activity is applied to the cost for that task. The user share of the cost is allocated using the same cost driver concept as used for the DPI Water activity, except that the data used in the cost driver is specific data for the DBBRC activity and water sources only.

### Summary

Table 7.12 outlines how revenue needs are allocated to pricing water source pricing areas.

**Table 7.12: Allocation of revenue needs (\$'000 15/16)**

Operating costs for monopoly water management services	Costs driver for each activity as set out in Appendix E
NSW contribution to MDBA	Water take across the Basin relevant to the water management activity.
NSW contribution to DBBRC	The pricing water source to which the activity is applicable.
Depreciation on regulatory asset base	Costs driver for the activity, as set out in Appendix E, to which the asset is linked.
Return on the regulatory asset base	Costs driver for the activity, as set out in Appendix E, to which the asset is linked.
Working capital	The cost for each pricing water source.

The resulting user share of revenue needs by water type is shown in Table 7.13.

**Table 7.13: User share of revenue needs by water type (\$'000 15/16)**

Water type	2016/17	2017/18	2018/19	2019/20	Total
Regulated rivers	20,541	20,430	20,166	19,835	80,972
Unregulated rivers	14,116	14,172	13,882	13,118	55,288
Groundwater	11,177	11,139	11,262	11,477	45,055
<b>Total</b>	<b>45,834</b>	<b>45,741</b>	<b>45,310</b>	<b>44,430</b>	<b>181,315</b>

For the purpose of calculating prices, the user share of revenue needs has been smoothed over the proposed four-year price determination period.

Appendix F sets out the total of user share of revenue needs by pricing water source by year for the period 1 July 2016 to 30 June 2020.

### 7.3.9 Projected revenue to be recovered from users

DPI Water has included an efficiency gain for its operating expenditure in each of the years after 2016/17. DPI Water also proposes an efficiency gain in operating expenditure equal to the CPI inflation adjustment from 2015/16 to 2016/17.

To calculate the prices, the projected annual revenue needs over the proposed price period have been smoothed on a net present value basis.

As outlined in Chapter 8, it is anticipated that additional water take only licences for floodplain harvesting will be activated over the new price path period in four pricing water sources. However the timing of the activation of such licences is less clear. The development and implementation of the floodplain harvesting water take framework has been funded through a Commonwealth Government grant, and as such there has been no cost to water access licence holders. The marginal level of associated activities will add no additional operating costs to revenue needs. Therefore the implementation of floodplain harvesting will spread the revenue needs over a greater volume of water take in the pricing water sources where implemented.

The prices proposed have been set, taking into account the resulting customer impacts detailed in Chapter 8. This results in an under-recovery of revenue needs for a number of pricing water sources, as at the commencement of the price determination. A price glide path has been proposed for these pricing water sources, which reduces the under-recovery over the proposed price path. The resulting recoverability by pricing water source is shown in Table 7.14. As noted above, the activation of floodplain harvesting in pricing water sources that are not at 100 per cent cost recovered, allows the level of cost recovery in those pricing water sources to increase. Because the timing of activating of floodplain harvesting is unclear, the table sets out the recoverability for each year of the proposed price determination period with and without floodplain harvesting.

**Table 7.14: Recoverability by pricing water source (percentage recovered)**

Pricing water source	2016/17		2017/18		2018/19		2019/20	
	No FPH	With FPH	No FPH	With FPH	No FPH	With FPH	No FPH	With FPH
<b>Regulated</b>								
01. Border	97.3%	100%	99.6%	100%	100%	100%	100%	100%
02. Gwydir	79.0%	89.0%	80.9%	91.1%	82.8%	93.3%	84.8%	95.6%
03. Namoi	98.0%	100%	100%	100%	100%	100%	100%	100%
04. Peel	63.1%	–	64.6%	–	66.1%	–	67.7%	–
05. Lachlan	100%	–	100%	–	100%	–	100%	–
06. Macquarie	100%	100%	100%	100%	100%	100%	100%	100%
08. Murray	91.0%	–	93.1%	–	95.3%	–	97.5%	–
09. Murrumbidgee	82.1%	–	84.1%	–	86.2%	–	88.2%	–
10. North Coast	100%	–	100%	–	100%	–	100%	–



Pricing water source	2016/17		2017/18		2018/19		2019/20	
	No FPH	With FPH	No FPH	With FPH	No FPH	With FPH	No FPH	With FPH
11. Hunter	77.1%	–	78.7%	–	80.4%	–	82.1%	–
12. South Coast	86.7%	–	88.7%	–	90.7%	–	92.7%	–
<b>Unregulated</b>								
04A.North West	100%	–	100%	–	100%	–	100%	–
06A.Central West	100%	–	100%	–	100%	–	100%	–
07.Far West	100%	100%	100%	100%	100%	100%	100%	100%
08.Murray	100%	–	100%	–	100%	–	100%	–
09.Murrumbidgee	100%	–	100%	–	100%	–	100%	–
10.North Coast	100%	–	100%	–	100%	–	100%	–
11. Hunter	100%	–	100%	–	100%	–	100%	–
12. South Coast	93.2%	–	95.3%	–	97.5%	–	100%	–
<b>Groundwater</b>								
13. Inland*	91.9%	–	92.2%	–	92.4%	–	92.6%	–
14.Coastal	100%	–	100%	–	100%	–	100%	–

\* Relates to Murrumbidgee groundwater only.

### 7.3.10 Government contribution to revenue needs of water management services

The government contribution to the revenue needs of water management services is shown in Table 7.15.

**Table 7.15: Government contribution to revenue needs by water type (\$'000 15/16)**

	2016/17	2017/18	2018/19	2019/20	Total
Water management services costs	12,821	12,804	12,506	12,074	50,205
MDBA	4,286	4,182	4,080	3,980	16,529
DBBRC	126	115	114	111	466
Depreciation	219	265	312	335	1,132
Rate of return	87	104	121	120	432
Working capital	27	25	27	27	106
Taxation	–	–	–	–	0
Government share of water management services	17,566	17,495	17,160	16,647	68,868
Community service obligation – under-recovery of user share of revenue needs (no FPH*)	3,080	2,558	1,729	481	7,848
Community service obligation – under-recovery of user share of revenue needs (with FPH*)	2,892	2,421	1,581	294	7,188
Forecast government contribution (no FPH*)	20,646	20,053	18,889	17,128	76,716
Forecast government contribution (with FPH*)	20,458	19,916	18,741	16,941	76,056

\* Floodplain harvesting.

## 7.4 Water consent transaction services

The regulatory pricing framework requires the operating costs for water consent transaction services to contain only remuneration costs and other (non-remuneration) costs, with the associated overhead costs to be recovered in the water management services charge.

The forecast level of operating costs for water consent transaction services over the period 1 July 2016 to 30 June 2020 is shown in Table 7.16.

**Table 7.16: Forecast operating costs for water consent transaction services (\$'000 15/16)**

2016/17	2017/18	2018/19	2019/20	Total
2,071	2,071	2,071	2,071	8,284

The prices for water consent transaction services are outlined in Chapter 9.

## 7.5 Water take measurement services

The operating costs for water take measurement services are made up of the same three components as water management services operating costs – remuneration, non-remuneration and overhead costs. The forecast level of operating costs for water take management services over the period 1 July 2016 to 30 June 2020 is shown in Table 7.17.

**Table 7.17: Forecast operating costs for water take measurement services (\$'000 15/16)**

2016/17	2017/18	2018/19	2019/20	Total
1,125	1,279	1,245	1,245	4,894

The prices for water take measurement services are outlined in Chapter 10.

## 7.6 Weighted average cost of capital

The revenue needs generated from the return on the regulatory asset base represent 2.7 per cent of the total revenue needs across the period 2016/17 to 2019/20. The return on the value of the regulatory asset base is calculated using a weighted average cost of capital (WACC).

The WACC for a business is the expected cost of its various classes of capital (debt and equity), weighted to take account of the relative share of debt and equity in the total capital structure. IPART will decide on the WACC to be applied in its determination.

Within the pricing framework, the estimation of WACC is not based upon the specific financial characteristics of the business being regulated, but on the financial characteristics of a 'best practice' business of the same nature.

WAMC is not required to have a capital structure and is a not-for-profit business. However under NWI pricing principles, it is required to propose prices that are based upon full-cost recovery principles. DPI Water has considered the WACC proposed by the three other water businesses subject to a price review in 2016 – Sydney Water Corporation, WaterNSW and Hunter Water Corporation – each of which is proposing the same WACC of 4.6 per cent real post-tax. DPI Water operates in the same industry and should therefore be subject to similar financing parameters. DPI Water proposes the same WACC as these businesses – 4.6 per cent real post-tax.

## 7.7 Financeability

IPART issued a Final Decision on the subject of Financeability Tests in Price Regulation in December 2013. The objective of the Final Decision was 'to assess the short-term financial sustainability of the utility'<sup>5</sup>.

Under the *IPART Act 1992* (section 15), IPART is required to consider, among other things:

- The impact on pricing policies of the borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any needs to renew or increase relevant assets.
- The standards of quality, reliability and safety of services concerned<sup>6</sup>.

The financeability tests required are:

- Funds from operations (FFO) interest cover – calculated as FFO plus interest expense divided by interest expense. This is a coverage ratio and measures a utility's ability to service its debt.
- Debt gearing (regulatory value) – calculated as debt divided by the regulatory value of fixed assets. This is a leverage ratio and measures a utility's ability to repay its debt.
- FFO over debt – calculated as FFO divided by debt. This is a more dynamic measure of leverage than debt gearing and a useful indicator of a utility's ability to generate cash flows.

Monopoly service water planning and management activities under the IPART (Water Services) Order 2004, undertaken by WAMC, are largely delegated to DPI Water under section 372 of the *Water Management Act 2000*. DPI Water is in the Department of Primary Industries, which in turn is a division within the Department of Industry, Skills and Regional Development. As part of a NSW Government department, DPI Water has no power to borrow funds or requirement to pay dividends. Similarly, WAMC does not borrow funds or pay dividends. Funding for DPI Water operations and capital investment comes directly from the NSW Government. Therefore, the three financeability tests are not applicable either to WAMC or DPI Water.

DPI Water is responsible to the Minister for Lands and Water for the delivery of appropriate standards of quality, reliability and safety of services.

<sup>5</sup> *Financeability tests in price regulation, section 1.2.3, Dec 2013.*

<sup>6</sup> *Financeability tests in price regulation, section 2.3, Dec 2013.*

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## 8 Water management

This chapter of the submission explains the revenue needs and proposed prices to recover the user share of the revenue needs for each pricing area. For further information on the service activities, strategies, services and benefits see Chapter 6.

### 8.1 Water access licence and tariff categories

Water management charges apply to all categories of water access licences and are paid by licence holders.

Under the National Water Initiative (NWI) agreed in 2004 by the Council of Australian Governments (COAG), the state and territory governments made commitments to best practice water pricing. This included the recovery from water users of a share of the cost of the management of water. This pricing aims to make sure there is sufficient revenue to allow efficient delivery of the required services, under the principle of impactor (or user) pays. It also aims to achieve pricing transparency in the cost recovery for water planning and management.

DPI Water proposes that the main characteristics of the current tariff structure be retained for the recovery of the user share of water planning and management costs.

The water management charge tariff structure is made up of three components:

- Entitlement charge – an annual charge that applies to the share component specified on each water access licence.
- Water take charge (formerly usage charge) – a charge that applies to the quantity of water recorded as taken for a water access licence in the billing period.
- Minimum annual charge – an annual charge that applies to a licence if the sum of the entitlement charge and water take charge for a water access licence is less than the value of the minimum annual charge.

The application of existing and proposed tariffs result in the following charge structures, depending on the attributes of the licence held and water take:

- Licences subject to a 2-part tariff – made up of a fixed 2-part entitlement charge and a water take charge that is calculated on the measured water take.
- Licences subject to a 1-part tariff – made up of a fixed 1-part entitlement charge, which is calculated as the fixed 2-part entitlement charge plus a premium equal to the water take charge with a 100 per cent activation rate.
- Licences subject to a water take charge only – that is calculated on the measured water take.
- Licences subject to a minimum annual charge – if the sum of any charges applicable to the licence is less than the minimum annual charge.

The work currently being undertaken to develop a water take measurement strategy (see Section 6.6) is intended to clarify the rules under which a licence will qualify for a 2-part tariff. This will facilitate some unregulated and groundwater licences, currently on a 1-part tariff, being able to transition to a 2-part tariff. An explanation of the different tariff categories for water access licences is provided in the next section.

A water licence entitles the holder to a specified share of the available water in a specified water source, subject to conditions applying to the licence. While all water access licences provide the holders with the right to take water, the conditions under which water can be taken may be different for different categories of licence. Therefore not all licensed share component is subject to an annual entitlement charge.

To help understand the demand forecast for the proposed water management tariffs, the quantities shown in the tables below set out the share component for licences in three tariff categories:

- Entitlement charge licences – licences subject to an annual entitlement charge. Note that an entitlement charge licence is also subject to a water take charge if the water take is measured for that licence.
- Water take charge only licences – licences subject only to the water take charge.
- Minimum charge only licences – licences subject only to the minimum annual charge.

### **Entitlement charge licences**

Entitlement charge licences are those licence categories subject to an annual entitlement charge, calculated using the quantity of share component for each licence. Entitlement charge licences include 11 categories of regulated river licences, nine categories of unregulated river licences and nine categories of groundwater licences.

For unregulated rivers and groundwater, the unit entitlement price for the licence depends on whether the water take for the licence is measured (2-part tariff applies) or not (1-part tariff applies):

- 2-part tariff – if water take is measured (using an approved method) for an entitlement charge licence, it will be charged a 2-part tariff made up of a 2-part entitlement charge (based on the quantity of share component) and a water take charge (based on the measured volume of water taken for that licence).
- 1-part tariff – if water take is not measured for an entitlement charge licence, it will be charged a 1-part tariff made up of a 1-part entitlement charge (based on the quantity of share component), at a unit entitlement price that is higher than the unit 2-part entitlement price because it carries a premium that assumes a water take equivalent to all of the share component.

The demand forecast for entitlement charge licences for unregulated rivers and groundwater therefore needs to quantify for each pricing water source:

- The share component for entitlement charge licences on the 2-part tariff.
- The share component for entitlement charge licences on the 1-part tariff.

### **Water take charge only licences**

Water take charge only licences are only subject to a charge based on the volume of water measured as taken against that licence, and are not subject to an annual entitlement charge. Water take charge only licences include four categories of regulated river licences and three categories of unregulated river licences. There are no categories of groundwater licences that are water take charge only licences.

### **Minimum charge only licences**

Minimum charge only licences are categories of licence where one of two scenarios applies:

- Water taken against a licence of this category will have already been recorded (and charged) under another licence, for example major utility (Barnard) and unregulated river (regulated supply) categories.

- Water taken against a licence of this category is used solely for water impacts management and cannot be used for consumptive or commercial purposes or traded, for example salinity and water table management licences.

The share component information for minimum charge only licences is provided for completeness. It is not used for pricing purposes.

Table 8.1 shows a full list of the categories of licence and the proposed tariff category for each water type. These tariff categories will be used in presenting the quantity of share component for licences, their use for tariff calculation, and in discussing the different profiles of share component and the associated variability of water take in different pricing areas.

**Table 8.1: Tariff category applicable to each licence category**

Licence category	Tariff category
<b>Regulated river</b>	
Coleambally irrigation (conveyance)	Entitlement charge licence
Domestic and stock	Entitlement charge licence
Floodplain harvesting (regulated river)	Water take charge only licence
Local water utility	Entitlement charge licence
Major utility	Entitlement charge licence
Murrumbidgee irrigation (conveyance)	Entitlement charge licence
Regulated river (conveyance)	Entitlement charge licence
Regulated river (environmental – RMIF)	Entitlement charge licence
Regulated river (general security A)	Entitlement charge licence
Regulated river (general security B)	Entitlement charge licence
Regulated river (general security)	Entitlement charge licence
Regulated river (high security)	Entitlement charge licence
Major utility (Barnard)	Minimum charge only licence
Supplementary water	Water take charge only licence
Supplementary water (environmental)	Water take charge only licence
Supplementary water (Lowbidgee)	Water take charge only licence
<b>Unregulated river</b>	
Domestic and stock	Entitlement charge licence
Floodplain harvesting (unregulated river)	Water take charge only licence
Local water utility	Entitlement charge licence
Major utility	Entitlement charge licence
Major utility (Grahamstown)	Minimum charge only licence
Supplementary water (Aboriginal environmental)	Water take charge only licence
Unregulated river	Entitlement charge licence
Unregulated river (A class)	Entitlement charge licence
Unregulated river (B class)	Entitlement charge licence
Unregulated river (C class)	Entitlement charge licence



Licence category	Tariff category
Unregulated river (regulated supply)	Minimum charge only licence
Unregulated river (regulated supply – local water utility)	Minimum charge only licence
Unregulated river (high flow)	Entitlement charge licence
Unregulated river (special additional high flow)	Water take charge only licence
Water Act licence with billable entitlement purpose	Entitlement charge licence
<b>Groundwater</b>	
Aquifer	Entitlement charge licence
Aquifer (general security)	Entitlement charge licence
Aquifer (high security)	Entitlement charge licence
Domestic and stock	Entitlement charge licence
Local water utility	Entitlement charge licence
Major utility	Entitlement charge licence
Salinity and water table management	Minimum charge only licence
Supplementary water	Entitlement charge licence
Supplementary water (storage)	Entitlement charge licence
Water Act property account	Entitlement charge licence

## 8.2 Demand forecasts

To calculate prices for the water management charge in each pricing water source there are three demand forecast components:

- Quantity of licensed share component for licences that are subject to an annual entitlement charge.
- Volume of water take for all licences that are subject to a water take charge.
- Number of licences that are subject to a minimum annual charge.

### Demand forecast for entitlement charges

The demand forecast for the entitlement charge is the quantity of share component for entitlement charge licences as defined in Table 8.1 above. For unregulated river and groundwater tariff calculation purposes, the quantity of share component needs to be split by the tariff structure (1-part or 2-part tariff) applying to each entitlement charge licence. All regulated river entitlement charge licences are on a 2-part tariff.

Licence information is continually being updated in the Water Licensing System (WLS) as consent transactions are processed. The quantity of share component has been forecast by taking a listing of all licences, their share component, and other attributes of the licences from the WLS, as at 1 July 2015. Metadata has been added to the data set to tag each licence with its pricing attributes. The licence listing was then updated with expected or known changes to the licensed share component for each of the years to 2020/21.

This licence information has been used as the data set for an accountable share component forecast containing for each licence:

- The quantity of share component.
- The assigned tariff category.

- The pricing area attributes for tariff calculations.

### **Demand forecast for water take charges**

The water take charge is calculated on the measured volume of water taken under both:

- Entitlement charge licences on a 2-part tariff.
- Water take charge only licences.

The demand forecast for the volume of water subject to a water take charge is the total measured volume of water take regardless of which of these two tariff categories of licence are activated. While different activation levels for different categories and locations of licence have been taken into account in preparing the forecast of water take, a single volumetric forecast is provided for each pricing water source.

### **Demand forecast for minimum annual charges**

Any licence will be subject to a minimum annual charge in place of the applicable entitlement and/or water take charges, if the sum of those charges for the licence is less than the minimum annual charge. The numbers of licences subject to a minimum annual charge in each pricing area differs, depending on the water price for the area and the number of licences with a small licensed quantity of share component.

The minimum charge only licences will be subject to a minimum annual charge regardless of the quantity of share component on these licences.

Demand information for the number of minimum annual charges is provided by summarising the number of licences with a range of quantity of share component in each pricing area.

#### **8.2.1 Demand forecast for entitlement charge licences**

The share component forecast for entitlement charge licences includes the following changes, which will occur prior to and during the next determination period:

- Regulated rivers:
  - Issue of regulated river (environmental – RMIF<sup>1</sup>) licences.
- Unregulated rivers:
  - Additional share component issued to existing licences in the Barwon Darling (Far West).
  - Inclusion of share component for domestic and stock licences not subject to water management charges prior to 1 July 2016.
- Groundwater:
  - Supplementary water licences phased out.
  - New groundwater share component expected to be issued under controlled allocation orders.

No allowance in the share component forecast has been made for:

- Conversion of existing unregulated river licences to unregulated river (high flow) licences – currently none of these licences have yet been issued. The issue of high flow licences is not expected to have an effect on revenue due to the small quantity of share component available for conversion and the lack of interest to date in converting share components for existing coastal unregulated river licences.

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<sup>1</sup> River Murray Increased Flows

- Surrender of water access licences to DPI Water – there is a small but steady number of licences being surrendered, however the quantity of share component involved is very small and it is not possible to forecast the pricing water source for these surrenders.
- Changes to licenses held by the Hunter Water Corporation – negotiations are currently in progress to address potential double counting of water taken from the Williams River and transferred to Grahamstown Dam.
- Issue of unregulated floodplain licences in valleys other than the Barwon Darling (Far West).

Tables 8.2 to 8.5 show the share component forecasts for 2017/18. By then groundwater supplementary water licences will be fully phased out and floodplain harvesting licences are forecast to be issued. A year-by-year table of the share component for entitlement charge licences is shown in Appendix G.

**Table 8.2: Total share component for entitlement charge licences (all water types) (2017/18)**

Pricing water source	Regulated river	Unregulated river	Groundwater
01. Border	266,360	44,031	–
02. Gwydir	536,505	47,848	–
03. Namoi	265,094	152,724	–
04. Peel	47,795	17,953	–
05. Lachlan	690,768	54,920	–
06. Macquarie	675,186	181,589	–
07. Far West	–	221,202	–
08. Murray	2,378,256	51,622	–
09. Murrumbidgee	2,708,451	96,817	340,046
10. North Coast	10,070	274,604	–
11. Hunter	208,831	671,636	–
12. South Coast	15,121	1,257,625	–
13. Inland (excluding Murrumbidgee)	–	–	1,184,293
14. Coastal	–	–	371,175
<b>Total</b>	<b>7,802,437</b>	<b>3,072,568</b>	<b>1,895,514</b>

There is minimal change in the share component forecast over the determination period:

- Regulated rivers is forecast to increase by 0.5 per cent, as a result of the issue of environmental licences such as River Murray Increased Flows (RMIF).
- Unregulated rivers is forecast to increase by 0.5 per cent, as a result of the recognition from a pricing perspective of the additional share component issued for licences on the Barwon Darling (Far West).
- Groundwater is forecast to increase overall by 0.1 per cent, as a result of the controlled allocation of new entitlement, offset by the termination of supplementary licences.

The split of unregulated share component between 2-part tariffs and 1-part tariffs is shown in Table 8.3.

**Table 8.3: Unregulated river share component for entitlement charge licences (2017/18)**

Pricing water source	2-part tariff	1-part tariff	Total shares
01. Border	1,824	42,207	44,031
02. Gwydir	757	47,091	47,848
03. Namoi	1,089	151,635	152,724
04. Peel	5,600	12,353	17,953
05. Lachlan	5,183	49,737	54,920
06. Macquarie	48,428	133,161	181,589
07. Far West	145,582	75,620	221,202
08. Murray	17,142	34,480	51,622
09. Murrumbidgee	16,687	80,130	96,817
10. North Coast	122,523	152,081	274,604
11. Hunter	490,781	180,855	671,636
12. South Coast	1,161,278	96,348	1,257,625
<b>Total</b>	<b>2,016,874</b>	<b>1,055,695</b>	<b>3,072,568</b>

The measured water take forecast does not include change in entitlement charge licences moving from a 1-part to 2-part tariff. This is because the water take measurement strategy is in the process of development and it has not been possible to finalise any assumptions for change. Movement between licences on 1-part and 2-part tariffs can have a significant impact on forecast revenue and therefore on prices.

The split of groundwater share component between 2-part tariffs and 1-part tariffs is shown in Table 8.4.

**Table 8.4: Groundwater share component for entitlement charge licences (2017/18)**

Pricing water source	2-part tariff	1-part tariff	Total shares
09. Murrumbidgee	321,148	18,898	340,046
Inland (excluding Murrumbidgee)	1,125,504	58,789	1,184,293
13. Total Inland	1,446,652	77,687	1,524,340
14. Coastal	29,000	342,175	371,175
<b>Total Groundwater</b>	<b>1,475,652</b>	<b>419,862</b>	<b>1,895,514</b>

Tables 8.2 to 8.4 include the share component for entitlement charge licences held by the Hunter Water Corporation (HWC) and WaterNSW (Metropolitan). This subset of included share component is detailed in Table 8.5.

**Table 8.5: HWC and WaterNSW (Metropolitan) share component for entitlement charge licences (also included in Table 8.2, Table 8.3 and Table 8.4) (2017/18)**

Pricing water source	Regulated river	Unregulated river	Groundwater
11b. Hunter (Hunter Water Corporation)	75	339,515	29,004
12b. South Coast (WaterNSW (Metropolitan))	–	987,000	100
<b>Total</b>	<b>75</b>	<b>1,326,515</b>	<b>29,104</b>

### 8.2.2 Demand forecast for water take charge only licences

The share component forecast for water take charge only licences includes the following changes that will occur prior to and during the next determination period.

Regulated rivers:

- Issue of floodplain harvesting (regulated river) licences.

Unregulated rivers:

- Issue of floodplain harvesting (unregulated river) licences.

There are no water take charge only licences for groundwater.

As the quantity of share component for floodplain harvesting licences is the subject of licence holder negotiations in each pricing water source, Table 8.6 below shows forecast share component for all water take charge only licences, excluding floodplain harvesting licences.

**Table 8.6: Total share component for water take charge only licences (excluding floodplain harvesting licences) (2017/18)**

Pricing water source	Regulated river	Unregulated river	Groundwater
01. Border	120,001	92	–
02. Gwydir	181,397	–	–
03. Namoi	115,479	–	–
05. Lachlan	3,125	–	–
06. Macquarie	49,998	47,831	–
07. Far West	–	12,650	–
08. Murray	502,579	–	–
09. Murrumbidgee	945,780	–	–
11. Hunter	49,275	–	–
12. South Coast	1,300	–	–
<b>Total</b>	<b>1,968,935</b>	<b>60,573</b>	<b>–</b>

### 8.2.3 Demand forecast for minimum charge only licences

The share component for the 13 minimum charge only licences is shown in Table 8.7.

**Table 8.7: Total share component for minimum charge only licences (2017/18)**

Pricing water source	Regulated river	Unregulated river	Groundwater
06. Macquarie	–	64,767	–
09. Murrumbidgee	–	–	1,736
11. Hunter	30,000		–
13. Groundwater (inland)			37,295
<b>Total</b>	<b>30,000</b>	<b>64,767</b>	<b>39,031</b>

The mix of surface water share component for licence categories associated with the two main tariff categories in each valley is summarised in Table 8.8. Water take charge only licences are forecast to make up 23 per cent of share component for regulated rivers across the state. The range is from zero to 40 per cent of share component depending on the pricing water source. The proportion for the northern inland is at the top end of this range, at 40 per cent. There is only a small proportion of water take charge only share component for unregulated rivers.

**Table 8.8: Summary of proportion of surface water share component associated with tariff categories**

Pricing valley/ area	Regulated river licences			Unregulated river licences			Total share component		
	Entitlement charge	Water take charge only	Total	Entitlement charge	Water take charge only	Total	Entitlement charge	Water take charge only	Total
01. Border	60%	40%	100%	100%	0%	100%	64%	36%	100%
02. Gwydir	61%	39%	100%	100%	0%	100%	63%	37%	100%
03. Namoi	60%	40%	100%	100%	0%	100%	70%	30%	100%
04. Peel	100%	0%	100%	100%	0%	100%	100%	0%	100%
05. Lachlan	100%	0%	100%	100%	0%	100%	100%	0%	100%
06. Macquarie	88%	12%	100%	79%	21%	100%	86%	14%	100%
07. Far West	–	–	–	81%	19%	100%	81%	19%	100%
08. Murray	83%	17%	100%	100%	0%	100%	83%	17%	100%
09. Murrumbidgee	74%	26%	100%	100%	0%	100%	75%	25%	100%
10. North Coast	100%	0%	100%	100%	0%	100%	100%	0%	100%
11. Hunter	81%	19%	100%	100%	0%	100%	95%	5%	100%
12. South Coast	92%	8%	100%	100%	0%	100%	100%	0%	100%
<b>Total</b>	<b>77%</b>	<b>23%</b>	<b>100%</b>	<b>97%</b>	<b>3%</b>	<b>100%</b>	<b>82%</b>	<b>18%</b>	<b>100%</b>

### 8.2.4 Demand forecast – number of licences

There are a total of 37,038 water licences, 35,269 of which are subject to an entitlement charge (Table 8.9). This total includes both Water Management Act and Water Act licences. Of these licences, 50 per cent have an entitlement of 25 megalitres or less, and are therefore likely to be subject to a minimum annual charge.

From 1 July 2015 to 30 June 2017 the remaining water sharing plans (WSPs) will be implemented. This is forecast to result in 3,342 water access licences being created to replace the existing Water Act licences.

An estimated 400 floodplain harvesting licences may be created during the next determination period. However, the number of unregulated river domestic and stock access licences that may be surrendered could offset this. DPI Water is in the process of advising domestic and stock licence holders that there is no need for their licence if they also hold a domestic and stock right. This process will be completed before the start of the next determination period. Domestic and stock licences in unregulated river water sources will be subject to water management charges from the start of the next determination.

**Table 8.9: Number of licences in each pricing area**

Pricing water source	Regulated river	Unregulated river	Groundwater
01. Border	421	440	–
02. Gwydir	474	260	–
03. Namoi	722	428	–
04. Peel	214	278	–
05. Lachlan	1,684	586	–
06. Macquarie	1,513	1,426	–
07. Far West	–	315	–
08. Murray	3,401	338	–
09. Murrumbidgee	1,737	1,023	1,074
10. North Coast	71	3,737	–
11. Hunter	1,601	3,077	–
12. South Coast	142	3,267	–
13. Inland	–	–	5,028
14. Coastal	–	–	3,781
<b>Total</b>	<b>11,980</b>	<b>15,175</b>	<b>9,883</b>

The profile of the number of licences with a quantity of share component for six quantity ranges in each water type is shown in Table 8.10.



**Table 8.10: Percentage of entitlement charge licences by quantity of share component (2017/18)**

Size of licenced share component	Regulated river	Unregulated river	Groundwater	All water types
A. Up to 25 ML	49%	53%	46%	50%
B. 26 – 100 ML	19%	31%	23%	25%
C. 101 – 250 ML	13%	11%	14%	12%
D. 251 – 1,000 ML	13%	4%	14%	10%
E. 1,001 – 9,999 ML	5%	1%	3%	3%
F. 10,001 ML and above	1%	0.2%	0.1%	0.3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

The high incidence of small share component licences explains the large number of low value customer accounts described in the customer analysis in Section 3.4. A large proportion of the licences in category A (up to 25 ML) are likely to incur a minimum annual charge. The table below shows the current 15,392 licences subject to a minimum annual charge. The forecast change in these numbers is provided in Section 8.4.3 and in Appendix L.

**Table 8.11: Current number of licences subject to a minimum annual charge**

Pricing water source	Regulated river	Unregulated river	Groundwater
01. Border	208		–
02. Gwydir	302	*281	–
03. Namoi	348		–
04. Peel	43		–
05. Lachlan	914		–
06. Macquarie	1,064	**312	–
07. Far West	–	38	–
08. Murray	2,339	52	–
09. Murrumbidgee	1,030	124	–
10. North Coast	15	1,052	–
11. Hunter	868	827	–
12. South Coast	66	1,598	–
13. Inland	–	–	2,112
14. Coastal	–	–	1,799
<b>Total</b>	<b>7,197</b>	<b>4,284</b>	<b>3,911</b>

\* 4A. North West area. \*\* 6A. Central West area.

### 8.2.5 Water take volume forecasts

Water take volume forecasts have been prepared for each water type – regulated river, unregulated river and groundwater.

## Regulated river water take

As for the 2009 DPI Water pricing submission, the regulated river water take forecast is based on the historical 20-year average water take. It also includes the following two components that are not currently included in the historical water take figures:

- Supplementary water (Lowbidgee) licence water take – at the time of preparing this submission, only three years of water take information was available for this licence type. This is because supplementary water has previously been delivered to Lowbidgee under other arrangements. The three-year Lowbidgee average has been added into the 20-year average for the Murrumbidgee regulated water take (after removing the Lowbidgee water take from the Murrumbidgee annual totals for the last three years).
- Floodplain harvesting licence water take – floodplain harvesting water is currently taken by water users, but no historic volumetric measurements are available. DPI Water is undertaking modelling of floodplain harvesting to determine future licence entitlements. The regulated river forecast includes a separate estimate of water take for these licenses. The forecast will be updated and provided to IPART if floodplain harvesting modelling is completed for a valley prior to the final pricing determination.

The issue of floodplain licences is the subject of negotiations in each relevant valley (pricing water source). The individual floodplain harvesting licences will not be issued until all floodplain harvesting licences have been determined and agreed for a pricing water source. The introduction of floodplain harvesting licences increases the forecast volume of water take over which the revenue needs for a pricing water source can be recovered. Therefore, this reduces the entitlement and water take prices.

As finalisation of floodplain harvesting licences is subject to agreement with the licence holders in the pricing water sources, DPI Water is proposing two tariffs – one that excludes and one that includes floodplain harvesting water take. It is proposed to change from one tariff to the other for the water year following Ministerial approval to issue all floodplain harvesting licences for a pricing water source.

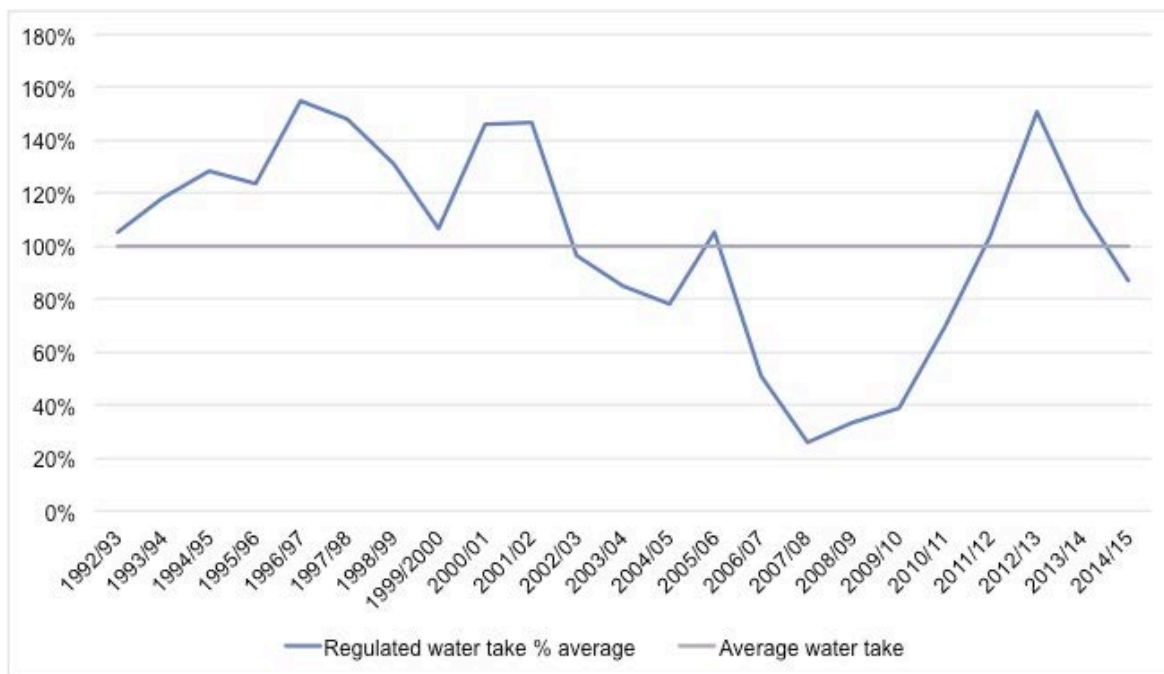
**Table 8.12: Regulated river water take forecast (ML)**

IPART pricing water source	20-year average including Lowbidgee	Floodplain harvesting (FPH)	Total forecast after implementation of FPH
01. Border	144,533	41,000	185,533
02. Gwydir	266,784	118,000	384,784
03. Namoi	167,761	48,000	215,761
04. Peel	11,242	–	11,242
05. Lachlan	215,287	–	215,287
06. Macquarie	263,577	29,000	292,577
07. Far West	–	–	–
08. Murray	1,414,869	–	1,414,869
09. Murrumbidgee	1,751,181	–	1,751,181
10. North Coast	584	–	584
11. Hunter	124,601	–	124,601
12. South Coast	3,943	–	3,943
<b>Total</b>	<b>4,364,363</b>	<b>236,000</b>	<b>4,600,363</b>

The demand forecast for tariff calculation assumes a consistent average of water take for each year of the determination, whereas the actual volume of measured water taken varies significantly from year to year. There is likely to be even greater variation in future as a result of the inclusion of measured water take from floodplain harvesting licences.

Figure 8.1 below shows the total measured regulated river water take for NSW against a 23-year average water take. The 20-year history of water take by pricing water source is included at Appendix H. Over the last 20 years, the total regulated river water take for NSW has varied from 26 to 155 per cent of the 20-year average. Individual valleys have experienced water take variations in the range five to 212 per cent of the valley's 20-year average.

**Figure 8.1: The variability of regulated river total water take compared to the average take**



Water availability characteristics vary for different parts of the state. These availability characteristics are reflected in the levels of activation of licensed share component and the proportions of different category of licence issued for each water source. To illustrate this, historical water take information has been analysed to obtain an estimate of the split of the forecast water take by the two main tariff categories of licences (see Table 8.13). The analysis is only an estimate because of changes in water regulation and management over the 20-year period, and inclusion in the forecast of estimates of take volumes for new water take charge only licences, such as floodplain harvesting.

**Table 8.13: Regulated river estimate of proportion of water take and activation of share component by tariff category of licence**

Pricing water source	Estimated proportion of water take forecast			Percentage activation of share component		
	Entitlement charge licences	Water take charge only licences	Total water take forecast	Entitlement charge licences	Water take charge only licences	All licences
01. Border	50%	50%	100%	35%	54%	42%
02. Gwydir	49%	51%	100%	35%	58%	44%
03. Namoi	61%	39%	100%	49%	48%	49%
04. Peel	100%	0%	100%	24%	—	24%
05. Lachlan	100%	0%	100%	31%	9%	31%
06. Macquarie	86%	14%	100%	37%	46%	38%
08. Murray	90%	10%	100%	54%	28%	49%
09. Murrumbidgee	91%	9%	100%	59%	16%	48%
10. North Coast	100%	0%	100%	6%	—	6%
11. Hunter	78%	22%	100%	47%	55%	48%
12. South Coast	100%	0%	100%	26%		24%
<b>Total</b>	<b>84%</b>	<b>16%</b>	<b>100%</b>	<b>50%</b>	<b>32%</b>	<b>46%</b>

The northern inland has a greater reliance on supplementary or flood events for a significant proportion of their water take. Activation of share component for entitlement charge licences in the northern inland is low compared to the two southern inland pricing water sources, which have the benefit of increased reliability as a result of redirected eastern flows via the Snowy scheme.

### Unregulated river water take

The unregulated river water take forecast has been developed taking the following factors into account:

- The limited time-series water take information available for unregulated rivers.
- The implementation of floodplain harvesting licences for the Barwon Darling River only (Far West).
- Different levels of share component activation for different categories or locations for licences.
- A significant number of water licences that are inactive.

The historical unregulated river water take measurement information is based on:

- The prior years' 2-part tariff billing for unregulated licences (major utility, local water utility and industry licences).
- The water take measurement data from meters (government and user owned) installed on unregulated rivers.

Using the available measured water take information, water take activation factors have been developed for different categories of licences. Where the activation factor for a category in a specific pricing water source is known to be significantly different to the average, as a result of water system characteristics and user water take practices, a pricing water source specific activation factor has been adopted.

No historical information is available for floodplain harvesting water take. Volumes included in the forecast are first estimates prior to more accurate water modelling being completed. Floodplain harvesting licences will be issued based on modelling that is currently in progress.

The share component activation factors have been used in a water take model to generate an unregulated river forecast of water take for each pricing water source for licences on 1-part and 2-part tariffs.

Using the model, DPI Water is able to forecast the change in 2-part water take in pricing water sources if there is a planned implementation of water take measurement, resulting in conversion of entitlement from a 1-part to a 2-part tariff. Table 8.14 shows the water take forecast. The estimate for floodplain harvesting water take for the Barwon Darling (Far West) is shown separately.

Currently 65 per cent of unregulated river share component is on a 2-part tariff, which includes a low proportion of inland (28 per cent), and a high proportion of coastal (80 per cent) share component.

Table 8.14 shows the forecast measured water take for entitlement charge licences on a 2-part tariff and water take charge only licences, and the estimated water take associated with entitlement charge licences on a 1-part tariff. The conversion of entitlement charge licences from 1-part to 2-part tariff will depend on the adoption and implementation of the water take management strategy.

**Table 8.14: Unregulated river total water take forecast (ML) (2017/18)**

Pricing water source	Floodplain harvesting water take	Measured 2-part tariff water take	Estimated 1-part tariff water take	Total
01. Border	–	730	7,907	8,637
02. Gwydir	–	303	8,241	8,544
03. Namoi	–	434	26,536	26,971
04. Peel	–	2,240	2,162	4,402
05. Lachlan	–	1,978	8,893	10,871
06. Macquarie	–	19,236	23,969	43,205
07. Far West	30,000	101,687	52,922	184,609
08. Murray	–	4,561	6,034	10,595
09. Murrumbidgee	–	4,013	14,023	18,036
10. North Coast	–	48,885	26,799	75,683
11. Hunter	–	129,033	31,703	160,735
12. South Coast	–	586,179	17,211	603,390
<b>Total</b>	<b>30,000</b>	<b>929,280</b>	<b>226,398</b>	<b>1,155,677</b>

The unregulated river total water take forecast includes the following volume of water take associated with entitlement charge licences for the Hunter Water Corporation (HWC) and WaterNSW (Metropolitan).

**Table 8.15: HWC and WaterNSW (Metropolitan) water take (Included in Table 8.14) (ML) (2017/18)**

	Measured water take
Hunter Water Corporation	68,546
WaterNSW (Metropolitan)	534,742
<b>Total</b>	<b>603,288</b>

### Groundwater water take

DPI Water has been measuring water take for a growing proportion of inland groundwater share component for the last 15 years. Water take measurement under consistent water take rules has been available since 2006. This provides DPI Water with a good time series of water take information on which to base the groundwater forecast.

Currently 95 per cent of inland groundwater share component is on a 2-part tariff, compared to eight per cent of the coastal share component. The average for the state is 78 per cent of all groundwater share component.

The groundwater forecast includes phasing out supplementary water licences issued as part of the reduction of entitlement under the Achieving Sustainable Groundwater Entitlements (ASGE) program, and a small increase in share component as a result of the issue of controlled allocations.

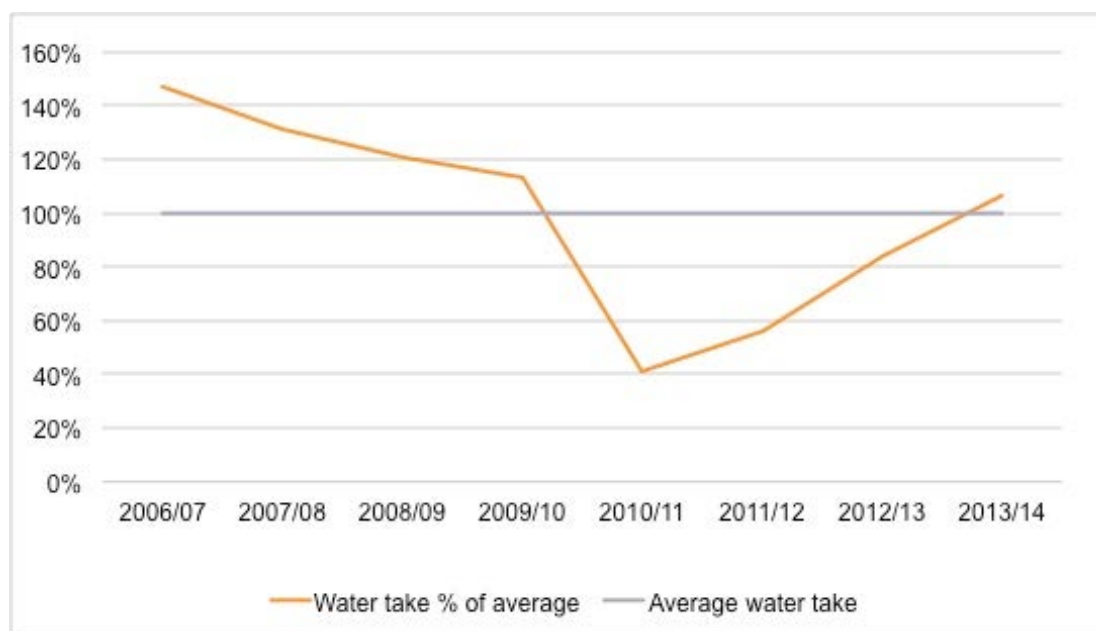
The groundwater water take forecast shown in Table 8.16 is for 2017/18, which is the year when all supplementary share component will be terminated.

**Table 8.16: Groundwater total water take forecast (ML) (2017/18)**

Pricing water source	Measured 2-part tariff water take	Estimated 1-part tariff water take	Total
13. Inland	755,773	38,945	794,718
14. Coastal	6,670	68,523	75,193
<b>Total</b>	<b>762,443</b>	<b>107,468</b>	<b>869,911</b>

The groundwater coastal water take forecast includes a measured water take forecast of 6,670 megalitres for the Hunter Water Corporation.

The demand for groundwater take varies from year to year depending on climatic conditions and requirements for agricultural production. Figure 8.2 shows the variation in water take for the major inland groundwater sources, compared to the average take for those water sources over the same period. This shows water take varying in a range from 40 to 146 per cent of the average.

**Figure 8.2: Annual groundwater take as a percentage average for the same period**

### 8.3 Revenue need by water source

Revenue needs for each pricing water source are developed using the building block approach outlined in Chapter 7. A smoothed annual revenue need for each pricing water source has been calculated. The total annual user share of revenue needs is \$45.36 million. Table 8.17 shows the user share revenue needs for each pricing water source. These have been used to calculate the proposed water management prices in this submission.

**Table 8.17: Smoothed annual user share of revenue needs by pricing water source (\$2015/16 \$'000s)**

Pricing water source	Regulated rivers	Unregulated river	Groundwater
01. Border	932	–	–
02. Gwydir	1,404	–	–
03. Namoi	1,116	–	–
04. Peel	252	–	–
04A. North West	–	1,307	–
05. Lachlan	1,661	–	–
06. Macquarie	1,825	–	–
06A. Central West	–	1,361	–
07. Far West	–	1,394	–
08. Murray	5,797	320	–
09. Murrumbidgee	5,920	844	–
10. North Coast	51	2,490	–
11. Hunter	1,175	1,687	–
12. South Coast	123	4,427	–



Pricing water source	Regulated rivers	Unregulated river	Groundwater
13. Inland	–	–	8,999
14. Coastal	–	–	2,271
<b>Total for water type</b>	<b>20,255</b>	<b>13,830</b>	<b>11,270</b>

If a pricing water source is at full cost recovery, the revenue from the three components of the water management charge (entitlement, water take and minimum annual charges) will equal the user share of revenue needs for the pricing water source. If a pricing water source is below full cost recovery, the pricing principles and strategies outlined in section 8.4 below, have been used to develop prices that will move the pricing water source towards full cost recovery.

## 8.4 Proposed prices

### 8.4.1 Price structure principles

The proposed prices are based on the following principles:

- All categories of licences are included in the water management charge pricing process.
- Three tariff categories are proposed for licences; each licence will be subject to one of these three tariff categories:
  - Entitlement charge licences – licences subject to an annual entitlement charge.
  - Water take charge only licences – licences subject only to the water take charge.
  - Minimum charge only licences – licences subject only to the minimum annual charge.
- Minimum charge only licences are proposed as a new tariff category. This relates to water access category licences that cover a secondary take of water already billed under another category of licence, or water extraction solely for water impacts management (see Table 8.1). These categories of water access licence did not exist at the time of the 2009 DPI Water pricing submission.
- The tariff category that applies to a licence is based on the water access category of the licence (see Table 8.1). There is no difference in pricing within a licence category for different types of licence holder. There is no price premium for high security water access licences.
- A 2-part tariff, comprising an entitlement charge and water take charge, will apply where an entitlement charge licence has water take for that licence measured in a way that qualifies the licence for a 2-part tariff. All regulated river licences will be on a 2-part tariff.
- The fixed (entitlement) and variable (water take) charges will target a 70:30 revenue split in all water types. The only exception to this will be North Coast regulated river, which will continue the 92:08 revenue split used by IPART in calculating tariffs for this pricing water source in the current determination. The approach to calculating the 2-part entitlement and water take charges is the same methodology as applied to regulated river licences in the current price determination.
- A fixed 1-part entitlement charge will apply to unregulated river or groundwater entitlement charge licences that do not have water take for that licence measured in a way that qualifies the licence for a 2-part tariff.
- The unit 1-part entitlement charge will be the sum of the unit 2-part entitlement charge and the unit water take charge. This results in a water management (1-part entitlement) charge for a licence that is equal to a licence on a 2-part charge with a water take activation rate of 100 per cent of share component.
- A minimum annual charge replaces other charges if the sum of the entitlement charge and water take charge for a water licence is less than the value of the minimum annual charge.

- It is proposed to keep the 21 existing pricing water sources for the future determination period: 11 regulated river, eight unregulated river and two groundwater pricing water sources<sup>2</sup>.
- Pricing water sources are mapped to water sources and water types, as defined in WSPs. The only exception is Murrumbidgee groundwater pricing, where the old administrative Murrumbidgee Region identifies the licences subject to the Murrumbidgee groundwater price, which is on an upward glide path to reach the inland groundwater price. The mapping of WSPs to pricing water sources is shown in Appendix K.

#### 8.4.2 Fixed and variable tariffs

The cost structure for DPI Water is largely fixed and is not directly related to water availability. In fact (as stated in the 2009 submission), service requirements often increase during times of low water availability, as greater focus has to be placed on managing, prioritising and sharing limited water supplies to meet critical needs, on providing information to water users, and on managing environmental interests. During times of low water availability there is also a need to focus on protecting water rights to ensure agreed water sharing occurs in accordance with the rules.

DPI Water accepts however, that it is appropriate to share revenue risk between water users and government. Consequently, DPI Water proposes to continue implementing the 70:30 revenue split determined for 2-part tariffs in the 2011 pricing determination. This ratio provides a split that shares the revenue variability risk between the licence holder and government, and an appropriate incentive for licence holders either to hold or to trade water entitlements.

##### Implementation of fixed/variable ratio for unregulated river and groundwater licences

Implementation of a 70:30 revenue split for the 2-part tariff in unregulated rivers and groundwater results in changes to the relationship between the size of the entitlement charge and the size of the water take charge. The impact of this relationship on the bill for a licence will depend on whether the water take activation rate for the licence is above or below the average activation rate for the pricing water source.

The reason for the change is because, when the 2009 pricing submission was prepared, a measured water take forecast was not available for unregulated river and groundwater sources. Water take volumes were available for major water utilities, but there was no information on water take volumes for other unregulated licences. This meant that, for all unregulated river and groundwater prices in the 2011 determination, the relationship between the entitlement price and the water take price did not give a 70:30 fixed/variable ratio for entitlement charge licences, unless the activation rate was 100 per cent. This assumption of 100 per cent was used in tariff calculations for all pricing water sources except the South Coast and Hunter.

The actual average water take activation for unregulated and groundwater licences is between 24 and 70 per cent, depending on the pricing water source. The fixed/variable ratios for the tariffs in the current determination period are estimated to range from 75:25 (South Coast) to 93:7 (Murray, Murrumbidgee), depending on the pricing water source. The tariffs proposed in this submission have been calculated with the average target fixed/variable ratio set at 70:30. One exception is the unregulated Barwon Darling River in Far West, where an adjustment has been made for floodplain harvesting water take (as explained below for regulated rivers).

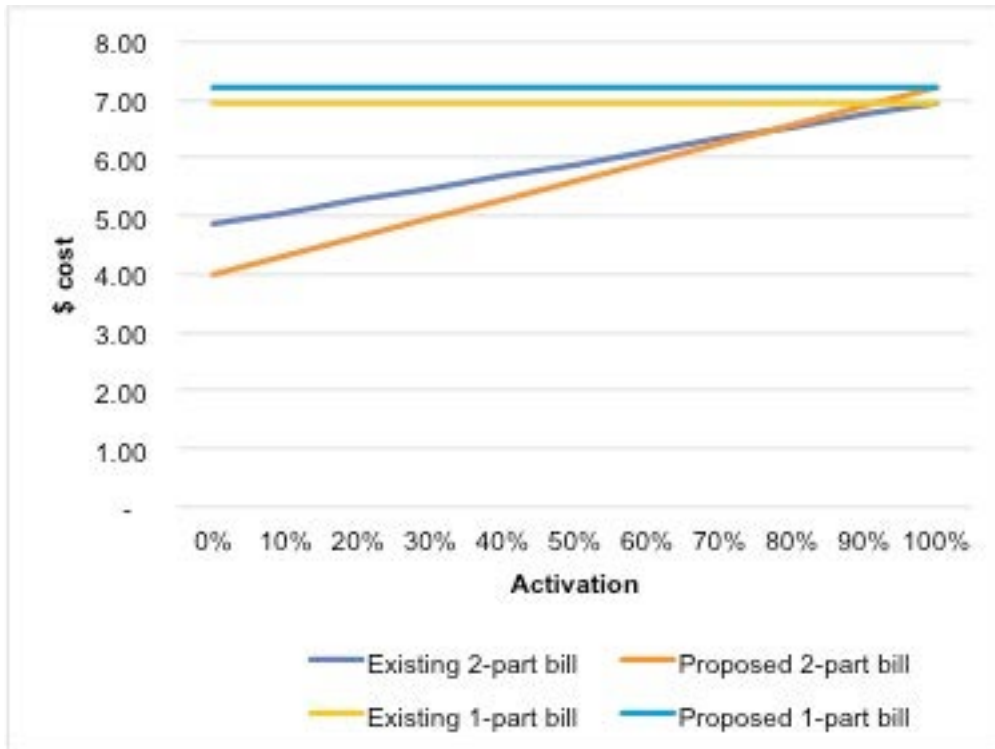
The bill impact is illustrated in Figure 8.3 below. The graph shows the current and proposed 2-part and 1-part charges per unit share component for inland groundwater, against the activation rate for the licence. The gap between the line for current price and the line for the proposed price at an activation rate of 52 per cent shows the unit reduction of \$0.26 (-4.6 per

<sup>2</sup> Murrumbidgee is not a pricing water source; it is an administrative subset within the Inland groundwater pricing water source.

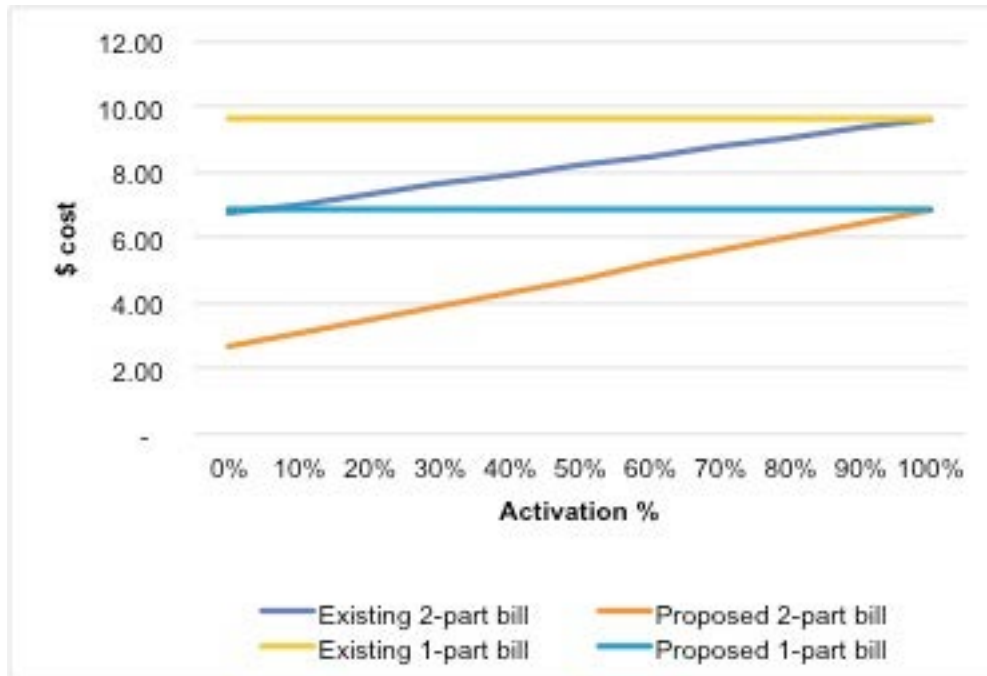
cent) in the bill for a typical licence at the average activation rate for inland groundwater. (See Table 8.33 in section 8.5.3 for details of the percentage bill change with activation rate).

The 1-part tariff is the sum of the unit 2-part entitlement price and the unit water take price. For inland groundwater, Far West and South Coast unregulated rivers this results in an increase in the proposed 1-part tariff.

**Figure 8.3: Inland groundwater bill per unit share component 2016/17**



For all other unregulated and groundwater pricing water sources, which are at full cost recovery on the proposed 2016/17 tariffs, there are reductions in the average bill for licences on either the 1-part or 2-part tariff. In the pricing water sources at full cost recovery, the fixed component of the average 2-part bill is also reduced. In Figure 8.4 below, the point at which the line for the proposed 2-part tariff intersects with the vertical axis (zero per cent activation) indicates the fixed component (entitlement charge) of the bill per unit share component.

**Figure 8.4: Murray river unregulated bill per unit share component 2016/17**

#### Implementation of fixed/variable ratio for regulated river licences

The 70:30 fixed/variable ratio for regulated rivers is applied to water management revenue needs after deducting the forecast revenue from minimum annual charges. The water management revenue also includes revenue from water take charge only licences (for example supplementary water licences).

For the next determination period, the water take forecast includes an estimated average annual water take for floodplain harvesting in four regulated pricing water sources. This was not included in the 2011 pricing.

Applying the 70:30 fixed/variable ratio to tariffs as previously, the calculated prices present a change in the relationship between the entitlement price and the water take price, with the fixed component of the bill increasing for entitlement charge licences. To bring the entitlement/water take price relationship back to the previous relationship under the 2011 determined tariffs, the fixed/variable ratio has been adjusted in the Border, Gwydir, Namoi and Macquarie pricing water sources to remove the impact of the inclusion of floodplain harvesting. A reduced fixed percentage based on the same principle has been applied in pricing for the inclusion of floodplain harvesting forecast water take for the unregulated Barwon Darling River (Far West). These reductions bring the proposed prices proportionately in line with the current entitlement/water take (fixed/variable) price relationship for entitlement charge licences.

#### 8.4.3 Minimum annual charge

DPI Water has significant water licence related operating costs associated with the ongoing activities of water regulation and the support required for licences. Water management (entitlement and water take) charges are billed on the quantity of share component (entitlement) and the volume of water take associated with each licence. For smaller licences, the water management charge based on entitlement and water take alone does not recover the licence specific costs. This means that, if there was no other charge component to recover the minimum fixed costs associated with each licence, these costs would be shared based only on entitlement and water take. For this reason, a minimum annual charge applies to billed licences where the sum of the entitlement charge and water take charge is less than the minimum annual charge. In

2013/14 a total of 15,392 licences were on the minimum annual charge (regulated rivers 7,197; unregulated rivers 4,284; and groundwater 3,911).

The minimum annual charge is currently set at \$105.34. DPI Water proposes that the minimum annual charge be increased to \$150 to more equitably recover the licence specific costs. The forecast minimum annual charge revenue is deducted from the user share of revenue needs, prior to the calculation of the proposed entitlement and water take tariffs for each pricing water source.

The licence specific operating costs to be recovered in the water management charge are on average \$235 per licence per annum. These costs relate to the following water management activities, which have cost drivers associated with the number of licences:

- Regulation systems management (W08-01) – involving the management, operation, development and maintenance of the register of licences. The issue of licences requires maintenance of a system to administer the water rights associated with each licence.
- Consents management and licence conversion (W08-02) – involving the transcribing of water sharing provisions into licence conditions and the maintenance of those conditions on licences in response to any changes made to water management plans.
- Compliance management (W08-03) – involving the preparation and dissemination of information on rights, responsibilities and consequences for non-compliance with the legislation, including licence and approval conditions. There are compliance management costs incurred regardless of whether a licence is active or not. The incidence of compliance complaints and breaches for a pricing water source correlates with the number of licences in that area.
- Customer management (W10-01) – involving responding to calls to licensing and compliance information lines, and producing communication and education materials.
- Billing management (W10-03) – involving the cost of billing, revenue collection, debtor management and responding to queries on billing activities. There is at least one bill for each water licence per annum.

DPI Water recognises there may be some portion of these specific activities that may vary between licences, depending on its activation rate or the water type associated with the licence. For example, regulated river bills are levied quarterly, while unregulated river and groundwater bills are levied annually. For this reason, DPI Water is proposing a minimum annual charge of \$150, which is less than the forecast total average of \$235 per licence cost of the activities listed above.

The current minimum annual charge makes up four per cent of revenue from 42 per cent of licences. The 42 per cent of licences on the minimum annual charge represent 1.2 per cent of share component for entitlement charge licences and 6 per cent of all share component. However, the user share of the cost of the licence related activities listed above represents 22 per cent of the user share of revenue needs. Increasing the minimum annual charge to \$150 is forecast to increase the number of minimum annual charges billed from 15,392 to 21,270 in 2016/17, representing 57 per cent of licences and seven per cent of the user share of revenue needs.

#### **8.4.4 Pricing scenarios for cost recovery**

DPI Water has contained its operating costs to the level allowed by IPART for 2013/14. However, the proposed inclusion of the full user share of the NSW contribution to MDBA, and DPI Water capital costs means that ten of the 21 pricing water sources are below full cost recovery at the current water management tariffs. These include eight regulated rivers (reduced to six when floodplain harvesting is implemented), one unregulated pricing water source, and the Murrumbidgee administrative area within inland groundwater pricing water source.

The implementation of floodplain harvesting licences, and the inclusion of water take associated with those licences, provides an additional demand volume to recover the user share of revenue needs in those pricing water sources. However, revenue recovery from floodplain water take cannot be included until those licences have been implemented. For this reason, DPI Water is proposing two water management price levels for those pricing water sources:

- Water management prices to apply prior to the implementation of floodplain harvesting licences for the full water year.
- Water management prices to apply from the water year starting on 1 July, following Ministerial approval of the issue of floodplain harvesting licences across a pricing water source.

The availability of new water take forecasts for all water types, and the implementation of the intended fixed/variable ratios for unregulated rivers and groundwater, means a change in the relative size of the unit entitlement and water take prices for many pricing water sources. This change has an impact on the annual bill for a licence, which will depend on the water take activation rate for that licence.

DPI Water proposes setting prices for 2016/17 at the level that would not increase the bill for a typical licence in each pricing water source. The typical licence is defined as an entitlement charge licence, with a median quantity of share component on a 2-part tariff (excluding licences on a minimum annual charge or where the licence share component has been increased), with the average water take activation rate of share component for the licence. There may be customers holding licences that normally have a water take activation rate that differs from the average, who will be subject to an increase in their annual bill. This is a result of the relative increase in the water take price. Conversely, there may be licences where the annual bill reduces because of a normally low water take activation rate.

The inclusion of the full user share of the NSW contribution to the MDBA, and the allocation of those costs to inland pricing water sources on the forecast volume of water take, results in a larger increase in revenue needs in those pricing water sources with a larger water take.

Price harmonisation, where tariffs for different pricing water sources would be made the same, was considered as part of the pricing scenario options. Provisional assessment of the impact of such harmonisation was undertaken for the Namoi and Peel water sources. As a result of this assessment, it was decided to retain the current pricing water sources. The result of the assessment of the harmonisation of the Namoi and Peel regulated river water sources follows.

### **An assessment of the harmonisation of prices for the Namoi and Peel**

The impact of harmonising water management prices for the Namoi and Peel regulated water sources was assessed. Calculation of tariffs for the separate water sources shows the Namoi is currently two per cent below full cost recovery, without inclusion of the floodplain harvesting licences. Peel is 37 per cent below full cost recovery, and its current prices are higher than those in the Namoi valley. Combining the Peel with the Namoi would result in a combined under recovery of more than eight per cent. To bring the combined pricing water source to full cost recovery with harmonised prices would require a 9.6 per cent increase in bills for the Namoi (without the inclusion of Namoi floodplain harvesting) and an increase of eight per cent for bills in the Peel.

Implementing floodplain harvesting licences in the Namoi increases the forecast volume of water take for recovery of the Namoi revenue needs. This means the Namoi on its own could move to full cost recovery with a price reduction of six per cent on current prices. Adding the Peel into a combined Namoi/Peel pricing water source would turn the price reduction for the Namoi into a price increase, in order to achieve full cost recovery for the combined pricing water source.



While a combined Namoi/Peel pricing water source would have common water management prices, the price paid per megalitre of water take for the Peel regulated water source is still likely to be higher than for the Namoi. This is because the average water take activation rate for licences in the Peel is much less than in the Namoi. While some of this difference is the result of a higher proportion of non-active licences in the Peel, the lower activation rate is also a consequence of the lower availability of water in the Peel. The proportionally lower Peel water take results in a proportionally higher increase in the water take price from application of the 70:30 fixed/variable ratio. As a result of these impacts, Namoi/Peel harmonisation is not included in the proposed prices.

### **Pricing scenarios**

As a result of the pricing considerations for cost recovery, three pricing scenarios were assessed.

**Constrained glide path to full cost recovery** – this scenario included:

- Assessment of increases in the value of the minimum annual charge.
- For pricing water sources that are below full cost recovery:
  - A common constrained percentage glide path (2.5 per cent per annum) to full cost recovery.
  - No increase in an average bill in the first year.
- For pricing water sources that would be above future full cost recovery on the current prices:
  - Price reductions implemented in 2016/17.

**Full cost recovery by 2019/20** – this scenario included:

- Assessment of increases in the value of the minimum annual charge.
- For pricing water sources that are below full cost recovery:
  - A glide path to full cost recovery by 2019/20.
  - No increase in an average bill in 2016/17.
- For pricing water sources that would be above future full cost recovery on the current prices:
  - Price reductions implemented in 2016/17.

**Full cost recovery from 2016/17** – this scenario involved full cost recovery for all pricing water sources from 2016/17.

In assessing these scenarios, the following conclusions were reached:

- Raising the minimum annual charge to \$150 provides a more appropriate recovery of licence specific revenue needs.
- Price changes resulting from the implementation of the 70:30 fixed/variable relationship, using the new measured water take forecasts, can result in bill increases for licences with a water take activation rate that differs from average, or for licences on a 1-part tariff. Setting prices in 2016/17 so there is no increase in the bill for an average licence on a 2-part tariff will provide an adjustment year for licence holders adversely affected by an increase resulting from implementation of the determined fixed/variable ratios.
- Passing on the full user share of the NSW contribution to MDBA has a significant impact on the Murrumbidgee, Murray and Gwydir regulated river prices. A constrained glide path to full cost recovery provides a period of adjustment for those pricing water sources. Water management prices will be subject to annual CPI adjustment, so the effective price increase will be CPI plus the real price increase.



- There is a noticeable change in prices as a result of introducing the forecast average water take for floodplain harvesting licences. Prices reduce because of the additional volume of measured water take over which revenue needs can be recovered.
- The additional floodplain harvesting measured water take forecast also has the potential to proportionally increase the entitlement charge on entitlement charge licences. Consequently an adjustment has been applied to the fixed/variable ratio for pricing water sources with floodplain harvesting licences. This has been implemented to retain a relationship similar to the current one between the entitlement price and the water take price. The adjustment reduces the proportion of fixed revenue in the tariff calculation.

### Proposed pricing approach

In summary, the following pricing approach is proposed:

- Adoption of a pricing strategy of a constrained glide path to full cost recovery (2.5 per cent subject to price rounding to nearest cent).
- Increasing the minimum annual charge to \$150 with effect from 2016/17.
- Water management tariffs for 2016/17 (excluding licences on a minimum annual charge or where the licence share component has increased) being set not to increase the bill for a typical licence – an entitlement charge licence with a median quantity of share component on a 2-part tariff with the average water take activation rate for the pricing water source.
- Where a pricing water source is below full cost recovery in 2016/17, prices will be increased in 2017/18 and beyond, at a rate of 2.5 per cent per annum real (2.5 per cent plus CPI) over the determination period or until full cost recovery is reached.
- Where a pricing water source is above future full cost recovery at current prices, prices will be reduced to the full cost recovery level with effect from 2016/17.
- For pricing water sources subject to the introduction of floodplain harvesting licences and their associated measured water take, two tariff levels are proposed: one that excludes and one that includes floodplain harvesting licences. The change from the exclusive tariff to the inclusive tariff is proposed to apply from the next 1 July following Ministerial approval to issue all floodplain harvesting licences for that pricing water source.

#### 8.4.5 Water management prices

The tables of proposed prices in this section are all based on a constrained, 2.5 per cent per annum real, glide path to full cost recovery.

For regulated rivers, all entitlement charge licences are on a 2-part tariff.

For unregulated and groundwater entitlement charge licences:

- A 2-part entitlement price applies to an entitlement charge licence that has water take for that licence measured in a way that qualifies the licence for a 2-part tariff.
- A 1-part entitlement price applies to an entitlement charge licence that does not have water take measured in a way that qualifies the licence for a 2-part tariff.

The 1-part entitlement price is the equivalent of a unit water management charge for a licence on a 2-part tariff with a 100 per cent water take activation rate.

The water take charge applies to the measured water take for both an entitlement charge licence on a 2-part tariff and a water take charge only licence.

The minimum annual charge applies to any licence, held for any part of the year, if the sum of the entitlement charge and water take charge for a water access licence is less than the value of the minimum annual charge.

The commencing and closing proposed water management prices are shown in Tables 8.18 to 8.20. The prices for each of the four years of the future determination are outlined in Appendix K. At the proposed prices, full cost recovery is not achieved by seven of 21 of the pricing water sources during the four years of the future determination period. Prices for the pricing water sources below full cost recovery are proposed to continue on the glide path to full cost recovery after the pricing determination period.

### Regulated rivers

Table 8.18 outlines the proposed regulated rivers water management prices. It shows the prices for the first and last year of the determination period, and, in the two columns on the right, the price required for full cost recovery for the pricing water source. For the pricing water sources expected to implement floodplain harvesting licences during the future determination, two price levels are shown.

**Table 8.18: Proposed water management prices for regulated river licences**

Pricing water source	2013/14 to 2015/16		2016/17		2019/20		Full cost recovery	
	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take
01. Border	\$2.32	\$1.79	\$2.32	\$1.79	\$2.38	\$1.86	\$2.38	\$1.86
01. Border with FPH*	\$2.32	\$1.79	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71
02. Gwydir	\$1.37	\$1.26	\$1.39	\$1.20	\$1.50	\$1.29	\$1.78	\$1.53
02. Gwydir with FPH*	\$1.37	\$1.26	\$1.39	\$1.20	\$1.50	\$1.29	\$1.57	\$1.35
03. Namoi	\$2.75	\$1.88	\$2.77	\$1.85	\$2.83	\$1.89	\$2.83	\$1.89
03. Namoi with FPH*	\$2.75	\$1.88	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74
04. Peel	\$2.33	\$3.71	\$2.26	\$4.01	\$2.43	\$4.33	\$3.64	\$6.56
05. Lachlan	\$1.86	\$2.14	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10
06. Macquarie	\$1.98	\$1.90	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88
06. Macquarie with FPH*	\$1.98	\$1.90	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82
07. Far West	—	—	—	—	—	—	—	—
08. Murray	\$1.50	\$0.97	\$1.46	\$1.05	\$1.58	\$1.12	\$1.62	\$1.15
09. Murrumbidgee	\$1.23	\$0.79	\$1.22	\$0.81	\$1.32	\$0.87	\$1.50	\$0.99
10. North Coast	\$5.58	\$5.54	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64
11. Hunter	\$2.73	\$1.75	\$2.69	\$1.84	\$2.90	\$1.98	\$3.62	\$2.51
12. South Coast	\$5.00	\$5.61	\$4.57	\$7.27	\$4.92	\$7.83	\$5.34	\$8.54
Minimum annual charge	\$105.34		\$150.00		\$150.00			

\* FPH = floodplain harvesting

### Unregulated rivers

All unregulated river pricing water sources reach full cost recovery during the determination period. Therefore the 2019/20 column in Table 8.19 shows the full cost recovery price for all pricing water sources. Two price levels are shown for Far West – before and after the implementation of floodplain harvesting licences.

**Table 8.19: Proposed water management prices for unregulated river licences**

Pricing water source	2013/14 to 2015/16			2016/17			2019/20		
	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement
04A. North West	\$3.73	\$1.60	\$5.34	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77
06A. Central West	\$5.87	\$2.52	\$8.39	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54
07. Far West	\$4.67	\$2.00	\$6.67	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77
07. Far West with FPH*	\$4.67	\$2.00	\$6.67	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40
08. Murray	\$6.77	\$2.91	\$9.67	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88
09. Murrumbidgee	\$8.30	\$3.55	\$11.85	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03
10. North Coast	\$7.00	\$3.00	\$10.01	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82
11. Hunter	\$2.30	\$2.17	\$4.48	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39
12. South Coast	\$2.26	\$1.48	\$3.74	\$2.10	\$1.80	\$3.90	\$2.27	\$1.89	\$4.16
Minimum annual charge		\$105.34			\$150.00			\$150.00	

\* FPH = floodplain harvesting

## Groundwater

Both inland and coastal groundwater pricing water sources are at full cost recovery, with the exception of the Murrumbidgee region, which is on a glide path to the inland groundwater price. This is shown in Table 8.20.

**Table 8.20: Proposed water management prices for groundwater licences**

Pricing water source	2013/14 to 2015/16			2016/17			2019/20		
	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement	2-part entitlement	Water take	1-part entitlement
09. Murrumbidgee	\$2.47	\$1.07	\$3.53	\$2.13	\$1.72	\$3.85	\$2.29	\$1.85	\$4.14
13. Inland	\$4.86	\$2.09	\$6.95	\$3.99	\$3.23	\$7.22	\$3.99	\$3.21	\$7.20
14. Coastal	\$4.07	\$1.85	\$5.92	\$2.01	\$3.75	\$5.76	\$2.01	\$3.74	\$5.75
Minimum annual charge		\$105.34			\$150.00			\$150.00	

## 8.5 Impacts of proposed prices

### 8.5.1 Implications for customers

There are six different types of impact on customers as a result of the proposed prices. One or more of the following could affect a customer's bill:

- For a licence on a 2-part tariff, the bill impact depends on the relative water take activation rate compared to the average activation rate in the pricing water source.
- Water take charge only licences have price increases in 2016/17, where implementation of the fixed/variable ratios results in a relative increase in the water take price (which would otherwise be offset by a reduction in the entitlement price for a licence on a 2-part tariff in 2016/17).

- A bill increase commencing in 2016/17 for unregulated and groundwater licences on a 1-part tariff in a pricing water source that is below or just at full cost recovery with current prices. This is because the unit 1-part entitlement price is the sum of the unit 2-part entitlement and unit water take prices.
- Price reductions in pricing water sources that are above future full cost recovery at current prices.
- Future annual real price increases starting in 2017/18 for pricing water sources that are below full cost recovery.
- A price increase from 2016/17 for all licences on the minimum annual charge.

The proposed prices apply uniformly to the category of a water licence, regardless of the type of customer or entity holding a licence. The prices apply to government and private sector licence holders alike.

The per unit prices are the same for each pricing water source (with one exception) regardless of the size of licence or the volume of measured water take. The one pricing exception is Murrumbidgee groundwater, where a price and glide path to full cost recovery is defined for licences within the Murrumbidgee administrative region.

It is proposed to increase the minimum annual charge uniformly across all water sources. The minimum annual charge replaces the entitlement and water take charges when the sum of those charges for a licence is less than the minimum annual charge, or where the licence is a minimum charge category licence.

Prices for 2016/17 are set to deliver no increase in the bill for a typical licence (other than small increases that result from rounding of calculated prices to the nearest cent) for pricing water sources below full cost recovery. The bill impact for a licence depends on the water take activation rate for the share component on a licence. Consequently there can be bill increases for licences that usually have an activation rate different to the average. For an entitlement charge licence on a 2-part tariff the relative change in the bill is proportionally the same for the same activation rate regardless of the size of the licence.

DPI Water will make available an on-line bill estimator that allows an individual licence holder to insert their details and obtain an estimate of their new bill. The implications for customers are summarised below for each water type. More detail is given in Appendix L.

### **Regulated rivers**

The proposed prices are calculated in the same way as the existing prices, but there are changes as a result of using the latest water take forecasts (based on the most recent 20-year average).

The pricing impacts for licences not on a minimum annual charge are:

- No increase (other than as a result of price rounding) in the 2016/17 bill, for entitlement charge licences with the median share and an average water take activation rate.
- A change in the bill for a licence if the water take activation rate is above or below the average for a pricing water source (see Table 8.27 for details of the percentage change in the bill depending on the activation rate).
- Price increases in four pricing water sources in 2016/17 for water take only charge licences, where the water take price is relatively higher than the current price (see Table 8.29).
- Future real price increases from 2017/18 onwards, at a glide path rate of 2.5 per cent real for pricing water sources that are not at full cost recovery (see Table 8.21).
- Price reductions for pricing water sources that would be above future full cost recovery at current prices. This applies to customers in the Macquarie (-9 per cent), Lachlan (-12 per

cent) and North Coast (-18 per cent) pricing water sources, who will receive reductions in bills in real terms.

The forecast level of cost recovery for regulated pricing water sources is shown in Table 8.21.

**Table 8.21: Regulated rivers pricing water sources cost recovery level**

Pricing water sources	Cost recovery	
	2016/17	2019/20
01. Border	97%	100%
01. Border with FPH	100%	100%
02. Gwydir	79%	85%
02. Gwydir with FPH	89%	96%
03. Namoi	98%	100%
03. Namoi with FPH	100%	100%
04. Peel	63%	68%
05. Lachlan	100%	100%
06. Macquarie	100%	100%
06. Macquarie with FPH	100%	100%
07. Far West	—	—
08. Murray	91%	97%
09. Murrumbidgee	82%	88%
10. North Coast	100%	100%
11. Hunter	77%	82%
12. South Coast	87%	93%

More details on the regulated river bill impacts are provided in Section 8.5.2.

### Unregulated rivers

There are significant relative fixed/variable (entitlement/water take) price changes for customers holding unregulated river licences on a 2-part tariff. This is a direct result of implementing the current determined fixed/variable ratios based on the forecast measured water take for unregulated pricing water sources. A benefit of the relative change is the entitlement charge (fixed component of the water management charge) reduces so that a bill for a licence on a 2-part tariff is lower when water is not taken.

The pricing impacts for licences not on a minimum annual charge are:

- For entitlement charge licences, seven of the eight unregulated river pricing water sources have price reductions for all licences on a 2-part tariff. These licences will have a decrease in their bill, unless they have a very high measured water take activation rate.
- For 2-part tariff entitlement charge licence customers in the South Coast with the median share and an average water take activation rate, bills do not change in 2016/17. However, the bills for South Coast increase from 2017/18, with a cumulative increase of 7 per cent real over the determination period.
- For 1-part tariff entitlement charge licence customers, bills decrease in the first year (2016/17) and remain lower than current bills in subsequent years (by 2 to 34 per cent) in all

except two pricing water sources. The South Coast experiences an increase in bills over the period of 11 per cent real. The Far West also experiences a bill increase of 2 per cent real.

- For water take charge only licences in three of the pricing water sources (North West, Central West and Far West), bills will potentially increase in 2016/17 for licences that are not on the minimum annual charge.

The unregulated pricing water sources cost recovery levels are shown in Table 8.22.

**Table 8.22: Unregulated rivers pricing water sources cost recovery level in 2016/17**

Pricing water source	Cost recovery	
	2016/17	2019/20
04A. North West	100%	100%
06A. Central West	100%	100%
07. Far West	100%	100%
07. Far West with FPH	100%	100%
08. Murray	100%	100%
09. Murrumbidgee	100%	100%
10. North Coast	100%	100%
11. Hunter	100%	100%
12. South Coast	93%	100%

More details on the unregulated river bill impacts are provided in Section 8.5.2.

### Groundwater

There are significant relative fixed/variable (entitlement/water take) price changes for customers holding groundwater licences. A benefit of the relative change is that the entitlement charge (fixed component of the water management charge) reduces so that a bill for a licence on a 2-part tariff is lower when no water is taken.

The pricing impacts for licences not on a minimum annual charge are:

- The coastal groundwater pricing water source has a price reduction, which means all licences will have a decrease in their bill unless the licence on a 2-part tariff has a very high water take activation rate.
- Licences in the inland groundwater pricing water source with a much higher than average water take activation rate will experience bill increases.
- Licences on a 1-part tariff in the inland groundwater pricing water sources will be subject to a bill increase of 4 per cent.

The Murrumbidgee region within the inland groundwater pricing water source is well below full cost recovery and will continue on a glide path with a 2.5 per cent increase from 2017/18 onwards. The groundwater level of cost recovery is shown in Table 8.23.

**Table 8.23: Groundwater pricing water sources cost recovery level in in 2016/17**

Pricing area/water source	Cost recovery	
	2016/17	2019/20
09.Murrumbidgee	51%	57%
13.Inland	100%	100%
14.Coastal	100%	100%

More details on the groundwater bill impacts are provided in Section 8.5.2.

### Farm business impacts of proposed prices

In its consideration of the implications for customers, DPI Water has assessed the impact of water management price increases on farm business total variable costs (see Table 8.24). The crops considered were lucerne, cotton, rice, maize and cherries. The assessment showed that the water management charge currently represents up to seven per cent of farm business total variable costs for groundwater, nine per cent for unregulated rivers, and six per cent for regulated rivers, with the exception of the Peel where the cost was up to nine per cent of total variable costs.

In most water sources, DPI Water regulated water charges comprise less than five per cent of farm business total variable costs. It follows that price increases over the determination period of up to 10 per cent as proposed would for most irrigation customers increase farm business total variable costs by a maximum of 0.5 per cent by the end of the determination period.

**Table 8.24: Typical DPI Water bill as a percentage of farm business total variable costs**

	Lucerne	Cotton	Rice	Maize	Cherry	Lucerne north
<b>Regulated rivers</b>						
01. Border	5	2		6	0.07	3
02. Gwydir	3	1		3	0.04	2
03. Namoi	4	2		5	0.06	3
04. Peel	8	3		9	0.11	5
05. Lachlan	5	2		5	0.07	
06. Macquarie	4	2		5	0.06	
08. Murray	2	1	4	2	0.03	
09. Murrumbidgee	2	1	3	2	0.02	
<b>Unregulated rivers</b>						
04A. Barwon Region		3				4
06A. Central West Region		3				4
07. Far West	5	2		6	0.07	3
08. Murray		6			0.24	
09. Murrumbidgee		9			0.32	



	Lucerne	Cotton	Rice	Maize	Cherry	Lucerne north
<b>Groundwater</b>						
13. Inland (excluding Murrumbidgee)	7	3		7	0.10	
Murrumbidgee	3	1		4	0.05	

In the unregulated systems, overall water use is generally less and surface water is often used in combination with groundwater. In addition, water used per hectare is often considerably less than on a fully irrigated farm. As a result the information in Table 8.24 may overestimate the proportion of the typical DPI Water bill as a proportion of farm business total variable costs in unregulated water sources.

In the Border Rivers, Namoi and Peel unregulated water sources the major crop grown is cotton, and the DPI Water bill comprises two to three per cent of farm business total variable costs. Over the period of the determination the DPI Water charges reduce or remain constant for all unregulated systems apart from the South Coast. As a result, farm business total variable costs will be reduced or remain unchanged for most unregulated water source customers on both 1-part and 2-part tariffs.

Table 8.25 shows, for regulated rivers, the relative full cost recovery (FCR) price per megalitre of water take for an entitlement charge licence, compared to the weighted average price per megalitre for NSW. The figures in this table are based on the estimated average water take for each pricing water source (see Table 8.13). This table demonstrates that even with full cost recovery prices, with the exception of the North Coast region and to some extent the South Coast and Peel, water charges comprise a very small proportion of the cost or value of water.

**Table 8.25: Relative price of water per megalitre for regulated rivers pricing water sources at full cost recovery**

Pricing water source	Relative total price/ML compared to NSW average at FCR
01. Border	1.7
02. Gwydir	1.2
03. Namoi	1.5
04. Peel	4.6
05. Lachlan	1.5
06. Macquarie	1.3
07. Far West	0.0
08. Murray	0.9
09. Murrumbidgee	0.7
10. North Coast	17.4
11. Hunter	2.1
12. South Coast	6.0
<b>Weighted average per ML</b>	<b>1.0</b>

### 8.5.2 Impacts on bills

Water management prices have a proportional impact on bills, depending on the quantity of share component for an entitlement charge licence, and the volume of water take associated with the licence. Consequently, the impact on bills resulting from the entitlement charge and water take charge is all presented in percentage terms. The minimum annual charge has a specific dollar impact on bills for licences on the minimum annual charge.

The minimum annual charge is proposed to rise by \$44.66, an increase of 42 per cent. This full increase will apply to all licences currently on the existing minimum annual charge.

The higher price will also increase the total number of licences on the minimum annual charge. At the proposed prices, the number of licences on the minimum annual charge is forecast to increase by 38 per cent in 2016/17, from 15,392 to an estimated 21,270 licences (see Appendix L). The additional 5,800 licences subject to the minimum annual charge will incur an increase equal to the difference between their current bill and the proposed minimum annual charge. The percentage change in the number of licences, by pricing water source, is shown in Table 8.26.

**Table 8.26: Change in percentage of licences on minimum annual charge from forecast 2015/16 to 2016/17**

Pricing water source	Regulated		Unregulated		Groundwater	
	% licences	% change	% licences	% change	% licences	% change
01. Border	60%	21%			–	–
02. Gwydir	65%	2%			–	–
03. Namoi	55%	14%			–	–
04. Peel	27%	35%			–	–
04A. North West			52%	159%		
05. Lachlan	60%	10%			–	–
06. Macquarie	77%	10%			–	–
06A. Central West			55%	256%		
07. Far West	0%	0%	29%	142%	–	–
08. Murray	73%	7%	52%	240%	–	–
09. Murrumbidgee	65%	1%	48%	299%	–	–
10. North Coast	24%	13%	50%	77%	–	–
11. Hunter	60%	10%	61%	126%	–	–
12. South Coast	52%	12%	70%	43%	–	–
13. Inland	–	–	–	–	39%	14%
14. Coastal	–	–	–	–	63%	32%
<b>Total</b>	<b>66%</b>	<b>9%</b>	<b>57%</b>	<b>101%</b>	<b>48%</b>	<b>25%</b>

The large increase in the number of unregulated river licences on the minimum annual charge is partly because domestic and stock category licences will be billed from 2016/17 onwards. No allowance has been made in this forecast for the surrender of domestic and stock licences by holders of a domestic and stock right.

### 8.5.3 Bill impacts from changes in the entitlement price and water take price

The bill impacts described in this section are all based on a constrained, 2.5 per cent per annum real, glide path to full cost recovery.

#### Regulated rivers

##### Entitlement charge licences

Bill impacts are driven by the water take activation rate for an entitlement charge licence. Table 8.27 shows the percentage change in the bill for each pricing water source, depending on the water take activation rate for the licence. The six activation rates shown in the table are chosen as representative of typical activation rates for regulated rivers. The first column shows the charge for an entitlement charge licence on the average water take activation rate in that pricing water source. The average water take activation rates are shown in Table 8.13 in section 8.2.5.

**Table 8.27: 2016/17 bill impact for regulated rivers entitlement charge licences at different water take activation rates – percentage change in 2-part bill 2016/17**

Pricing water source	Average for water source	Water take % activation rate					
		0%	25%	35%	50%	60%	100%
01. Border	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%
01. Border with FPH	-5.4%	-5.6%	-5.4%	-5.4%	-5.3%	-5.2%	-5.1%
02. Gwydir	-0.1%	1.5%	0.3%	-0.1%	-0.5%	-0.8%	-1.5%
02. Gwydir with FPH	-0.1%	1.5%	0.3%	-0.1%	-0.5%	-0.8%	-1.5%
03. Namoi	0.1%	0.7%	0.4%	0.3%	0.1%	0.1%	-0.2%
03. Namoi with FPH	-6.0%	-5.5%	-5.7%	-5.8%	-6.0%	-6.0%	-6.3%
04. Peel	0.0%	-3.0%	0.2%	1.0%	1.9%	2.4%	3.8%
05. Lachlan	-12.0%	-15.6%	-12.5%	-11.7%	-10.6%	-10.0%	-8.3%
06. Macquarie	-9.2%	-12.1%	-10.0%	-9.3%	-8.5%	-8.1%	-6.7%
06. Macquarie with FPH	-11.9%	-14.6%	-12.6%	-12.0%	-11.3%	-10.8%	-9.5%
07. Far West	–	–	–	–	–	–	–
08. Murray	0.1%	-2.7%	-1.1%	-0.7%	0.0%	0.4%	1.6%
09. Murrumbidgee	0.1%	-0.8%	-0.4%	-0.2%	0.0%	0.1%	0.5%
10. North Coast	-17.6%	-19.7%	-11.8%	-9.5%	-6.6%	-4.9%	0.0%
11. Hunter	0.1%	-1.5%	-0.6%	-0.3%	0.1%	0.4%	1.1%
12. South Coast	0.0%	-8.6%	-0.2%	2.2%	5.1%	6.8%	11.6%

The cumulative change in the bill over the future determination period (to 2019/20) is shown on the same basis in Table 8.28.

**Table 8.28: Cumulative bill impact for regulated river entitlement charge licences – percentage change in 2-part bill 2019/20**

Regulated River		Water take % activation rate					
Pricing water source	Average for water source	0%	25%	35%	50%	60%	100%
01. Border	3%	3%	3%	3%	3%	3%	3%
01. Border with FPH	-5%	-6%	-5%	-5%	-5%	-5%	-5%
02. Gwydir	8%	9%	8%	8%	7%	7%	6%
02. Gwydir with FPH	8%	9%	8%	8%	7%	7%	6%
03. Namoi	2%	3%	3%	2%	2%	2%	2%
03. Namoi with FPH	-6%	-5%	-6%	-6%	-6%	-6%	-6%
04. Peel	8%	4%	8%	9%	10%	10%	12%
05. Lachlan	-12%	-16%	-13%	-12%	-11%	-10%	-8%
06. Macquarie	-9%	-12%	-10%	-9%	-9%	-8%	-7%
06. Macquarie with FPH	-12%	-15%	-13%	-12%	-11%	-11%	-10%
07. Far West	–	–	–	–	–	–	–
08. Murray	8%	5.3%	6.7%	7.2%	7.8%	8.2%	9.3%
09. Murrumbidgee	8%	7.3%	7.7%	7.8%	8.0%	8.1%	8.4%
10. North Coast	-18%	-20%	-12%	-10%	-7%	-5%	0%
11. Hunter	8%	6%	7%	7%	8%	8%	9%
12. South Coast	8%	-2%	7%	10%	13%	15%	20%

### Water take charge only licences

The bill impact for water take charge only licences not on the minimum annual charge, is the proportional increase in the water take price compared to the current price. Table 8.29 shows, for the same volume of water take, the percentage change in the bill from 2015/16 to 2016/17 and the cumulative percentage change in 2019/20. The table also shows the number of water take charge only licences (excluding FPH) in each pricing water source. Many of the water take charge only licences are frequently on the minimum annual charge.

**Table 8.29: Cumulative bill impact for regulated river water take charge only licence**

Pricing water source	2016/17	2019/20	Full cost recovery	Number of licences affected
01. Border	0.0%	3.9%	3.9%	124
01. Border with FPH	-4.5%	-4.5%	-4.5%	Unknown*
02. Gwydir	-4.8%	2.4%	21.4%	169
02. Gwydir with FPH	-4.8%	2.4%	7.1%	Unknown*
03. Namoi	-1.6%	0.5%	0.5%	214
03. Namoi with FPH	-7.4%	-7.4%	-7.4%	Unknown*
04. Peel	No water take charge only licences			
05. Lachlan	-1.9%	-1.9%	-1.9%	1
06. Macquarie	-1.1%	-1.1%	-1.1%	509
06. Macquarie with FPH	-4.2%	-4.2%	-4.2%	Unknown*
07. Far West	–	–	–	–
08. Murray	8.2%	15.5%	18.6%	202
09. Murrumbidgee	2.5%	10.1%	25.3%	232
10. North Coast	No water take charge only licences			
11. Hunter	5.1%	13.1%	43.4%	268
12. South Coast	29.6%	39.6%	52.2%	18

\* Unknown until the number of floodplain harvest licences is finalised.

## Unregulated rivers

### Entitlement charge licences

Unregulated river entitlement charge licences can be on a 1-part or 2-part tariff. The entitlement price for a 1-part tariff is set to be the equivalent of a licence on a 2-part tariff with a water take activation rate of 100 per cent. This means that the unit 1-part price is the same as the sum of the unit 2-part entitlement price plus the unit water take price.

The bill impacts for a licence on a 2-part tariff are driven by water take activation. Table 8.30 shows the percentage change in the bill for each pricing water source depending on the water take activation rate for a licence. The six activation rates shown in the table are chosen as representative of typical activation rates for unregulated rivers. The first column shows the percentage change in the bill for an entitlement charge licence on the average water take activation rate in that pricing water source.

Seven of the eight pricing water sources have price reductions for entitlement charge licences on a 2-part tariff, except where a licence has a very high water take activation rate.

The bill for a licence on a 1-part tariff increases in the South Coast and Far West, because there is a resulting price increase for an equivalent 2-part tariff licence at a 100 per cent activation rate.

**Table 8.30: 2016/17 bill impact for unregulated river entitlement charge licences at different water take activation rates – percentage change in 2-part bill 2016/17**

Unregulated river		Water take % activation rate for licence on a 2-part tariff						
Pricing water source	Average for water source	0%	25%	40%	50%	70%	100%	1-part tariff
04A. North West	-25%	-38%	-29%	-25%	-22%	-17%	-11%	-11%
06A. Central West	-45%	-55%	-48%	-45%	-42%	-39%	-34%	-34%
07. Far West*	-1%*	-10%	-6%	-4%	-3%	-1%	1%	1%
07. Far West with FPH*	-5%*	-10%	-8%	-7%	-6%	-5%	-4%	-4%
08. Murray	-51%	-61%	-51%	-45%	-42%	-36%	-29%	-29%
09. Murrumbidgee	-49%	-61%	-49%	-43%	-39%	-32%	-24%	-24%
10. North Coast	-17%	-32%	-22%	-17%	-14%	-9%	-2%	-2%
11. Hunter	-36%	-44%	-36%	-33%	-31%	-28%	-24%	-24%
12. South Coast	0.0%	-7.1%	-3.0%	-1.1%	0.0%	1.9%	4.3%	4%

\* Excludes increase in share component on a licence.

The only unregulated river pricing water source with a price increase during the future determination is South Coast. The cumulative change in the bill over the future determination period (to 2019/20) is shown on the same basis in Table 8.31.

**Table 8.31: Cumulative 2019/20 bill impact for unregulated river entitlement charge licences – percentage change in 2-part bill 2016/17**

Unregulated river		Water take % activation rate for licence on a 2-part tariff						
Pricing water source	Average for water source	0%	25%	40%	50%	70%	100%	1-part tariff
04A. North West	-25%	-38%	-29%	-25%	-22%	-17%	-11%	-11%
06A. Central West	-45%	-55%	-48%	-45%	-42%	-39%	-34%	-34%
07. Far West*	-1%*	-10%	-6%	-4%	-3%	-1%	1%	1%
07. Far West with FPH*	-5%*	-10%	-8%	-7%	-6%	-5%	-4%	-4%
08. Murray	-51%	-61%	-51%	-45%	-42%	-36%	-29%	-29%
09. Murrumbidgee	-49%	-61%	-49%	-43%	-39%	-32%	-24%	-24%
10. North Coast	-17%	-32%	-22%	-17%	-14%	-9%	-2%	-2%
11. Hunter	-36%	-44%	-36%	-33%	-31%	-28%	-24%	-24%
12. South Coast	7%	0%	4%	6%	7%	9%	11%	11%

\* Excludes increase in share component on a licence.

### Water take charge only licences

There are currently only 19 unregulated river water take charge only licences. This number will increase when floodplain harvesting licences are issued for the Far West. Most of the existing licences are on a minimum annual charge. The price increase for a water take charge only licence not on minimum annual charge is shown in Table 8.32.

**Table 8.32: Cumulative bill impact for regulated river water take charge only licence**

Pricing water source	2016/17	2019/20	Number of licences affected
04A. North West	44%	44%	1
06A. Central West	13%	13%	14
07. Far West	30%	37%	4
07. Far West with FPH	15%	15%	Unknown*

\* Unknown until the number of floodplain harvest licences is finalised.

## Groundwater

### Entitlement charge licences

Groundwater entitlement charge licences can be on a 1-part or 2-part tariff. The entitlement price for a 1-part tariff is set to be the equivalent of a licence on a 2-part tariff with a water take activation rate of 100 per cent. This means that the unit 1-part price is the same as the sum of the unit 2-part entitlement price plus the unit water take price.

The bill impacts for a licence on a 2-part tariff are driven by the water take activation rate. Table 8.33 shows the percentage change in the bill for each pricing water source depending on the water take activation rate of a licence. The six activation rates shown in the table are chosen as representative of typical activation rates for groundwater. The first column shows the percentage change in the bill for an entitlement charge licence on the average water take activation rate in that pricing water source.

The coastal pricing water source has a price reduction for entitlement charge licences on a 2-part tariff, except where a licence has a very high water take activation rate. The bill impact for a licence in the inland groundwater area can be an increase or a decrease, depending on the water take activation rate. Licences in the Murrumbidgee region will have annual price increases, as these licences are on a glide path to full cost recovery, that is until they reach the same price as groundwater inland.

The bill for a licence on a 1-part tariff increases by four per cent in the inland groundwater pricing water source to be the equivalent of a 2-part tariff licence at a 100 per cent activation rate on the proposed prices.

**Table 8.33: 2016/17 bill impact for groundwater entitlement charge licences – percentage change in 2-part bill 2016/17**

Pricing water source	Average for water source	Water take % activation rate for licence on a 2-part tariff						1-part tariff
		0%	25%	40%	50%	70%	100%	
09. Murrumbidgee	0.0%	-14%	-6%	-3%	0%	4%	9%	9%
13. Inland	-4.6%	-18%	-11%	-7%	-5%	-1%	4%	4%
14. Coastal	-36%	-51%	-35%	-27%	-22%	-14%	-3%	-3%

The only groundwater pricing area with a price increase during the future determination period is the Murrumbidgee region. The cumulative change in the bill over the future determination period (to 2019/20) is shown on the same basis in Table 8.34.



**Table 8.34: Cumulative 2019/20 bill impact for groundwater entitlement charge licences – percentage change in 2-part bill 2016/17**

Groundwater		Water take % activation rate for licence on a 2-part tariff						
Pricing water source	Average for water source	0%	25%	40%	50%	70%	100%	1-part tariff
09. Murrumbidgee	8%	-7%	1%	5%	7%	11%	17%	17%
13. Inland	-5%	-18%	-11%	-7%	-5%	-1%	4%	4%
14. Coastal	-36%	-51%	-35%	-27%	-22%	-14%	-3%	-3%

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## 9 Water consent transactions

This chapter of the submission explains the revenue needs and proposed prices for water consent transactions.

### 9.1 Introduction

Water consent transactions are fee for service activities that manage the issue, trade and amendment of water access licences, water allocations and water approvals.

Under the *Water Management Act 2000* water access licences are tradable assets that include a right to a share of the available water in a specified water source. Most can be transferred, subdivided, mortgaged and bequeathed, and in many areas have achieved a very high market value. Some particular kinds of licence, such as specific purpose water access licences, are permanently linked to a particular use at a particular location (for example local water utility licences). Available water determinations are made at least annually for each category of licence in a water source. The water allocation account for each licence is credited an amount of water in accordance with the relevant available water determination. These water allocations are also tradable.

Water approvals are required for the construction and use of water supply works such as pumps, dams and bores; and for the application of water to land. These approvals typically apply for 10 years after which they can be extended on application. The approvals are attached to land, and are held by the owner or lawful occupier of that land. The holder changes with changes to land occupation. New approvals can be obtained and existing approvals can be amended in various ways.

Many of the transactions on water access licences, water allocations and water approvals are subject to consent from the NSW Minister responsible for water. This aims to ensure the integrity of the water access licences as assets is protected, as well as to minimise third party and environmental impacts associated with the take and use of water at a particular location. The unrestricted movement of water access licences, for example, is highly likely to result in localised impacts on other water users or valued environmental assets.

In accordance with statutory requirements, delegated DPI Water officers consider applications for transactions and either refuse consent or grant consent with conditions. This section outlines the proposed fees for recovery of the costs of processing these applications.

### 9.2 Demand forecasts – water consents transactions

DPI Water previously included a forecast of average annual numbers for the different kinds of transactions under the *Water Management Act 2000*. This submission includes updated forecasts that show a likely range of transaction numbers in addition to annual averages. Forecast transactions under the *Water Act 1912* are not included as the numbers are very low and decreasing as they are phased out. Also, transactions under the *Water Act 1912* do not have their price determined by IPART.

The numbers of applications for transactions fluctuates annually due to a number of factors. Climate influences the numbers for several types of transactions; for example applications for approvals for bores go up substantially in dry years. Some kinds of transactions that had high numbers in the early years (for example zero share licences) appear to now happen less

frequently as time has progressed. Additionally the transition of areas from the *Water Act 1912* to the *Water Management Act 2000* has not occurred as expected, and the number of transactions in those areas that have transitioned is less than anticipated.

In DPI Water's submission for the current determination it stated its intention to repeal the *Water Act 1912* and to administer all licences, approvals and trades during the 2010-14 determination period under the *Water Management Act 2000*. This was to be achieved by using transitional water access licences that would be then converted to full water access licences over time. However the NSW Government decided to delay the repeal of the *Water Act 1912* until there was more certainty about the implementation of the Basin Plan.

This decision was made in response to concerns from key stakeholders, including the NSW Irrigators Council, about the security of transitional water access licences in relation to the *Water Act 2007 (Commonwealth)*. Stakeholders were concerned that *Water Act 1912* licences converted to transitional water access licences under the *Water Management Act 2000* may be able to be cancelled by the Commonwealth without compensation when the Basin Plan was implemented.

DPI Water was however able to successfully repeal stock and domestic bore provisions in the *Water Act 1912* on 28 February 2011. This enabled all basic landholder rights (BLR) bores in NSW to be managed under the *Water Management Act 2000*. Previously, authorisations to construct bores to take water for stock and domestic purposes were managed under both Acts, depending on whether a water sharing plan was in effect for the relevant water source. The repeal of the *Water Act 1912* BLR provisions has enabled consistent service delivery to BLR bore applicants and holders, internal efficiencies in managing BLR related transactions under the one Act instead of two, and more sustainable cost-recovery for BLR services (BLR transactions under the *Water Act 1912* did not incur a fee).

Repeal of the *Water Act 1912* will occur once water sharing plans (WSPs) have commenced for all water sources in NSW and all licences have been converted to full water access licences using the normal process. This is expected to occur in 2016 and will result in all transactions being managed under the *Water Management Act 2000* when the next pricing determination takes effect in that same year.

Updated forecasts presented here are based largely on transaction numbers over the last five years, which have covered a range of conditions from wet to dry, and are after the post-transition settling down period for the larger water sources. Some adjustment is made for the remaining areas to be transitioned, but at a much lower rate than was assumed in 2009, based on recent experience.

Water access licence transactions cover the issue of new licences as well as dealings in existing licences, including what is commonly referred to as permanent trade. As can be seen in Table 9.1, the issue of new licences in particular has been much lower than was anticipated. This is mainly because in areas that have been transitioned, the numbers of new specific purpose licences for domestic purposes under the *Water Management Act 2000* have been much less than the issue of similar licences under the *Water Act 1912*. Also the issue of general licences for commercial purposes, through a controlled allocation process by tender, has resulted in a fraction of the number of such licences issued under the *Water Act 1912*, which were issued simply by application. Unregulated river dealings have not occurred at the rate expected, but this is likely to increase gradually over time as trading becomes more established in these areas.

Water allocation assignment is the assignment of water in one licence's water allocation account to another licence's water allocation account (commonly referred to as temporary trade). DPI Water administers water allocation assignments for unregulated rivers and coastal groundwater sources, while Water NSW administers them for regulated rivers and major inland systems on

behalf of DPI Water. The bulk of water allocation assignments for groundwater are in the large alluvial groundwater systems in the Murray Darling Basin and have been transitioned to the *Water Management Act 2000*. As shown in Table 9.1 numbers are volatile, and are strongly affected by climate and the availability of surface water. The forecast is based on numbers over recent years but it is possible numbers could trend upward over time.

**Table 9.1: Historical and forecast transaction numbers**

	2011 deter- mination forecast	Actual					Updated yearly forecast		
	Average	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	Low	Median	High
<b>Water access licence transaction numbers</b>									
New zero share	685	97	91	98	112	151	90	102	110
New specific purpose		17	25	15	11	19	13	16	25
New controlled allocation		0	0	1	14	19	0	10	20
Dealings* – regulated rivers	626	596	637	594	645	578	570	612	650
Dealings* – unregulated rivers	150	22	27	41	53	83	25	54	55
Dealings* – groundwater		61	59	80	128	149	60	120	130
<b>Water allocation assignment transaction numbers</b>									
Unregulated rivers	N/A	0	0	3	3	6	0	2	5
Groundwater	N/A	155	139	255	409	629	130	273	500
<b>Water approval transaction numbers</b>									
Water supply works approvals (excluding basic rights bores)	613	59	33	71	165	134	35	113	200
Water use approvals	104	13	3	13	27	17	3	20	40
Works and use approvals	443	55	37	95	200	97	40	134	220
BLR bore approvals	4185	362	454	977	1,799	1,458	600	1,388	2,000
Approval extensions	3,300	796	465	2,765	4,016	3,411	1,600	3,214	6,500

\* Dealings covers assignment of share, subdivide, consolidate, change and exit holding transactions. It does not include assignments of allocation (temporary transfers).

Water allocation assignments for unregulated rivers are rare. This is due to variable water availability and the fact that allocations are commonly not fully used. In most unregulated rivers the availability of adequate flows in the river at times when it is needed is the main restricting factor for water use, rather than available allocations. There is potential for some increase over time, but this is likely to be well into the future and numbers are unlikely to be large.

Approvals are issued for the construction and use of water supply works (for example pumps, bores, dams, etc) and for the use of water on land. Applications for approvals for BLR bores are lodged in large numbers and dealt with by a specific process. Apart from approvals for BLR bores (which do not expire), approvals expire after 10 years but can be extended on application. Consent for extension is a different process that does not require reconsideration of impacts.

As shown in Table 9.1, the numbers of applications for works and use approvals have proven to be far lower than was forecast in 2009. This is because the numbers were based on the numbers of applications for new licences that occurred under the *Water Act 1912*. These licences included both a right to take water and a right to construct works and use water on land. The numbers of new licence applications under the *Water Management Act 2000* have proven to be much lower.

Similarly, numbers of applications for BLR bore approvals are much lower than the 2009 forecast. This appears to be due to two factors. The first factor is that under the *Water Act 1912*, on which the forecast was largely based, numbers reached record numbers during the ‘millennium’ drought (peaking at 5,881 in 2006/07), but decreased rapidly in 2010 after the drought. The second factor is the transition of all BLR bore applications to the *Water Management Act 2000* in 2010 and the introduction of a fee for the approval. The previous fee-free application meant many applications were lodged as a contingency (at no cost) but the bores were never drilled. The fee has reduced or removed many of these contingency applications.

The number of applications for approval extensions can be predicted with a high level of accuracy from the expiry date of each approval in the register, knowing that only a very small proportion of approvals are not extended. While there is some minor uncertainty in the exact numbers of approvals that will finally be created from the transition process, the 2009 forecast is close to correct on a long-term basis. However numbers vary substantially from year to year. The updated forecast relates to the numbers of extensions during the next pricing determination period as predicted from the register, rather than the long-term average.

### 9.3 Forecast operating costs – water consents transactions

#### 9.3.1 Future water consents transaction costs

This submission maintains the principle of recovering only direct costs for administering water consents transactions, with all associated overheads being recovered from water management charges. The total number of transactions, and therefore the total costs, varies from year to year. Cost forecasts have been determined on a unit basis, so that the fees derived from those transactions will recover the cost as they occur.

The cost of processing transactions is driven by:

- The number of hours needed to complete the transaction, which is affected by the complexity of the process and any matters that DPI Water needs to consider when determining consents under various pieces of legislation (for example the *Water Management Act 2000*).
- The relevant average remuneration rate for the hours involved.
- Any additional expenditures where required, for example advertising or site inspection.

DPI Water previously separated the tasks involved in processing transactions into three areas: administration, assessment and advertising. Following further refinement of the process this has been adjusted into five areas: administration, rules-based assessment, impact assessment, advertising, and supervision and determination. These five areas are further explained below.

The administration of applications includes the following tasks:

- Receiving and registering applications and application fees.
- Checking applications for completeness and verifying the applicant’s right to apply (for example, landholder for approvals).
- Filing information and recording data.
- Requesting further information where required.
- Responding to enquiries by the applicant.

- Referral to the Native Titles Office (for new licences).
- Approval of decision, and posting notice of determination and conditions to the applicant.
- Ensuring the return of bore construction data and its recording (for approvals for bores).

Any application with potential environmental or third-party impacts requires assessment. This determines any benefits or impacts in accordance with the requirements of the *Water Management Act 2000* and the *Environmental Planning and Assessment Act 1979*. DPI Water has divided these tasks into rules-based assessment and impact assessment.

Rules-based assessment involves checking against water sharing plan rules, controlled allocation orders, local management rules and trading rules as appropriate, to determine whether an application can be approved. These rules protect against cumulative impacts and some kinds of local impacts, and the process of assessment is relatively simple. For all new or amended works and/or use approvals, a site visit is required and is built into the rules assessment.

Impact assessment requires case by case investigation to consider potential local impacts and make a judgement as to whether those impacts require refusal of consent, or granting of consent subject to conditions. Depending on the type of transaction, impact assessment includes identifying and addressing impacts on adjoining pumps or bores, Aboriginal heritage sites, native vegetation, threatened species, wetlands, land degradation, salinity, soil compaction, geomorphic instability, hydrology, water logging, acidity, contamination and water quality. It also requires consideration and resolution of any lodged objections. In some cases where significant risks are identified (for example major projects such as moderate to large dams) DPI Water may require the applicant to commission third-party experts to determine the extent of those risks and how they might be mitigated.

Advertising is a statutory requirement for any new development under water supply works and water use approvals, unless an exemption applies. It involves placing advertisements in local and state-wide newspapers inviting submissions on the proposed development.

Senior staff conduct the supervision and determination of all transactions. The process can take a substantial amount of time if consent decisions are contentious, if there are large numbers of lodged objections, or if a decision is appealed.

The total DPI Water staff time, as full-time equivalent numbers (FTEs), needed to process water consents transactions under the *Water Management Act 2000* is shown in Table 9.2. The estimated range of total staff FTEs and costs that will occur on a low, median and high transaction numbers year is shown in Table 9.3. The time and costs assume that 40 per cent of applications will be lodged online.

**Table 9.2: FTEs required to process water consents transactions by year**

	2011/ 12	2012/ 13	2013/ 14	2014/15
Full time equivalents (FTEs)	20.8	17.5	22.6	25.5

**Table 9.3: Forecast FTEs and costs for years with low, median and high transaction numbers**

Yearly transaction numbers	Low	Median	High
FTE	8.9	17.5	29
2015/16 \$	\$1.03m	\$2.07m	\$3.44m



## 9.4 Proposed fees – water consents transactions

DPI Water proposes that water consents transaction fees should:

- Reflect the actual staff costs incurred in processing particular transactions and properly recover DPI Water's assessment costs.
- Be standardised so that they can be easily understood and provide consistency between similar transactions with similar processing costs.
- Be able to be calculated by the applicant from the information provided in the application forms.
- Be understandable and administratively simple to determine.

Experience in administering the current fees has enabled DPI Water staff to recommend several areas where fees could be more reflective of cost. The special assessment fee in the current determination has been difficult to administer as in many cases the parameters used to determine the fee are not known until the assessment is completed. Better information is now available on average processing times, and there have also been efficiency improvements in processing transactions as a result of staff training and systems improvements.

Therefore proposed fees have been revised and the way transactions have been differentiated has been modified. The variable special assessment fee has been replaced with a fixed price. Dealings that involve change of location and those that do not (administrative dealings) are differentiated, as are approval amendments that relate to new development and those that do not (administrative approval amendments). Proposed fees are shown in Table 9.4.

To provide greater simplicity the proposed fees for consent transactions in Table 9.4 now include administration fees and charges for works and use approvals in a single fixed fee for the relevant transaction. In the 2011 price determination these were separate. For example, for a new or amended works and/or use approval, the fee includes the administration, assessment and advertising costs.

**Table 9.4: Proposed fees for consent transactions**

	Proposed fee
<b>New water access licences</b>	
Any new water access licence	\$329.53
<b>Water access licence dealings</b>	
Dealings – regulated rivers	\$329.53
Dealings – unregulated rivers and groundwater	\$1,067.73
Dealings – unregulated rivers and groundwater with low risk	\$515.10
Dealings – administrative	\$242.81
<b>Water allocation assignments</b>	
Unregulated rivers and groundwater	\$286.17

	Proposed fee
<b>Approvals</b>	
New or amended works and/or use approval	\$1,966.74
New or amended works and/or use approval – low risk	\$1,063.12
New basic rights bore approval	\$406.77
Amended approval – administrative	\$242.81
Extension of approval	\$245.81
Extension of approval lodged after expiry date	\$410.50

DPI Water also proposes to implement the following fee variations for particular circumstances:

- On-line lodgement discount – A discount equivalent to half an hour of time of an administrative officer is proposed to all fees that are lodged and paid for online, based on the resulting saving in administrative costs. DPI Water is continuing to make more types of transactions available for online lodgement.
- Extension late-lodgement fee – As for the previous determination, it is proposed that applications for extensions of approvals lodged after their expiry date are charged a 67 per cent higher fee. This acts as an incentive to lodge on time and also recovers the additional costs incurred by DPI Water in following up and processing late payments.
- Aboriginal water licence fee waiver – DPI Water proposes that no fees apply to applications associated with Aboriginal specific purpose access licences, and dealings relating to the use and access of water by Aboriginal people in regard to Aboriginal cultural, Aboriginal community development and Aboriginal commercial licences, and for work approvals nominated by those categories of licences. This is consistent with the government's policy to support Aboriginal culture and development.
- Rounding – For practical purposes, DPI Water proposes to round its fees to the nearest dollar.
- Recovery of title register search costs fee – DPI Water is required to confirm the right of an applicant to apply through a search of the water licence or land title register administered by Land and Property Information NSW (LPI). Up until now LPI has not charged any fees for accessing their systems to do these searches. However LPI has indicated it is considering requiring a fee for each search. Should this occur DPI Water proposes to pass the cost of the search on to the applicant.

#### 9.4.1 Aquifer interference approvals

The potential implementation of aquifer interference approvals is currently being assessed. Approval of aquifer interference activities would be a new service provided by DPI Water. While this service may be similar in nature to other water consent transactions under the *Water Management Act 2000*, at this stage there is not enough clarity around their commencement, or the manner in which they may be used. It is therefore proposed that this activity be considered as part of the next pricing determination.

### 9.5 Impacts of proposed water consents transactions fees

Table 9.5 shows how the proposed fees compare to fees under the current determination for a range of cases. It can be seen that many have been reduced while some are increased. This is a result of the availability of more data on the actual time required and improved efficiency in handling transactions.

**Table 9.5: Effect of proposed fees**

	Current*	Proposed		Proposed with online lodgement	
	Fee	Fee	Change to current fee	Fee	Change to current fee
<b>New water access licences</b>					
Zero share	\$282.59	\$329.53	17%	\$295.03	10%
Controlled allocation	\$604.77	\$329.53	-46%	\$295.03	-49%
Other	\$604.77	\$329.53	-46%	\$295.03	-49%
<b>Water access licence dealings</b>					
Dealings – regulated rivers	\$411.46	\$329.53	-16%	\$295.03	-25%
Dealings – unregulated rivers and groundwater	*\$1,593.14	\$1,067.73	-36%	\$1,033.23	-35%
Dealings – unregulated rivers and groundwater with low risk	\$758.84	\$515.10	-35%	\$468.47	-38%
Dealings – administrative	\$758.84	\$242.81	-70%	\$208.31	-72%
<b>Water allocation assignments</b>					
Unregulated rivers and groundwater	\$254.64	\$286.17	18%	\$251.67	4%
<b>Approvals</b>					
New or amended works and/or use approval	*\$2,607.33	\$1,966.74	-28%	\$1,932.24	-26%
New or amended works and/or use approval – low risk	\$1,286.63	\$1,063.12	-21%	\$1,028.62	-20%
New basic rights bore approval	\$254.33	\$406.77	60%	\$372.27	54%
Amended approval – administrative	\$926.94	\$242.81	-74%	\$208.31	-76%
Extension of approval	\$169.56	\$245.81	45%	\$211.31	31%

\* The examples of current fees including special assessment are calculated for a licence dealing of 50 ML entitlement, and for a new works and use approval for 100 l/sec pump with 40 ha irrigation.

As shown the majority of fees are substantially reduced, which will be beneficial for many water users. For example the separation of transactions with no likelihood of impacts (the administrative transactions) means that customers required to make these changes, due to change in land ownership or property mergers, will pay far less than before.

Proposed increases in some fees will have a low financial impact due to their infrequency. For example approvals are extended only once every 10 years, and for most properties new bores are infrequent due to the high cost of bore construction. As shown, further reductions and offsets to increases can be obtained if the customer lodges their application on-line.

## 10 Water take measurement services

This chapter of the submission explains the revenue needs and proposed prices for water take measurement.

DPI Water provides the following water take measurement services:

- Government meter operation and maintenance services.
- Ancillary (or supporting) services related to the provision of government meters.
- Water take reading and assessment services.

Charges for these services are billed to customers annually with their water management charges, or where the services are not regular (for example ancillary services or non-routine meter readings) they are charged on a fee for service basis.

Each of these services and the proposed fees are described below.

### 10.1 Government meter operation and maintenance services (meter service charge)

#### 10.1.1 Description

In 2009 the NSW Government began implementing the National Framework for Non-Urban Water Metering using Commonwealth funds. A total of 2,739 government owned meters will be installed by mid-2016 in the Hawkesbury-Nepean, Murray and Murrumbidgee river catchments (1,534 on unregulated rivers and groundwater and the remainder on regulated rivers). The service currently provided by DPI Water is the operation and maintenance of the unregulated river and groundwater meters. Initial capital costs were provided by Commonwealth grants, the recovery of which is not being sought from customers.

A contracted service provider, managed by WaterNSW on behalf of DPI Water, manages the maintenance of all government meters in the Murray Darling Basin. The maintenance of meters in the Hawkesbury-Nepean and Bega/Brogo is managed directly by DPI Water, with the maintenance being done by agency staff and individual contractors.

The service provided is described in detail in the 2013 WaterNSW (previously State Water) pricing application to the ACCC<sup>1</sup>, and is summarised as:

- Telemetry operation (telemeter phone SIM costs and costs for systems to receive data from telemeters).
- Planned maintenance.
- Corrective maintenance.
- Asset planning, audit and reporting.

The costs of this service are recovered through an annual charge to customers who have government meters on their works.

<sup>1</sup> State Water, *Pricing application to the Australian Competition and Consumer Commission for regulated charges to apply from 1 July 2014, June 2013*, p171+.

### 10.1.2 Demand forecast – meter service charge

The projected numbers of government meters have changed significantly since the last determination due to changes to the Commonwealth funding of meters. An additional round of installations of Commonwealth funded meters is underway in the Murrumbidgee, Murray and Lower Darling valleys, but no further installations are planned beyond this. The projected installation of government funded meters on unregulated rivers and groundwater in the Murray Darling Basin has been reduced to just over 700. The NSW Government has no plans to provide additional capital funding for metering in the future.

Of the 1,534 meters installed, the current review of metering under the water take measurement strategy (see Section 4.4) is expected to result in maintenance being discontinued for a proportion of meters that are not cost effective. Given this, the total number of government funded meters on unregulated rivers and groundwater is anticipated to peak at 1,230 (including meters in the Murray Darling Basin and on the coast) in late 2016 and decline slightly over the determination period to an estimated 1,200.

### 10.1.3 Forecast operating costs – meter service charge

WaterNSW has recently completed a competitive tendering process for the servicing of government meters in the Basin. This provides a sound basis for the efficient cost of operating meters, with the addition of costs for contract supervision and management of the telemetry system. Unit costs vary from \$489 a year for a 50-millimetre meter to \$555 a year for an 800-millimetre meter. There is no differentiation based on mechanical versus magflow meter types. The total annual cost forecast for the projected final number of 1,200 meters for unregulated rivers and groundwater is \$588,000.

### 10.1.4 Proposed charges – meter service charge

#### Structuring of charges

The current charges differentiate based on meter type (magflow versus mechanical), on whether telemetry is present or not, and on whether the telemetry is mobile phone or satellite based. However the costs determined through the competitive tendering process do not differentiate based on meter type. Also satellite telemetry has been discontinued due to poor cost effectiveness on existing meters, and there is a low likelihood that it will be used in future.

The proposed charges therefore include differentiation based solely on where there is a clear cost difference, leading to two cases:

- Sites where readings are obtained by telemetry or agency officer site visits.
- Sites with no telemetry with customer meter reading and reporting.

The charge is to be applied for all government meters, except for where the government and the customer have agreed to suspend maintenance and apply a one-part tariff. Situations where this will be possible will be determined during the development of the water take management strategy.

#### Telemetered or agency read sites

In the ACCC 2014 determination for WaterNSW<sup>2</sup> a schedule of meter service charges for regulated rivers was outlined. The regulated river charges step up for each year of the determination from 2014/15 to 2016/17. As the metering service for regulated rivers is no different to that for unregulated rivers and groundwater, DPI Water proposes to align its charges for unregulated rivers and groundwater with those charged by WaterNSW for regulated rivers.

<sup>2</sup> Australian Competition and Consumer Commission, *Final Decision on State Water Pricing Application: 2014/15 – 2016/17*, June 2014.

The ACCC determination included a schedule of charges for non-telemetered sites that was slightly higher than those for telemetered sites. This was based on the need for agency staff to visit sites to download data, and for increased site maintenance visits to manage the risk of meter failure. DPI Water does not believe that the small difference in charges warrants the administrative cost of having a different schedule, and therefore proposes only one schedule of charges for telemetered or agency read sites.

### **Non-telemetered sites with customer reading and reporting**

Many sites are not telemetered because either mobile phone network coverage is too poor to enable cost effective telemetry, or the site is associated with a very low volume of water take. DPI Water proposes to offer a reduced service charge for sites without telemetry, instead of the ACCC charge for non-telemetered sites, provided the customer agrees to read the meter and report the readings twice a year, check that the meter is working when pumping occurs and report meter failure immediately. This reduction represents the cost saving associated with eliminating regular agency officer visits to the site to download data, and eliminating the processing of continuous data. When finalised, the water take measurement strategy will provide further guidance on where this option will be available. If DPI Water is required to provide the meter reading service, the water take reading/assessment charge will apply

### **Proposed charges**

Applying the 2016/17 ACCC regulated river charges for telemetered sites to unregulated river and groundwater telemetered or agency read sites, and a pro-rata reduced version of the charge for non-telemetered sites with customer reading and reporting, would not achieve cost recovery. To achieve this the charges need to be increased by 13 per cent. It is therefore proposed to align charges to the ACCC regulated river charges for 2016/17, followed by a full cost recovery charge from 2017/18 onwards.

This approach achieves alignment of fees and also provides a pathway for increases over two years, which will result in full cost recovery commencing in 2017/18. It also allows WaterNSW to apply for similar fees to align with these in its next price determination, which will apply to fees from 2017/18.

In summary, the proposed meter service charges are shown in Table 10.1 and Table 10.2 below.

**Table 10.1: Proposed meter service charges – telemetered or agency read sites (\$2015/16)**

<b>Meter size (mm)</b>	<b>Proposed charge 2016/17</b>	<b>Proposed charge 2017/18 onwards</b>
50	\$396.77	\$446.84
80	\$396.90	\$447.00
100	\$397.66	\$447.85
150	\$418.28	\$471.08
200	\$440.69	\$496.31
250	\$446.34	\$502.67
300	\$448.33	\$504.91
350	\$460.85	\$519.02
400	\$512.97	\$577.72
450	\$621.04	\$699.42
500	\$630.41	\$709.98

Meter size (mm)	Proposed charge 2016/17	Proposed charge 2017/18 onwards
600	\$664.43	\$748.29
700	\$678.05	\$763.63
750	\$679.72	\$765.51
800	\$717.41	\$807.96
900	\$771.45	\$868.81
1000	\$776.91	\$874.96

**Table 10.2: Proposed meter service charges – non-telemetered sites with customer reading and reporting (\$2015/16)**

Meter size (mm)	Proposed charge 2016/17	Proposed charge 2017/18 onwards
50	\$286.34	\$328.59
80	\$286.48	\$328.74
100	\$287.24	\$329.60
150	\$307.86	\$352.82
200	\$330.27	\$378.06
250	\$335.92	\$384.42
300	\$337.91	\$386.66
350	\$350.43	\$400.77
400	\$402.55	\$459.46
450	\$510.62	\$581.17
500	\$519.99	\$591.72
600	\$554.01	\$630.04
700	\$567.63	\$645.38
750	\$569.30	\$647.26
800	\$606.99	\$689.71
900	\$661.03	\$750.56
1000	\$666.48	\$756.71



### 10.1.5 Impacts of proposed meter service charges

The impacts of the new charges in 2016/17 and 2017/18 for different sized meters are shown in Table 10.3 and Table 10.4 below. For non-telemetered sites it assumes customers accept the option of customer reading and reporting meter readings.

**Table 10.3: Impact of proposed meter service charges on installed government meters (\$2015/16) – telemetered or agency read sites**

Meter size (mm)	No of meters installed	Current price	Proposed 2016/17	Change from current	Proposed 2017/18	Change from current
50	136	\$403.61	\$396.77	-\$6.84	\$446.84	\$43.23
80	104	\$403.61	\$396.90	-\$6.71	\$447.00	\$43.39
100	222	\$403.61	\$397.66	-\$5.95	\$447.85	\$44.24
150	346	\$403.61	\$418.28	\$14.67	\$471.08	\$67.47
200	134	\$403.61	\$440.69	\$37.08	\$496.31	\$92.70
250	173	\$403.61	\$446.34	\$42.39	\$502.67	\$99.06
300	107	\$403.61	\$448.33	\$44.72	\$504.91	\$101.30
350	45	\$403.61	\$460.85	\$57.24	\$519.02	\$115.41
400	57	\$403.61	\$512.97	\$109.36	\$577.72	\$174.11
450	45	\$403.61	\$621.04	\$217.43	\$699.42	\$295.81
500	9	\$403.61	\$630.41	\$226.80	\$709.98	\$306.37
700	2	\$403.61	\$678.05	\$274.44	\$763.63	\$360.02
800	4	\$403.61	\$717.41	\$313.80	\$807.96	\$404.35

**Table 10.4: Impact of proposed meter service charges on installed government meters (\$2015/16) – non-telemetered sites with customer reading and reporting**

Meter size (mm)	No of meters installed	Current price	Proposed 2016/17	Change from current	Proposed 2017/18	Change from current
50	29	\$309.36	\$286.34	-\$23.02	\$328.59	\$19.23
80	16	\$309.36	\$286.48	-\$22.88	\$328.74	\$19.38
100	48	\$309.36	\$287.24	-\$22.12	\$329.60	\$20.24
150	46	\$309.36	\$307.86	-\$1.50	\$352.82	\$43.46
200	9	\$309.36	\$330.27	\$20.91	\$378.06	\$68.70
250	1	\$309.36	\$335.92	\$26.56	\$384.42	\$75.06
300	1	\$309.36	\$337.91	\$28.55	\$386.66	\$77.30

The meter-size based charge distribution adapted from the ACCC determination reduces the impact on customers with small entitlements. Assuming typical entitlements and water take associated with the meters, the impact of the increase in meter service charges between those under the current determination and the proposed for 2017/18 would be no more than six per cent of the total bill for small meters, dropping to less than one per cent for large meters (because of the much higher entitlements and annual water charges).

Additionally, the development of the water take management strategy means customers with low take of water have options for reducing the impact of the meter service charge on their overall

annual bill. If this strategy results in some government meter sites not requiring a meter, DPI Water proposes to give those customer the following options:

- Retain the meter as is and pay the full charge.
- Turn off telemetry and move to non-telemetry charge (with self-reporting).
- Suspend meter maintenance and accept a one-part tariff.

## 10.2 Ancillary services for government meters

### 10.2.1 Description

For government meters the following supporting services are needed occasionally and are billed on a fee for service basis.

#### **Meter laboratory verification**

A customer may request that a government meter be tested to confirm that it is accurate. This involves removing the meter from the site, shipping it to a laboratory for testing, then shipping it back and reinstating it. If the meter is assessed by the laboratory as being within the required accuracy standard ( $\pm 2.5$  per cent) the charge is retained by DPI Water to offset the cost. If it is not within the standard then the charge is refunded.

#### **Meter in-situ validation**

Validation charges are for the cost of a meter validation, where a government meter is relocated or disturbed other than by government agency staff. The validation is required by national standards to confirm the meter installation allows the meter to read within accuracy standards.

#### **Meter restart**

The review of metering requirements being undertaken through the water take measurement strategy may result in the metering of water take not being needed on some government meter sites, where no or very low water take occurs. In such cases DPI Water may give the customer the option of suspending meter maintenance until significant water take is recommenced, resulting in the meter service charge not being levied. If water take is recommenced at a government meter site where maintenance has been suspended at the customer's request, DPI Water proposes to charge for the cost of restarting the meter. The proposed charge is to cover the cost of a site visit by a technician, plus any necessary replacement components at cost.

### 10.2.2 Demand forecast – ancillary services

These services are rarely used. So far there has been only one case where a customer disputed a government meter and requested laboratory verification, and no cases where in-situ validation has been required. The proposed restart service is also likely to occur on a small number of occasions in the future.

### 10.2.3 Forecast operating costs – ancillary services

#### **Meter laboratory verification**

In the one case of a request for meter verification the meter was sent to the laboratory for testing and the result was the meter was well within the required  $\pm 2.5$  per cent, and therefore the charge was not refunded. The cost of meter removal, lab testing and meter replacement was well in excess of the deposit, but because of the rarity of such requests DPI Water is not requesting an increase in the charge at this time.

#### **Meter in-situ validation**

The cost of a meter validation when incurred will be the cost of a contractor visiting the site, which is estimated at \$240 per visit for travel and time at the site.

## Meter restart

The cost of a meter restart when incurred will be the cost of a contractor visiting the site, which is estimated at \$240 per visit for travel and time at the site, plus the cost of replacing any parts.

### 10.2.4 Proposed charges – ancillary services

DPI Water proposes to retain the ancillary charges approved by IPART in the last determination, with minor adjustments. The newly proposed restart charge is set to cover the cost of a site visit by a technician, plus any necessary replacement components at cost. These are shown in Table 10.5 below.

**Table 10.5: Proposed ancillary services for government meters charges (\$2015/16)**

Ancillary service	Proposed charge
Meter laboratory verification at request of customer (refundable if meter is shown to be outside required accuracy).	\$1,751.40
Meter in-situ validation charge – where a meter is moved or disturbed.	\$240.00
Fee to reset meter after suspension of maintenance for a year or more at customer request.	\$240.00 plus parts at cost

### 10.2.5 Impacts of proposed ancillary service charges

As these are rare events this impact will be minimal.

## 10.3 Water take reading/assessment service

### 10.3.1 Description

DPI Water contracts WaterNSW to read meters in inland NSW on its behalf. WaterNSW officers visit the meters from one to four times a year to obtain meter readings, which are recorded into licence water allocation accounts. Officers also visit a number of sites where there is no meter and the take of water is determined using other means used as a substitute for a meter reading. All of these cases incur an annual charge for the service.

Previously known as a 'meter reading charge', DPI Water proposes to re-label the charge as a 'water take reading/assessment charge', since calling it a 'meter reading charge' has resulted in confusion for customers who rightly incur the charge under the current IPART determination, but do not have a meter.

### 10.3.2 Demand forecast – water take reading/assessment

There are currently nearly 8,000 groundwater bores and 60 unregulated river pumps in the inland, where WaterNSW reads meters or assesses water take by other means. These numbers will reduce over the next few years as telemetry is introduced or self-reporting increases. The outcomes of the current cost benefit review for meter reading will likely be a significant reduction in agency meter reading for bores with very low or nil water take.

Additionally, customers who currently do not have a meter or do not have their meter read by an agency officer can request an agency officer to visit to read the meter or do an assessment (provided sufficient suitable data is available), in order to have a 2-part annual water charge rather than a 1-part annual water charge. Numbers of such cases are very small.

### 10.3.3 Forecast operating costs – water take reading/assessment

WaterNSW provides the meter reading service on behalf of DPI Water. In 2014/15 WaterNSW charged DPI Water \$97 per reading for 13,858 readings at 7,918 sites, which totals \$1.34 million.

In future the number of sites being read and the average number of readings per site is expected to reduce, thereby reducing the overall cost. However WaterNSW has advised that, while reducing the number of readings per site per year will reduce costs per site, the reduction will be partly offset by an increase in the cost per reading. This increase will be due to a reduction in sites being visited on meter reading runs increasing the travel requirements between sites.

#### 10.3.4 Proposed charges – water take reading/assessment

DPI Water proposes to pass on the costs it incurs from WaterNSW, with the proposed charge based on the costs outlined in the current service agreement with WaterNSW. This includes an allowance for the combined effect of a reduction in average visits per site per year and an increase in travel between sites. Overall the result is a reduction of seven per cent from the current charge.

**Table 10.6: Water take reading/assessment charge for private meters (\$2015/16)**

	Proposed charge
Water take reading/assessment charge	\$198.00

#### 10.3.5 Impacts of proposed water take reading/assessment charges

The proposed charge is seven per cent lower than the current charge, and therefore will have a positive impact on customers.

# 11 Glossary

Term	Acronym	Definition
Achieving Sustainable Groundwater Entitlements	ASGE	A DPI Water program that program aims to ensure the long-term sustainability of the six major inland groundwater systems in NSW, and a healthy and sustainable groundwater irrigation industry.
Adaptive Environmental Water Plans	AEWP	Plans for the delivery of available environmental water to key wetlands.
Annual Information Return	AIR	A report provided to IPART annually, detailing operating and capital expenditure programs and non-financial information relating to water management.
Appendix L Report	–	An annual performance report from DPI Water to IPART.
Approved water supply work	–	A water supply work for which an approval has been obtained from DPI Water
Aquifer Interference Policy	AIP	A NSW Government policy, issued by DPI Water, for the licensing and assessment of aquifer interference activities
Australian Competition and Consumer Commission	ACCC	For water, the ACCC provides advice to the responsible Commonwealth Minister on water market, trade and charge rules for storage and delivery, planning and management; provides advice for infrastructure operators within the Basin; and ensures its rulings are enforced.
Australian National Aquatic Ecosystem Classification Framework (Interim)	ANAE	A nationally consistent, flexible framework for classifying different aquatic ecosystems and habitats. It assists in the identification of High Ecological Value Aquatic Ecosystems (HEVAE)
Available Water Determination	AWD	At the start of each water year on 1 July, DPI Water makes AWDs, or 'water allocations', which specify how much of their water entitlement licence holders can extract from a river or aquifer over the course of that year.
Basic Landholder Right	BLR	There are three types of basic landholder rights in NSW under the Water Management Act 2000: domestic and stock rights; native title rights; and harvestable rights – dams.
Bulk Water Reform	–	An independent review of the bulk water delivery in NSW, commissioned by the NSW Government in 2013.
Bureau of Meteorology	BoM	Australia's national weather, climate and water agency.
<i>Civil Procedure Act 2005 (NSW)</i>	–	An Act with respect to practice and procedure in civil proceedings, where civil proceedings are any proceedings other than criminal proceedings.
Coal Seam Gas	CSG	Natural gas found in coal deposits.
Commonwealth Environmental Water Holder	CEWH	A role established under the <i>Water Act 2007 (Commonwealth)</i> , to perform the Commonwealth's functions in a manner that gives effect to the Murray Darling Basin Plan.
Consumer Price Index	CPI	An index used to measure inflation.
Council of Australian Governments	COAG	The peak intergovernmental forum in Australia, whose members are the Prime Minister, state and territory Premiers and Chief Ministers and the president of the Australian Local Government Association.

Term	Acronym	Definition
Customer Relationship Management (system)	CRM	A database that allows DPI Water to manage answers to customer enquiries and customer interactions.
Customer Service Charter	–	A public charter, which sets out the standard of service customers can expect from DPI Water, including service goals, standards and feedback mechanisms.
Customer Service Committee	–	Regional forums for consulting customers on water delivery strategies and priorities, which are run by Water NSW and attended by DPI Water.
Department of Industry, Skills and Regional Development (or Industry cluster)	–	The Department responsible for driving sustainable economic growth across NSW, ensuring NSW is attractive for investment and production, and creating jobs and opportunities. The Department of Primary Industries is a part of this larger department.
Department of Primary Industries	DPI	The Department responsible for developing and sustaining diverse, profitable food and fibre industries, and ensuring best practice management of our natural resources. DPI Water is a part of this department.
DPI Water	DPIW	DPI Water is an operating section of the NSW Department of Primary Industries, responsible for surface and groundwater management in NSW.
Drainage Management Plans	DMP	Plans, which provide rules to mitigate ecological and water quality impacts, including cumulative impacts, from drainage works in a given area.
Dumaresq-Barwon Border Rivers Commission	DBBRC	A Commission established by the NSW and Queensland Governments to operate and maintain jointly 'owned' water infrastructure and implement agreed water sharing arrangements in the Queensland-NSW border region.
Electrical Conductivity	EC	The unit of measure for MDBA salinity credits.
Entitlement charge	–	An annual charge that applies to an access licence based on the quantity of share component specified on that access licence.
<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>	<i>EPBC Act</i>	A Commonwealth Act that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places.
<i>Environmental Planning and Assessment Act 1979 (NSW)</i>	–	An Act that institutes the system of environmental planning and assessment for NSW.
Floodplain harvesting	FPH	The capture and use of water flowing across a floodplain that is not covered by another extraction category, such as an access licence, harvestable right or capture of irrigation runoff in tailwater return systems according to licence conditions or best management practices.
Floodplain Management Plans	FMP	Plans, which provide clarity over where flood works can be constructed on the floodplain, and manage the risk to life and property from the effects of flooding.
Framework for the Assessment of River and Wetland Health (National)	FARWH	A framework that provides nationally consistent reporting mechanisms on river and wetland health.
Full-time equivalent	FTE	A unit of measurement equal to the effort of one person working full time, and used to add up full-time and part-time effort for tasks.
Gigalitre	GL	One gigalitre is equal to one billion litres (or one thousand megalitres).

Term	Acronym	Definition
Great Artesian Basin	GAB	The largest and deepest artesian basin in the world, lying underneath 24 per cent of Australia's land mass, including NSW, the Northern Territory, South Australia, and most of Queensland.
Great Artesian Basin Senior Officials Committee	GABSOC	The coordinating group for the GAB strategic management and accountable to the Commonwealth parliamentary secretary for water and the GAB jurisdictional water ministers.
Groundwater	–	Underground water sources.
Groundwater dependent ecosystems	GDE	Ecosystems that need groundwater to maintain the plants, animals, and ecological processes they support.
High Ecological Value Aquatic Ecosystems	HEVAE	Aquatic ecosystems that meet international criteria for diversity, distinctiveness, naturalness, and provides vital habitat for flora and fauna.
Independent Pricing and Regulatory Tribunal	IPART	The independent regulator that determines the maximum prices that can be charged for certain water, transport and retail energy services in NSW.
<i>Independent Pricing and Regulatory Tribunal Act 1992</i>	<i>IPART Act</i>	An Act to establish the Independent Pricing and Regulatory Tribunal of NSW, and to confer functions on it in relation to pricing, industry and competition, and for other purposes.
Integrated Quantity and Quality Model	IQQM	DPI Water's main surface water modelling platform for the past two decades. It has been configured to provide detailed models for all managed river systems in the Murray Darling Basin and most of the major managed river systems along the coast.
Inter-Governmental Agreement	IGA	The Inter-Governmental Agreement – Implementing Water Reform in the Murray Darling Basin, one of two Basin Plan agreements between NSW and the Commonwealth (along with the NPA).
KWiQM	KWiQM	The one central DPI Water database containing all project data.
Land and Property Information (NSW)	LPI	A NSW Government department that is the key provider of land information services in NSW (a division of the Department of Finance, Service and Innovation).
Licensed water take	–	Water taken via a water supply work that is nominated on the access licence and is assigned to the water allocation account for that access licence.
Long Term Average Annual Extraction Limit	LTAEL	The long-term average level of groundwater that can be extracted sustainably each year from sources defined in water sharing plans.
Megalitre	ML	One megalitre is equal to one million litres.
Metrological Assurance Framework	MAF	A national framework to enable implementation of new standards for non-urban water meters and to accommodate future trade measurement requirements.
Minimum annual charge	–	A charge that applies to an access licence if the sum of the entitlement and water take charge for a water licence is less than the value of the minimum annual charge.
Murray Darling Basin (or the Basin)	–	The river system and catchment area for the Murray and Darling rivers (and other rivers), spanning the majority of NSW, Victoria and the ACT, and parts of Queensland and South Australia; comprising more than 1 million square kilometres in area.
Murray Darling Basin Authority	MDBA	An independent Commonwealth government agency, which leads the planning and management of the Murray-Darling Basin water resources (surface and ground water); and supports the sustainable and integrated management of the water resources of the Basin.



Term	Acronym	Definition
Murray Darling Basin Plan (or the Basin Plan)	–	The Basin Plan provides a coordinated approach to water use across the Basin states; by limiting water use at environmentally sustainable levels by determining long-term average sustainable diversion limits for both surface water and groundwater resources.
Murray Darling Basin states (or Basin states)	–	New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory.
National Association of Testing Authorities	NATA	NATA provides assessment, accreditation and training services to laboratories and technical facilities throughout Australia and internationally. DPI Water's laboratory at Wollongbar is NATA accredited.
National Framework for Non-urban Water Metering	–	Established to deliver the objectives of the NWI for national metering standards, and to provide a nationally consistent framework for water metering and measurement.
National Partnership Agreement	NPA	The National Partnership Agreement (NPA) – Implementing Water Reform in the Murray-Darling Basin, one of two Basin Plan agreements between NSW and the Commonwealth (along with the IGA).
National Water Initiative	NWI	COAG's principal water policy agreement, through which its members agreed on actions to achieve a cohesive national approach to the way water is managed, measured, planned for, priced, and traded.
National Water Meter Standard	NWMS	Meters that have been pattern approved by the National Measurement Institute, and installed in accordance with ATS 4747.
National water quality management strategy	NWQMS	A joint national approach to improving water quality in Australian and New Zealand waterways.
National Water Reform Committee (interim)	NWRC	Responsible for implementing NWI initiatives and updating the NWQMS.
Net present value	NPV	The present value of future cash inflows (income) and/or cash outflows (costs or expenditure).
<i>New South Wales – Queensland Border Rivers Agreement (1946)</i>	–	An Act to ratify certain agreements made between the states of NSW and Queensland relating to the Severn, Dumaresq, Macintyre and Barwon Rivers.
Nominal \$	–	Value expressed to include the effects of general price increases (see real \$)
<i>NSW 2021</i>	–	The government's 10-year plan to build the economy, provide quality services, renovate infrastructure, ensure accountability to Government, and strengthen local environment and communities.
Office of Environment and Heritage	OEH	The environmental water manager in NSW, responsible for the use of allocations for licensed environmental water.
Office of Water	–	The former name of DPI Water.
Pricing water source	–	Prices are set and DPI Water costs are allocated according to the pricing water source, which is a combination of water type (regulated river, unregulated river and groundwater) and the location (valley or area) of the water type.
Ramsar Convention	–	The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Real \$ (or cost/revenue of a particular year)	–	Value expressed to remove the effects of general price increases (see nominal \$)

Term	Acronym	Definition
Regulated river	–	A river where downstream flows are regulated by a major storage or dam to supply irrigation water.
Regulatory asset base	RAB	An economic assessment of the value of the non-current assets used to deliver monopoly services under the Water Service Order (2004).
Revenue building block	–	Classification of the components of revenue needs to deliver monopoly services under the Water Services Order (2004).
Revenue needs	–	The sum of the revenue building blocks, that for DPI Water comprise of operating costs, NSW Government's contributions to Murray Darling Basin Authority and Dumaresq-Barwon Borders River Commission, return on capital, depreciation, and working capital allowance.
River Condition Index	RCI	A tool that incorporates spatial and remote sensing data for hydrology, geomorphology, riparian vegetation, biota, environmental disturbance and water quality to determine the river condition of a given area or water source.
River Murray Increased Flows	RMIF	A licence type – regulated river (environmental – RMIF).
Share component	–	The proportion of water that a water access licence holder can take from a water source each year, as specified on each water access licence.
<i>Snowy Hydro Corporatisation Act 1997</i>	–	An Act to reform the Snowy Mountains Hydro-electric Scheme by corporatising the Snowy Mountains Hydro-electric Authority.
Snowy Water Inquiry Outcomes Implementation Deed 2002	SWIOID	An agreement between NSW, Victoria and the Commonwealth to give effect to the outcomes of the Snowy Water Inquiry in 1998 and the corporatisation of the Snowy Scheme.
<i>State Infrastructure Strategy 2012</i>	–	NSW's first prioritised and costed long-term infrastructure strategy, prepared by Infrastructure NSW.
<i>State Infrastructure Strategy Update 2014</i>	–	Thirty investment recommendations to the NSW Government on the next round of critical infrastructure for NSW, prepared by Infrastructure NSW.
Sustainable Diversion Limit	SDL	Set by the Basin Plan, the SDLs set limits on the quantities of surface and groundwater that can be taken from Basin water sources for agriculture and other consumptive purposes.
Total Asset Management	TAM	NSW Treasury's strategic approach to physical asset planning and management.
Unregulated river	–	A river without major storages or dams, or where the storages do not release water downstream (in these cases, water is piped to where it is needed, such as metropolitan centres).
Water Access Licences	WAL	A licence that entitles licence holders to specified shares in the available water within a particular water management area or water source (the share component); and to take water at specified times, rates or circumstances from specified areas or locations (the extraction component).
<i>Water Act 1912</i>	–	An Act to consolidate the Acts relating to water rights, water and drainage, drainage promotion, and artesian wells; in the process of being phased out and replaced by <i>Water Management Act 2000</i> .
<i>Water Act 2007 (Commonwealth)</i>	–	An Act to make provision for the management of the water resources of the Murray-Darling Basin, and to make provision for other matters of national interest in relation to water and water information.

Term	Acronym	Definition
Water Administration Ministerial Corporation	WAMC	WAMC is constituted under the <i>Water Management Act 2000</i> and has certain functions that can be broadly referred to as the supply of water, and water planning and management activities, which are designed to ensure the sustainability of water. An instrument dated 1 November 2011 delegates the delivery of most WAMC services to DPI Water. All of WAMC's functions are referred to as DPI Water's functions in this submission.
Water allocation	–	The volumetric amount of water that may be taken against a water access licence subject to conditions that apply to the licence.
Water allocation account	–	Tracks the water allocation made to the related water access licence, the volume of water taken and water that is available to be taken or traded subject to conditions that apply to the licence.
Water consent transactions	–	Fee for service activities that manage the issue, trade and amendment of water access licences, water allocations and water approvals, under the <i>Water Management Act 2000</i> .
Water Licensing System	WLS	A DPI Water system developed to improve access to data from the public water access licence register maintained by Land and Property Information.
<i>Water Management Act 2000</i>	–	An Act to provide for the protection, conservation and ecologically sustainable development of the water sources of NSW.
<i>Water Management Amendment Act 2014</i>	–	Amendments and additions to the <i>Water Management Act 2000</i> .
Water management charge	–	Water management charges apply to all categories of water access licences and are paid by licence holders, to recover the user share of the costs of water planning and management. These charges vary between water sources, reflecting localised variations in the nature and cost of services.
Water management services	–	Services provide for which charges are levied against a water access licence holder.
Water planning and management services	–	Water planning and management activities are undertaken to ensure the long-term sustainability of the water resource, thereby enabling continued water use while maintaining the health of natural ecosystems. Water planning and management activities include water management services, water consent transactions, and water take measurement services.
Water Resource Plan	WRP	Plans made under the <i>Water Act 2007 (Commonwealth)</i> . These plans cover the water resources of the Murray Darling Basin and deal with those matters that the Basin Plan requires a water resource plan to include.
Water Sharing Plan	WSP	Plans made under the <i>Water Management Act 2000</i> . These plans provide the rules and arrangements for water sharing in NSW by balancing the needs of socioeconomic, environmental and cultural purposes. Within the Murray Darling Basin they will become a key component of a water resource plan.
Water source	–	A water source is the primary water management unit used for defining where water sharing rules apply.
Water supply work	–	A means for taking water from a water source at a specified location.

Term	Acronym	Definition
Water take	–	<p>To remove water from, or to reduce the flow of water in or into, the water resource, including by any of the following means:</p> <ul style="list-style-type: none"> <li>• Pumping or siphoning water from the water resource.</li> <li>• Stopping, impeding or diverting the flow of water in or into the water resource.</li> <li>• Releasing water from the water resource if the water resource is a wetland or lake.</li> <li>• Permitting water to flow from the water resource if the water resource is a well or watercourse.</li> </ul> <p>This includes storing water as part of, or in a way that is ancillary to, any of the processes or activities referred to in the list above.</p>
Water take activation rate	–	The annual volume of water take as percentage of the quantity of share component specified on a water access licence
Water take charge	–	A charge that applies to an access licence based on the volumetric amount of water recorded as taken in the period to be billed on a water allocation account for that access licence.
Water take measurement	–	A broader concept than 'metering', encompassing methods other than metering used to assess and quantify water take.
Water take measurement services	–	Water take measurement, government owned meter servicing and associated ancillary services.
Water Take Measurement Strategy	WTMS	A new strategy being developed by DPI Water, in consultation with stakeholders and users, for measuring take of water under water access licences, and due to be finalised before the start of the next determination in July 2016.
WaterNSW	WNSW	The organisation formed by the merger of the State Water Corporation and the Sydney Catchment Authority in 2015.
Weighted average cost of capital	WACC	The rate that a company is expected to pay, on average, to all its security holders to finance its assets.

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# Appendix A

## Historical revenue variance analysis

**Table A.1: Revenue by year by pricing water source (\$'000 nominal)**

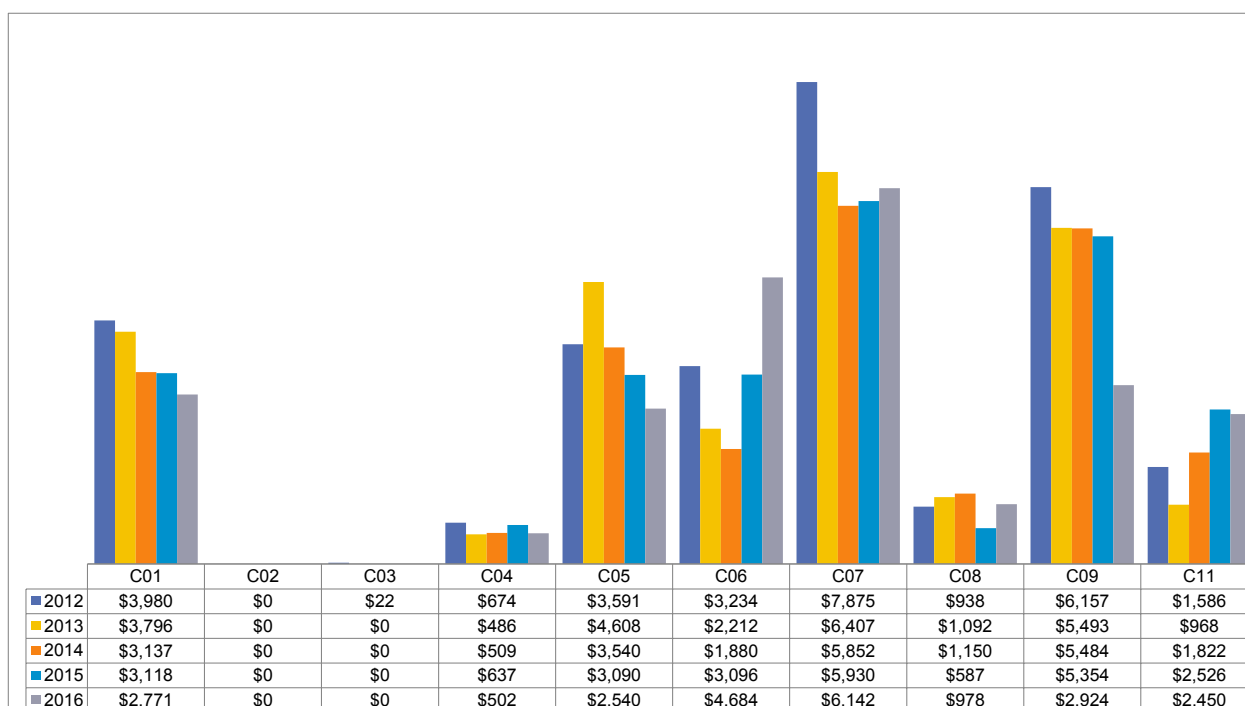
Pricing water source	2011/12	2012/13	2013/14	2014/15
<b>Regulated river</b>				
01. Border	780	949	938	702
02. Gwydir	793	1,225	1,272	945
03. Namoi	701	1,089	1,267	875
04. Peel	89	135	179	134
05. Lachlan	1,245	1,806	1,891	1,666
06. Macquarie	1,432	2,153	1,944	1,563
08. Murray	4,900	5,537	5,379	4,812
09. Murrumbidgee	4,204	4,987	4,758	4,925
10. North Coast	40	50	64	57
11. Hunter	583	710	849	766
12. South Coast	61	83	101	78
<b>Total regulated river</b>	<b>14,826</b>	<b>18,723</b>	<b>18,641</b>	<b>16,522</b>
<b>Unregulated river</b>				
04A. North West	924	1,139	1,399	1,399
06A. Central West	1,326	1,685	1,788	1,894
07. Far West	1,273	1,326	1,255	1,255
08. Murray	352	374	490	564
09. Murrumbidgee	578	821	1,027	952
10. North Coast	2,069	2,391	2,569	2,569
11. Hunter	1,965	2,131	2,231	2,231
12. South Coast	3,434	3,695	3,949	3,949
<b>Total unregulated river</b>	<b>11,922</b>	<b>13,564</b>	<b>14,707</b>	<b>14,813</b>
<b>Groundwater</b>				
13. Inland	6,077	7,356	8,521	8,363
14. Coastal	1,748	1,893	2,226	2,226
<b>Total groundwater</b>	<b>11,922</b>	<b>13,564</b>	<b>14,707</b>	<b>14,813</b>
<b>Total</b>	<b>34,573</b>	<b>41,535</b>	<b>44,096</b>	<b>41,923</b>

**Table A.2: Operating expenditures by year by pricing water source (\$'000 nominal)**

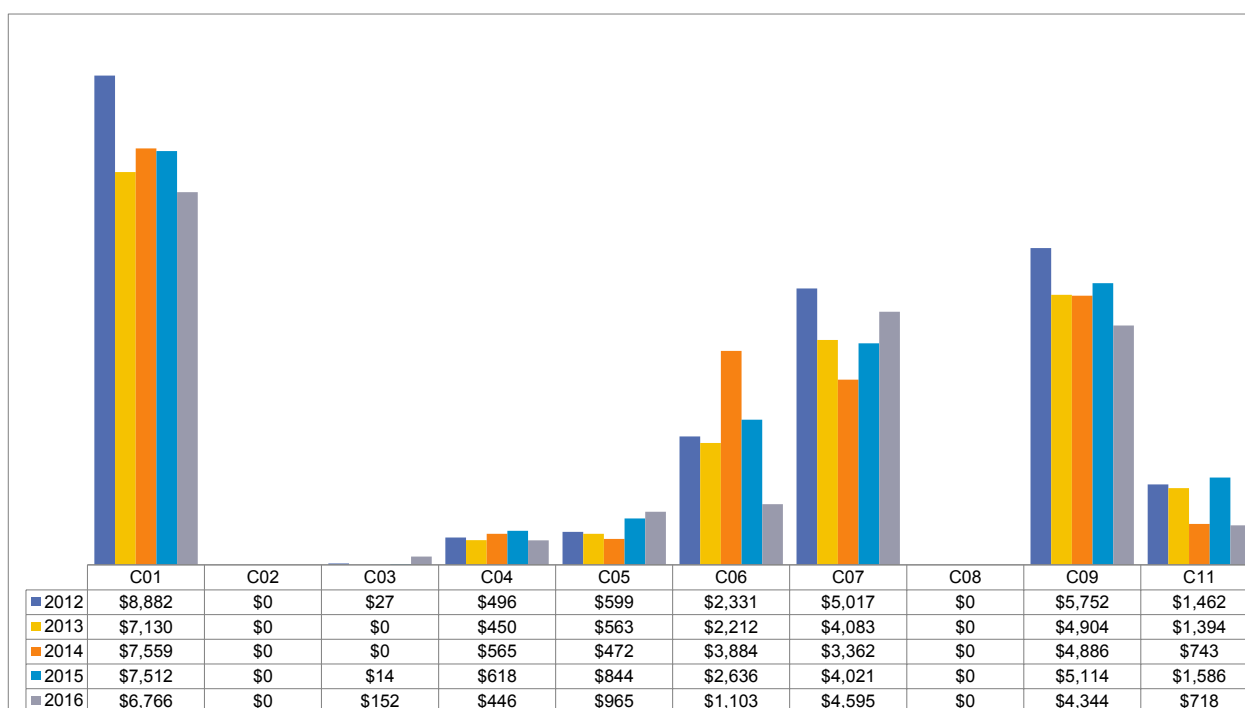
	2012	2013	2014	2015	2016	Total operating expenditure
<b>Regulated river</b>						
01. Border	931	854	860	965	997	4,608
02. Gwydir	1,341	1,175	1,355	1,211	1,505	6,587
03. Namoi	1,525	1,066	1,169	1,478	1,226	6,464
04. Peel	336	221	210	447	347	1,561
05. Lachlan	2,919	2,981	2,584	3,311	1,950	13,745
06. Macquarie	2,619	2,260	2,178	2,580	2,163	11,801
07. Far West	–	–	–	–	–	–
08. Murray	6,813	6,394	6,227	5,992	6,412	31,838
09. Murrumbidgee	6,524	5,868	5,794	4,695	6,340	29,221
10. North Coast	107	103	91	172	72	544
11. Hunter	1,903	1,669	1,549	2,509	1,722	9,352
12. South Coast	327	592	243	383	255	1,799
<b>Unregulated river</b>						
04A. North West	2,262	1,955	2,213	1,977	1,634	10,042
06A. Central West	1,863	1,544	1,862	1,899	1,717	8,884
07. Far West	1,892	1,558	1,531	2,091	1,751	8,824
08. Murray	664	568	640	500	429	2,801
09. Murrumbidgee	1,879	1,735	1,687	1,472	1,137	7,910
10. North Coast	4,310	3,692	3,987	4,331	3,450	19,769
11. Hunter	3,001	2,733	2,712	3,104	2,793	14,343
12. South Coast	6,320	5,396	5,814	6,425	6,177	30,132
<b>Groundwater</b>						
13. Inland	10,864	10,683	9,664	11,393	9,326	51,931
14. Coastal	3,207	3,281	2,990	3,290	2,577	15,345
<b>Total operating expenditure</b>	<b>61,607</b>	<b>56,328</b>	<b>55,358</b>	<b>60,227</b>	<b>53,982</b>	<b>287,503</b>

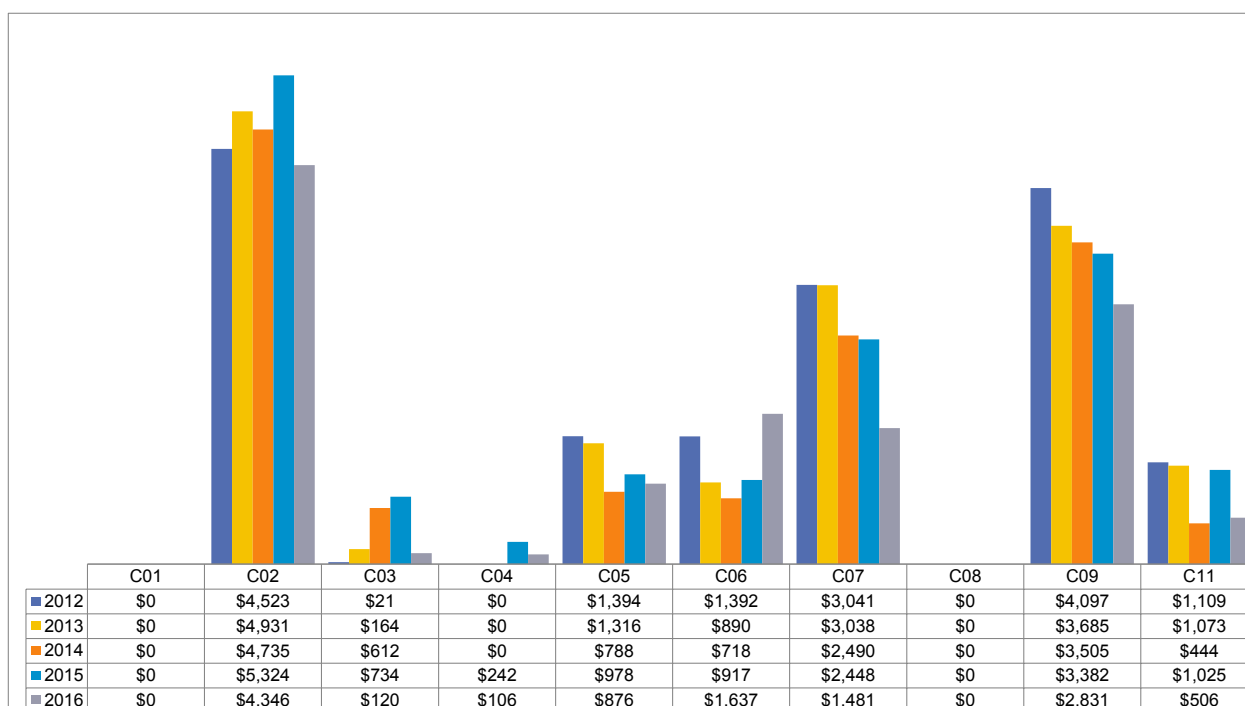


**Figure A.1: Regulated rivers – actual operating expenditure by activity group by year 2011/12 – 2015/16 (\$'000s 2015/16)**



**Figure A.2: Unregulated rivers – actual operating expenditure by activity group by year 2011/12 – 2015/16 (\$'000s 2015/16)**



**Figure A.3: Groundwater – actual operating expenditure by activity group by year 2011/12 – 2015/16 (\$'000s 2015/16)****Table A.3: Historical capital expenditure by year (\$'000 nominal)**

	2012/13	2013/14	2014/15	2015/16
Business and computing equip	0	8	245	247
Infrastructure	1,373	406	120	10,741
Intangibles	1,528	601	569	3,481
Laboratory equipment	0	0	276	27
Plant and equipment	552	35	0	0
Specialised equipment	0	0	0	465
Vehicles	0	0	90	0
	<b>3,453</b>	<b>1,049</b>	<b>1,300</b>	<b>14,960</b>
Less external funding				-13,809
	<b>3,453</b>	<b>1,049</b>	<b>1,300</b>	<b>1,152</b>

**Table A.4: User share of revenue needs (\$'000 nominal)**

	2012	2,013	2014	2015*	2016
<b>Regulated river</b>					
01.Border	1,727	1,425	1,133	1,374	1,486
02.Gwydir	2,307	1,553	1,409	1,412	1,804
03.Namoi	2,214	1,641	1,246	1,784	1,693
04.Peel	456	412	243	567	514
05.Lachlan	4,229	4,343	2,852	4,238	3,178
06.Macquarie	3,976	3,227	2,340	3,165	2,983
07.Far West	–	–	–	–	–
08.Murray	9,943	8,568	6,713	7,641	8,507
09.Murrumbidgee	10,300	7,241	6,056	5,580	7,516
10.North Coast	142	135	93	181	90
11.Hunter	2,293	2,018	1,552	2,582	1,927
12.South Coast	393	651	244	396	290
<b>Total regulated</b>	<b>37,979</b>	<b>31,215</b>	<b>23,880</b>	<b>28,919</b>	<b>29,987</b>
<b>Unregulated river</b>					
04A.North West	2,711	2,378	2,250	2,107	1,871
06A.Central West	2,180	1,876	1,878	1,985	1,907
07.Far West	2,868	2,357	1,703	2,397	2,314
08.Murray	792	702	657	549	503
09.Murrumbidgee	2,268	2,110	1,732	1,605	1,342
10.North Coast	5,348	4,656	4,080	4,642	3,985
11.Hunter	3,548	3,233	2,744	3,243	3,077
12.South Coast	7,797	6,746	5,894	6,794	6,943
<b>Total unregulated</b>	<b>27,513</b>	<b>24,057</b>	<b>20,938</b>	<b>23,322</b>	<b>21,941</b>
<b>Groundwater</b>					
13.Groundwater Inland	11,686	11,416	9,664	11,536	9,757
14.Groundwater Coastal	3,606	3,637	2,990	3,359	2,786
<b>Total groundwater</b>	<b>15,292</b>	<b>15,053</b>	<b>12,654</b>	<b>14,895</b>	<b>12,544</b>
<b>Total</b>	<b>80,784</b>	<b>70,325</b>	<b>57,473</b>	<b>67,136</b>	<b>64,472</b>

\* 2015/16 excludes allowance for return on capital expenditure and depreciation.

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## Appendix B

### 2011 cost drivers for the allocation of C-code costs

The prefix to the name of the cost driver indicates the water types that are the subject of the cost driver (R: Regulated, U: Unregulated, G: Groundwater).

C-code	Activity name	Cost Driver	Cost driver rationale
<b>C01</b>	<b>Surface water monitoring</b>		
C01-01	Surface water quantity monitoring	R/U DPI Water funded gauging sites	<p>Activity cost relates to number of gauging stations for each water type in each valley.</p> <p>Gauging stations funded by State Water, MDBA, BRC and other organisations have been excluded from DPI Water cost allocation. The cost of State Water funded gauging stations is recovered from the State Water Corporation.</p> <p>It has been assumed there is a consistent mix of the types of hydrometric sites across the State. Gauging stations range from basic, intermediate to sophisticated monitoring sites.</p> <p>There is also a mix of automated and manual collection of data. This mix has been assumed to be consistent across the State, with DPI Water progressively moving to automated data collection.</p> <p>MDBA and BRC-funded gauging stations are charged to those entities and are included in DPI Water costing based on the charge-back to NSW for its share of MDBA and BRC costs.</p>
C01-02	Surface water quantity data management and reporting	R/U DPI Water funded gauging sites	<p>The number of gauging stations in each water source is a valid cost driver because the data to be managed relates to those sites. DPI Water will recover the associated data management cost for externally-funded sites in the charge for those sites.</p> <p>The Inter-active Voice Recognition information system will apply to gauging stations across the State where there is the automated real-time telemetry.</p>
C01-03	Surface water quality monitoring	R/U Number of DPI Water funded sampling events at key sites	<p>The predetermined water quality sampling regime at specified sites across the State and the number of sampling events at those sites is the appropriate cost driver.</p> <p>Water sharing plan implementation will require an increase in sampling events after the implementation of each plan.</p>
C01-04	Surface water ecology, biology and algal monitoring	R/U Number of ecology, biology and algal sampling events	<p>The driver is a combination of water ecology and algal sampling sites and events.</p> <p>The base duty of care sampling regime for blue-green alga has been used, but the actual activity each year varies depending on the incidence of alerts impacted by climatic and other circumstances. Analysis shows close correlation between available algal alert data and the base duty of care sampling regime.</p>

C-code	Activity name	Cost Driver	Cost driver rationale
C01-05	Surface water quality and biological database management	R/U Entitlement	The need and use of water quality data relates directly to the consumption of water across all water sources. As accurate water consumption information is not available for all water sources, water entitlement has been used as a surrogate driver for cost allocation to water sources. Usage forecasts have been used as the driver for allocation across regulated river valleys.
C01-06	Surface water monitoring assets management	R/U DPI Water funded gauging sites	The maintenance and operation of water monitoring assets is a function of the number of gauging stations used for each water source. The cost driver used is DPI Water funded gauging stations. DPI Water services for MDBA and BRC-funded gauging stations are charged to those entities and are included in DPI Water costing based on the charge-back to NSW of the State's share of those costs.
<b>C02</b>	<b>Groundwater monitoring</b>		
C02-01	Groundwater quantity monitoring	G Number of active monitoring bores	Activity relates directly to number of active monitoring bores. Monitoring bores are tagged to the Groundwater Management Areas for their location and the areas have been mapped to Inland or Coastal regions. The driver used for allocation of costs to each area is the number of active monitoring bores in each area. A small proportion of monitoring bores are customer bores. These are included in the number of active bores where data collection is undertaken. The mix of automated and manual collection of data is assumed to be consistent across the State for the period of the forecasts, because DPI Water is moving towards automated data collection from all bores where this is feasible.
C02-02	Groundwater quality monitoring	G Entitlement	The need for quality monitoring will increase and is linked to the consumption of water. As the water consumption information is not complete across all groundwater management areas, the water entitlement has been used as the basis for cost allocation.
C02-03	Groundwater database management	G Number of active monitoring bores	The data management requirement is related to the number of active monitoring bores requiring data to be recorded, disseminated, managed and archived.
C02-04	Groundwater monitoring assets management	G Number of active monitoring bores	The maintenance and operation of monitoring bore assets directly relates to the number of monitoring bores for each Groundwater Management Area.
<b>C03</b>	<b>Surface and groundwater metering</b>		
C03-01	Metering operations - user owned	U/G Meter readings	Activity relates directly to the number of meter readings per year for each water source. This takes into account the number of times each meter is read, for example a meter can be scheduled to be not read, read once, twice or four times per year.
C03-02	Metering data management	U/G Meter readings	The cost of metering data management relates to the number of meter readings taken.
C03-03	Metering operations - government owned	U/G Government owned meter readings	This is a new activity that will be subject to separate costing and pricing.

C-code	Activity name	Cost Driver	Cost driver rationale
<b>C04</b>	<b>Surface water and groundwater analysis</b>		
C04-01	Water quality analysis	R/U/G Number of samples tested	The activity relates to the number of chemical and algal samples tested for each water source.
<b>C05</b>	<b>Water modelling and impact assessment</b>		
C05-01	Water sharing/water management modelling	R/U Water modelling and impact assessment	Cost allocation to each surface water type is based on the FTE resources undertaking modelling and impact assessment for that water type and then entitlement has been used for cost allocation to valleys.
C05-02	Resource assessments	R/U Water modelling and impact assessment	The cost of resource assessments relates to the modelling activity as per C05-01.
C05-03	Water balances and accounting	R/U Extraction related entitlement	The activity cost for water balances and accounting relates to the consumption of water across water sources. As complete water consumption information is not available for unregulated water, entitlement has been used as a surrogate driver for cost allocation to water sources but usage forecasts have been used for allocation across regulated river valleys.
C05-04	Groundwater modelling	G Number of active monitoring bores	Groundwater monitoring bores provide the data for the development and validation of groundwater models. The priority for groundwater modelling is stressed aquifers which are where a large proportion of groundwater monitoring bores are located. The driver selected for allocating the cost of groundwater modelling activity is therefore the number of active monitoring bores in each area.
<b>C06</b>	<b>Water management implementation</b>		
C06-01	Systems operation and water availability management	R/U/G Operations complexity	Planning time for each water type is assessed to be (1) in proportion to resources involved for each water type then (2) the cost allocation between valleys was determined to be a function of the operational complexity of the valley.  The regulated river operational complexity was assessed in consideration of factors such as; number of dams, complexity of the river systems, and consideration of interaction with other systems such as Snowy and interstate trading. Unregulated complexity was determined by the resourcing allocated to the valley and groundwater by region.
C06-02	Trading and accounts management	R/U/G Entitlement and numbers of licences	Water trading and accounts management activity is considered to be related to the volume of water entitlement and number of licences in each water source.
C06-03	Plan performance monitoring and reporting	R/U/G Water sharing plan activity	The plan performance monitoring and reporting is proportional to the complexity of each WSP. The same calculated planning complexity matrix determined for water sharing plan development (C07-01) was assessed to be the relevant cost driver for this activity.
C06-04	Blue-green algae management	R/U BGA standard sampling profile	The Blue-Green Algae management requirement varies from year to year depending on the climate, water flows and the environmental conditions.  Analysis shows close correlation between algal alerts over a period and the base duty-of-care sampling regime adopted by DPI Water. Consequently, the base duty-of-care sampling regime for BGA was chosen as the typical cost driver for this activity over the period of the Submission.



C-code	Activity name	Cost Driver	Cost driver rationale
C06-05	Environmental water management	R/U/G Entitlement	Detailed cost driver characteristics appropriate to this activity are still being developed through the water sharing plans. Until this information is available and a scientifically-determined driver can be developed, the relative volume of extraction is considered to be the most appropriate basis for allocation cost.  For this reason, licensed entitlement is considered the most appropriate reflection of extraction in each water source associated with environmental water requirements.
<b>C07</b>	<b>Water management planning</b>		
C07-01	Water sharing plan development	R/U/G Water Sharing Plan activity	Over the period of the determination the balance of water sharing plans will be implemented and the implemented plans will commence being reviewed for the development of the next plan. Therefore, it was assumed that planning work will be undertaken relating to all water sharing plans within the determination period.  The cost allocation characteristic for this activity relates to the number of plans and the complexity of each plan. A cost allocation matrix based on these characteristics was developed. Where a water sharing plan refers to a water source involving more than one water type the cost was allocated in proportion to the entitlement for each water type.
C07-02	Operational planning	R/U/G Extraction related entitlement	Operational Planning is driven by determining the rights of licence holders to extract water. Water entitlement is thus used for allocation to water sources and valleys, except for regulated water where usage forecasts are used as the cost driver for this activity.
C07-03	Environmental water planning	R/U/G Entitlement	Environmental Water Planning relates to maximising the sustainable and safe volume of water for all stakeholders including, licence holders and the environment.  The driver for cost allocation is considered to be the volume of water in each system. As water volumes are still being determined for many water sources, licensed entitlement for all water types is used as the driver for allocating the cost of this activity.
C07-04	Cross-border and national commitments	R/U/G Entitlement	Cross-border and national-commitment activities affect all water sources and relate to the total volume of water available to stakeholders in NSW.  The driver for cost allocation is considered to be the volume of water in each system. As water volumes are still being determined for many water sources, licensed entitlement for all water types was used as the driver for allocating the cost of this activity.
C07-05	Water industry regulation	R/U/G Entitlement	Water industry regulation activities apply to all water sources. The driver for cost allocation is the volume of water entitlement in each system.
<b>C08</b>	<b>River management works</b>		
C08-01	River management works	R Water source specific projects	River management works apply to the Upper Murray and Tumut Rivers. Cost is allocated based on the value of works in each of Murray and Murrumbidgee Valleys, for regulated water.
<b>C09</b>	<b>Licensing administration</b>		
C09-01	Licence administration	R/U/G Number of licences	Licence administration, management and system development activities are driven by the number of licences for each water source.

C-code	Activity name	Cost Driver	Cost driver rationale
C09-02	Licence conversion and entitlement specification	R/U/G Number of licences	Licence conversion and entitlement specification activity is proportional to the number of licences for each water source.
C09-03	Compliance	R/U/G Entitlement and number of licences	Compliance activities are focussed on the volume of water extracted. A two-part driver is therefore used for this activity based on (1) water entitlement and (2) the number of licences for each water source.
<b>C10</b>	<b>Water consents transactions</b>		
C10-01	Water consents transactions	Consent transaction activity	The drivers for water consents transactions are the time and resources required for each transaction and the number of each type of transaction. The transactions are subject to a separate activity costing to determine the tariffs for each transaction.
<b>C11</b>	<b>Business administration</b>		
C11-01	Financial administration	R/U/G Water bills (number of billable licences)	The primary activity component is billing and collection of revenue which is currently undertaken via service level agreements by State Water on behalf of DPI Water. Water management charges for regulated rivers are billed quarterly on SWC invoices. Unregulated river and groundwater licence holders are charged annually. The cost of regulated water invoicing is shared with State Water but DPI Water carries the full cost of the unregulated and groundwater billing. The driver for this activity is the number of licences billed for each water source.
C11-02	Business development	R/U/G Extraction related entitlement	Business development and planning activities apply across all water sources in addressing the requirements of stakeholders. The driver used for cost allocation is licensed water entitlement for each water type and valley except for regulated rivers where usage forecasts are used for cost allocation.

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## **Appendix C**

### Performance measures and outputs for future activities

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
<b>W01</b>	<b>Surface water monitoring</b>	<b>The collection and provision of quantity, quality, algal and ecological information for monitoring, use, assessment and management of surface water.</b>			
W01-01	Surface water quantity monitoring	The provision of a surface water quantity monitoring system; including design, station calibration, data collection, processing, encoding, quality assurance and archiving from the networks of water monitoring stations; the delivery of near real time height and/or flow data from all telemetered sites to the corporate database; and the maintenance and operation of surface water monitoring stations.	<ul style="list-style-type: none"> <li>• A maintained monitoring network of hydrometric stations providing the necessary data for surface water management.</li> <li>• Provision of validated water data from the network of surface water hydrometric stations.</li> </ul>	<p><b>Output measure</b> Number of stations for water management charge:</p> <ul style="list-style-type: none"> <li>• Current: <ul style="list-style-type: none"> <li>○ DPI Water = 430.</li> <li>○ DBBRC = 29.</li> </ul> </li> <li>• Forecast: <ul style="list-style-type: none"> <li>○ DPI Water = 430.</li> <li>○ DBBRC = 29.</li> </ul> </li> </ul> <p><b>Performance indicator</b> No of visits per annum per station:</p> <ul style="list-style-type: none"> <li>• Current: average 4.8.</li> <li>• Forecast: average 5.</li> </ul>	Surface water quantity known.
W01-02	Surface water data management and reporting	The data management and reporting of surface water quantity, quality and biological information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.	Surface water quantity and quality information compiled, securely stored, managed and published to stakeholders and general public.	<p><b>Output measure</b> Number of surface water sites subject to data management meeting specific criteria:</p> <ul style="list-style-type: none"> <li>• Current: 1,245.</li> <li>• Forecast: 1,245.</li> </ul> <p><b>Performance indicator</b> Percentage telemetered sites with data available on internet 9am each day:</p> <ul style="list-style-type: none"> <li>• Current: 95%.</li> <li>• Forecast: 95%.</li> </ul> <p>Percentage of DPI Water funded sites telemetered</p> <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: 90%.</li> </ul>	Surface water knowledge that supports the ability to share and manage water resources.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W01-03	Surface water quality monitoring	The provision of a surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	Provision of validated water quality test information.	<b>Output measure</b> Number of tests per year: <ul style="list-style-type: none"> <li>• Current:               <ul style="list-style-type: none"> <li>○ DPI Water: 30,120 per year.</li> <li>○ MDBA: 5,144 per year.</li> <li>○ DBBRC: 4,800 per year.</li> </ul> </li> <li>• Forecast: as above.</li> </ul> <b>Performance indicator</b> Tests meeting quality standards (percentage acceptable tests/total tests): <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: as above.</li> </ul> Speed of reporting of results (percentage of tests taken, processed, quality assurance approved and coded for publication within 90 days): <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: as above.</li> </ul>	State-wide water quality behaviour known and described.
W01-04	Surface water algal monitoring	The provision of a surface water algal monitoring program; including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees.	Provision of algal data on the presence and extent of potentially toxic algal blooms.	<b>Output measure</b> Number of sites monitored and tested for blue green algae: <ul style="list-style-type: none"> <li>• Current: average 73 sites per month (DPI Water and MDBA). Increased frequency when conditions require.</li> <li>• Forecast: as above</li> </ul> <b>Performance indicator</b> Percentage of samples collected and analysed according to current standards and within agreed timeframe: <ul style="list-style-type: none"> <li>• Current: 95%.</li> <li>• Forecast: 95%.</li> </ul>	Presence and status of algal blooms known.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W01-05	Surface water ecological condition monitoring	The provision of a surface water ecological condition monitoring system to assess the health of water sources; including design and application based on the River Condition Index for rivers, flood plains and wetlands.	Provision of the information for the six components of the River Condition Index: <ul style="list-style-type: none"> <li>• Hydrology.</li> <li>• Geomorphology.</li> <li>• Riparian.</li> <li>• Biota.</li> <li>• Disturbance.</li> <li>• Water quality.</li> </ul>	<b>Output measure</b> River condition index updated: <ul style="list-style-type: none"> <li>• Current: an updated report completed each year, outlining the attributes updated and the proportion of the state/water sources covered.</li> <li>• Forecast: As above.</li> </ul> <b>Performance indicator</b> Percentage of the state for which the River Condition Index (RCI) is completed in current year: <ul style="list-style-type: none"> <li>• Forecast: <ul style="list-style-type: none"> <li>○ 10% completed each year.</li> <li>○ 100% of all RCI completed for the state by the end of 10 years.</li> </ul> </li> </ul>	River condition known.
<b>W02</b>	<b>Groundwater monitoring</b>	<b>The collection and provision of water level, pressure, flow and quality information for monitoring, use, assessment and management of groundwater</b>			
W02-01	Groundwater quantity monitoring	The provision of a groundwater level, pressure and flow monitoring system; including design, site calibration, data collection, entry, audit, quality assurance, archiving, and information provision; and the maintenance and operation of groundwater monitoring bores.	<ul style="list-style-type: none"> <li>• A maintained network of monitoring bores providing the data necessary for groundwater management.</li> <li>• Provision of validated quantity and other physical resource data from groundwater monitoring bores.</li> </ul>	<b>Output measure</b> The number of pipes from which data are collected (in the last 2 years): <ul style="list-style-type: none"> <li>• Current: 4,736.</li> <li>• Forecast: 4,800.</li> </ul> <b>Performance indicator</b> Percentage of pipes monitored according to their scheduled frequency: <ul style="list-style-type: none"> <li>• 90%.</li> </ul>	Groundwater quantity status known for effective water management.
W02-02	Groundwater quality monitoring	The provision of a groundwater quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	Provision of validated groundwater quality information.	<b>Output measure</b> The number of pipes from which water quality data are collected (in the last 2 years): <ul style="list-style-type: none"> <li>• Current: 495.</li> <li>• Forecast: 495.</li> </ul> <b>Performance indicator</b> Percentage of pipes monitored according to their scheduled frequency: <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: 90%.</li> </ul>	Groundwater quality status known for effective water management.



Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W02-03	Groundwater data management and reporting	The data management and reporting of groundwater quantity and quality information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.	Groundwater quantity and quality information compiled, securely stored, managed and published to stakeholders and general public.	<b>Output measure</b> Number of active pipes subject to data management: <ul style="list-style-type: none"> <li>• Current: 4,736.</li> <li>• Forecast: 5,000.</li> </ul> <b>Performance indicator</b> Percentage of active sites subject to data management: <ul style="list-style-type: none"> <li>• Current: 98%.</li> <li>• Forecast: 98%.</li> </ul>	Groundwater information that supports the ability to share and manage water resources and monitor performance against water management plans.
<b>W03</b>	<b>Water take monitoring</b>	<b>The provision of metering services, the collection of water take data and its recording on water allocation accounts for unregulated and groundwater licence holders</b>			
W03-01	Water take data collection	The electronic and manual collection, transmission and initial recording of water take data from licence holders for unregulated and groundwater sources; and the operation and maintenance of government owned meter and telemetry facilities.	<ul style="list-style-type: none"> <li>• Government owned meters operated and maintained.</li> <li>• Volume of water take is collected.</li> </ul>	<b>Output measures</b> Number of government owned and maintained meters: <ul style="list-style-type: none"> <li>• Current: 1,230               <ul style="list-style-type: none"> <li>◦ Unregulated river: 605.</li> <li>◦ Groundwater: 625.</li> </ul> </li> <li>• Forecast: 1,200               <ul style="list-style-type: none"> <li>◦ Unregulated river: 600.</li> <li>◦ Groundwater: 600.</li> </ul> </li> </ul> Number of sites with agency water take reading/assessments charged: <ul style="list-style-type: none"> <li>• Current: 3,002               <ul style="list-style-type: none"> <li>◦ Unregulated river: 58.</li> <li>◦ Groundwater: 2,944.</li> </ul> </li> <li>• Forecast: 3,300               <ul style="list-style-type: none"> <li>◦ Unregulated river: 200.</li> <li>◦ Groundwater: 3,100.</li> </ul> </li> </ul> <b>Performance indicator</b> Percentage government owned meters operational: <ul style="list-style-type: none"> <li>• Current: 89%.</li> <li>• Forecast 95%.</li> </ul>	Water take known.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W03-02	Water take data management and reporting	The data management and reporting of water take for unregulated and groundwater sources including compilation, secure storage, management and publishing of data to authorised parties.	Water take measurement information quality assured, compiled, managed and made available to stakeholders.	<b>Output measure</b> Issued entitlement metered: <ul style="list-style-type: none"> <li>• Current: 3,486,000               <ul style="list-style-type: none"> <li>○ Unregulated river: 2,010,000 shares.</li> <li>○ Groundwater: 1,476,000 shares.</li> </ul> </li> <li>• Forecast: 3,495,000               <ul style="list-style-type: none"> <li>○ Unregulated river: 2,017,000 shares.</li> <li>○ Groundwater: 1,478,000 shares.</li> </ul> </li> </ul> <b>Performance indicator</b> Percentage of issued entitlement metered: <ul style="list-style-type: none"> <li>• Current: 70%               <ul style="list-style-type: none"> <li>○ Unregulated river: 65%.</li> <li>○ Groundwater: 78%.</li> </ul> </li> <li>• Forecast: 70%               <ul style="list-style-type: none"> <li>○ Unregulated river: 65%.</li> <li>○ Groundwater: 78%.</li> </ul> </li> </ul>	Compliance of water take with licensed share component and water management plans.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
<b>W04</b>	<b>Water modelling and impact assessment</b>	<b>The development and use of water system models for water sharing and water management applications, resource impact and water balance assessments, and annual general purpose water resource accounts for NSW water sources</b>			
W04-01	Surface water modelling	The development, upgrade and application of surface water resource management models, for use in water planning and to assess performance in terms of statutory requirements, interstate agreements, regional water supply optimisation and third party impacts on NSW stakeholders.	<p>Surface water models developed for NSW River basins for:</p> <ul style="list-style-type: none"> <li>• Reporting on model conceptualisation and structure, processes, calibration, data sources for stakeholder information.</li> <li>• Long-term extraction limits.</li> <li>• Reliability and sequencing of water take.</li> <li>• Reliability and sequencing of water availability for entitlement types.</li> <li>• Time series and statistical analysis of river flows and floodplain/wetland watering.</li> <li>• On-farm water management.</li> <li>• Daily stream salinity.</li> <li>• Modelling to support water planning at a regional scale, including hydrologic/economic optimisation models for regional water strategies and metropolitan water planning.</li> </ul>	<p><b>Output measure</b> Number of models/analyses annually</p> <ul style="list-style-type: none"> <li>• Current: 22/2,000.</li> <li>• Forecast: 26/2,800.</li> </ul> <p><b>Performance indicator</b> The percentage of surface water share component in NSW covered by models subject to annual assessments:</p> <ul style="list-style-type: none"> <li>• Current: 80% <ul style="list-style-type: none"> <li>○ Regulated river: 90%.</li> <li>○ Unregulated: 35%.</li> </ul> </li> <li>• Forecast: 95% <ul style="list-style-type: none"> <li>○ Regulated river: 100%.</li> <li>○ Unregulated river: 50%.</li> </ul> </li> </ul>	Assessment of surface water impacts/plan optimisation, performance and diversion assessment from plan/scenario evaluations.
W04-02	Groundwater modelling	The development, upgrade and use of groundwater resource management models for water sharing and management applications, and for resource impact and balance assessments.	<p>Regional groundwater models for groundwater sources covered by water management plans that are capable of providing:</p> <ul style="list-style-type: none"> <li>• Long-term sustainable extraction limits.</li> <li>• Details of aquifer interference.</li> <li>• Local water table details.</li> <li>• Water balance details.</li> <li>• Technical assessment of development proposals.</li> </ul>	<p><b>Output measure</b> Number of models/major aquifer analyses annually:</p> <ul style="list-style-type: none"> <li>• Current: 21/2,100.</li> <li>• Forecast: 22/2,200.</li> </ul> <p><b>Performance indicator</b> Percentage of volume of groundwater share component subject to modelling assessment annually:</p> <ul style="list-style-type: none"> <li>• Current: 48%.</li> <li>• Forecast: 50%.</li> </ul>	Assessment of groundwater impacts, plan performance and diversion assessment from plan/scenario evaluations.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W04-03	Water resource accounting	The development and update of water resource accounts and information on NSW water sources, for use by external stakeholders, and for internal water planning, management and evaluation processes.	<ul style="list-style-type: none"> <li>• General purpose water accounting reports.</li> <li>• Reporting and analysis of water resource accounting obligations.</li> <li>• Miscellaneous analysis and reporting.</li> </ul>	<p><b>Output measure</b> Number of outputs for water accounting reports, reporting obligations and required ad hoc:</p> <ul style="list-style-type: none"> <li>• Current: <ul style="list-style-type: none"> <li>○ 10 valleys.</li> <li>○ 9 analysis reports.</li> <li>○ 14 miscellaneous studies.</li> </ul> </li> <li>• Forecast: <ul style="list-style-type: none"> <li>○ 17 valleys.</li> <li>○ 17 analysis reports.</li> <li>○ 20 miscellaneous studies.</li> </ul> </li> </ul> <p><b>Performance indicator</b> Percentage of entitlement by water type covered by the water accounting reports:</p> <ul style="list-style-type: none"> <li>• Current: <ul style="list-style-type: none"> <li>○ Regulated river: 95%.</li> <li>○ Unregulated river: 15%.</li> <li>○ Groundwater: 90%.</li> </ul> </li> <li>• Forecast: <ul style="list-style-type: none"> <li>○ Regulated river: 100%.</li> <li>○ Unregulated river: 60%.</li> <li>○ Groundwater: 95%.</li> </ul> </li> </ul>	Stakeholder confidence in consistent, repeatable and comparable water accounts.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
<b>W05</b>	<b>Water management implementation</b>	<b>The implementation of procedures and systems to deliver the provisions of water management plans, blue-green algal management and environmental water management, the assessment and evaluation of these plans, and compliance with long-term extraction limits.</b>			
W05-01	Systems operation and water availability management	The preparation and implementation of the procedures and systems required to deliver the provisions of water management plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.	<ul style="list-style-type: none"> <li>• Implementation procedures and systems.</li> <li>• Water availability determinations.</li> <li>• WaterNSW operations compliance monitoring and annual reporting.</li> <li>• Audit of Water Sharing Plan operations.</li> </ul>	<p><b>Output measure</b> Annual compliance review on WaterNSW work approval conditions. Available Water Determinations (AWD) issued:</p> <ul style="list-style-type: none"> <li>• Current: <ul style="list-style-type: none"> <li>○ Regulated river: at least monthly AWD for all licence categories for all water sources.</li> <li>○ Unregulated river and groundwater: annual AWD for each water source.</li> </ul> </li> <li>• Forecast: <ul style="list-style-type: none"> <li>○ As above.</li> </ul> </li> </ul> <p><b>Performance indicator</b> Annual compliance review on WaterNSW submitted within 3 months of receiving input data from WaterNSW. Timeliness of AWDs:</p> <ul style="list-style-type: none"> <li>• Current: 100%.</li> <li>• Forecast: as above.</li> </ul>	Sustainable operation and utilisation of water resources.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W05-02	Blue-green algae management	The provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans.	<ul style="list-style-type: none"> <li>Algal risk management framework for fresh and marine waters managed appropriately.</li> <li>Issue of algal alerts as required, provision of regular updates to stakeholders and maintenance of the algal website and information line.</li> </ul>	<p><b>Output measure</b></p> <p>Algal risk management plans for each region are implemented:</p> <ul style="list-style-type: none"> <li>Current: Nine regional risk management plans in operation.</li> <li>Forecast: All risk management plans reviewed and updated as required.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of reports meeting weekly timeframe to regional algal coordinating committees and state algal coordinator of alert levels based on algal data.</p> <ul style="list-style-type: none"> <li>Current: 100%.</li> <li>Forecast: 100%.</li> </ul> <p>Actions implemented in accordance with algal risk management plan and guidelines:</p> <ul style="list-style-type: none"> <li>Current: 100%.</li> <li>Forecast: 100%.</li> </ul>	Risks associated with blue-green algae are mitigated
W05-03	Environmental water management	The development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes.	<ul style="list-style-type: none"> <li>Collaborative management of planned environmental water in regulated and unregulated rivers.</li> <li>Collaborative management of adaptive and held environmental water in regulated rivers.</li> <li>Measurement of the outcomes of environmental water delivery (in selected valley(s)).</li> <li>Snowy River and Murray River increased flows.</li> <li>Cold Water Pollution (CWP) management and science development.</li> </ul>	<p><b>Output measure</b></p> <ul style="list-style-type: none"> <li>Delivery of Snowy and Snowy Mountain River increased flows.</li> <li>Conditions on major dam work approvals to implement environmental watering plans and to mitigate cold water pollution impacts on receiving waters.</li> <li>Monitor and evaluate water resource plans to determine environmental outcomes.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of occasions that Snowy and Snowy Mountain River daily flow target achieved:</p> <ul style="list-style-type: none"> <li>98% of occasions.</li> </ul>	Healthy ecosystem function and environmental assets.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W05-04	Water plan performance assessment and evaluation	The assessment, audit and evaluation of the water management plans' appropriateness, efficiency and effectiveness in achieving economic, social and environmental objectives.	<p>Outputs – performance assessment:</p> <ul style="list-style-type: none"> <li>• Performance and assessment strategy document.</li> <li>• Identification of key knowledge gaps related to assessment of plan management rules, followed by an integrated research program to resolve the knowledge gap.</li> <li>• Publication of ecosystem response conceptual models and preliminary reports that describe ecology/flow management outcomes and provide adequate advice.</li> <li>• Assessment of water plan amendment provisions.</li> </ul> <p>Outputs – evaluation:</p> <ul style="list-style-type: none"> <li>• Assessment of level of plan achievement of: <ul style="list-style-type: none"> <li>○ Economic objectives.</li> <li>○ Environmental objectives.</li> <li>○ Social/cultural objectives.</li> </ul> </li> <li>• Audit and assessment of the level of implementation of provisions in plans.</li> <li>• Each WSP audited every 5 years to determine if its provisions are being actioned.</li> <li>• Completion of evaluation reports for the WSPs as they expire.</li> </ul>	<p><b>Output measure</b></p> <p>Number of valleys being assessed under the performance and assessment strategy.</p> <ul style="list-style-type: none"> <li>• Current: 7.</li> <li>• Forecast: 24.</li> </ul> <p>Number of plan audits completed (5 yearly)</p> <ul style="list-style-type: none"> <li>• Current: 10.</li> <li>• Forecast: 32.</li> </ul> <p>Number of plan evaluations completed</p> <ul style="list-style-type: none"> <li>• Current: 0.</li> <li>• Forecast: 17.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of plans incorporated into ecological performance and assessment programs</p> <ul style="list-style-type: none"> <li>• Current: 30%.</li> <li>• Forecast: 100%.</li> </ul> <p>Percentage of plans audited within statutory requirement:</p> <ul style="list-style-type: none"> <li>• Current: 30%.</li> <li>• Forecast: 100%.</li> </ul> <p>Percentage plans evaluated that have come to term:</p> <ul style="list-style-type: none"> <li>• Current: 0%.</li> <li>• Forecast: 100%.</li> </ul>	Adaptive management of water plans to meet the requirements of the <i>Water Management Act 2000 (and Water Act 2007 (Commonwealth))</i> when WRPs commence).



Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
<b>W06</b>	<b>Water management planning</b>	<b>The development, review, amendment, and extension or replacement of water management plans, regional planning and management strategies, and development of the water planning and regulatory framework.</b>			
W06-01	Water plan development (coastal)	The development, review, amendment, and extension or replacement of water management plans, and the consultation activities associated with developing these plans for the coastal water sources.	<ul style="list-style-type: none"> <li>• WSPs completed for all non-MDB water sources.</li> <li>• Implementation of the WSP ecosystem performance and assessment strategy.</li> <li>• Review and remake or extension of each WSP as it expires.</li> </ul>	<p><b>Output measure</b></p> <ul style="list-style-type: none"> <li>• 5 WSPs will be reviewed and replaced/extended.</li> <li>• 7 WSPs will be reviewed.</li> <li>• 1 WSP will be reviewed and merged into an existing WSP.</li> </ul> <p><b>Performance indicator</b></p> <p>Cumulative percentage of forecast WSPs reviewed, replaced/extended or merged:</p> <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul>	Statutory water sharing arrangements in place
W06-02	Water plan development (inland)	The development, review, amendment, and extension or replacement of water management plans; the development of additional planning instruments to comply with the Commonwealth Water Act; and the consultation activities associated with developing these plans for the inland water sources.	<ul style="list-style-type: none"> <li>• Water Resource Plans development for MDB water sources.</li> <li>• Implementation of the WSP Ecosystem Performance and Assessment Strategy.</li> <li>• Each WSP audited every 5 years to determine its provisions are being actioned.</li> <li>• Completion of evaluation reports for the WSPs as they expire.</li> <li>• Remake or extension of each WSP as it expires.</li> <li>• WRP assessment tasks.</li> </ul>	<p><b>Output measure</b></p> <ul style="list-style-type: none"> <li>• 8 WSPs will be reviewed and replaced/extended.</li> <li>• 2 WSPs will be reviewed.</li> <li>• 3 WSPs will be reviewed and merged into an existing WSP.</li> <li>• 22 WRPs will be completed.</li> </ul> <p><b>Performance indicator</b></p> <p>Cumulative percentage of forecast WSPs reviewed, replaced/extended or merged:</p> <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul> <p>Cumulative percentage of forecast WRPs completed:</p> <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul>	Statutory water sharing and water quality management arrangements in place.
W06-03	Floodplain management plan development	The development, review, amendment, and extension or replacement of Floodplain Management Plans, in collaboration with the Office of Environment and Heritage.	<p>Floodplain Management Plan (FMP) development:</p> <ul style="list-style-type: none"> <li>• Remake of each FMP as it expires.</li> </ul>	<p><b>Output measure</b></p> <p>Number of FMPs completed or remake:</p> <ul style="list-style-type: none"> <li>• 5 new FMPs will be developed.</li> </ul> <p><b>Performance indicator</b></p> <p>Cumulative percentage of forecast FMPs completed:</p> <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul>	Statutory floodplain arrangements in place.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W06-04	Drainage management plan development	The development, review, amendment, and extension or replacement of Drainage Management Plans, to address water quality problems associated with drainage systems.	Drainage Management Plan (DMP) development: <ul style="list-style-type: none"> <li>• Remake of each DMP as it expires.</li> </ul>	<b>Output measure</b> Number of DMPs completed or remade: <ul style="list-style-type: none"> <li>• 0 new DMPs will be developed.</li> </ul> <b>Performance indicator</b> <ul style="list-style-type: none"> <li>• N/A.</li> </ul>	Statutory drainage management arrangements in place.
W06-05	Regional planning and management strategies	The development, evaluation and review of regional water strategies, metropolitan water plans and other planning instruments, including the associated stakeholder engagement.	<ul style="list-style-type: none"> <li>• Development of regional water strategies, which integrate and set priorities for related special-purpose plans (for example water sharing plans).</li> <li>• Evaluation and ongoing adaptive management of the metropolitan water plans for greater Sydney and the lower Hunter.</li> <li>• Development, assessment and review of planning instruments.</li> </ul>	<b>Output measure</b> <ul style="list-style-type: none"> <li>• 2 regional water strategies (metropolitan water plans) will be reviewed.</li> <li>• 6 new regional water strategies will be completed.</li> </ul> <b>Performance indicator</b> Cumulative percentage of forecast metropolitan water plans being reviewed: <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul> Cumulative percentage of forecast regional water strategies completed: <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul>	Water management plans that satisfy existing and future water supply needs.
W06-06	Development of water planning and regulatory framework	The development of the operational and regulatory requirements and rules for water access.	<ul style="list-style-type: none"> <li>• Developed, amended and refined regulatory instruments and policies putting in place an improved regulatory framework for water management planning.</li> <li>• Requirements for issuing new water licences clearly defined and understood by users.</li> <li>• Requirements for equitable water take defined and improved.</li> </ul>	<b>Output measure</b> Number of regulatory instruments and policies developed or amended according to an annual forecast: <ul style="list-style-type: none"> <li>• Forecast on an annual basis.</li> </ul> <b>Performance indicator</b> Percentage of annual forecast frameworks and regulatory instruments delivered according to schedule: <ul style="list-style-type: none"> <li>• Forecast: 100%.</li> </ul>	An effective and efficient water planning and management framework.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W06-07	Cross border and national commitments	The development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments.	<ul style="list-style-type: none"> <li>Development and implementation of operational programs to meet NWI commitments.</li> <li>Biennial assessments on progress with implementing NWI agreements on water reform agenda.</li> <li>Participation in relevant interstate committees progressing NWI and COAG water reform initiatives.</li> <li>Development of interstate water sharing arrangements through MDB and Border Rivers agreements, and Snowy and ACT arrangements.</li> </ul>	<p><b>Output measure</b> Full participation in interstate processes to manage water.</p> <p><b>Performance indicator</b> Compliance with key interstate agreements:</p> <ul style="list-style-type: none"> <li>Current: 100%.</li> <li>Forecast: 100%.</li> </ul>	National and interstate agreements successfully negotiated and implemented.
<b>W07</b>	<b>Water management works</b>	<b>The undertaking of water management works to reduce the impacts arising from water use or remediate water courses</b>			
W07-01	Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.	<p>Water management works to mitigate resource impacts:</p> <ul style="list-style-type: none"> <li>Riverbank protection.</li> <li>Salt interception schemes.</li> </ul>	<p><b>Output measure</b> High priority areas of erosion identified and remediated:</p> <ul style="list-style-type: none"> <li>Current: 90%.</li> <li>Forecast: 90%.</li> </ul> <p>Maintain salinity (EC) credits for NSW</p> <p><b>Performance indicator</b> Channel output capacity at Tumut maintained at 9,200ML/day.</p>	Remediation of environmental impacts arising from water use.
<b>W08</b>	<b>Water regulation management</b>	<b>The development, operation and management of the administration of licences, approvals, their associated transactions and compliance management and enforcement</b>			
W08-01	Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.	<p>Management and operation of public register for access licence approvals, trading and environmental water.</p> <p>Systems development:</p> <ul style="list-style-type: none"> <li>Online tools.</li> <li>Online applications.</li> <li>Online payments.</li> <li>Smart phone tracking of applications.</li> </ul>	<p><b>Output measure</b> Number of applications received online:</p> <ul style="list-style-type: none"> <li>Current; 2,000.</li> <li>Forecast: 2,500.</li> </ul> <p><b>Performance indicator</b> Percentage of all applications received online:</p> <ul style="list-style-type: none"> <li>Current: 33%.</li> <li>Forecast: 42%.</li> </ul>	A water regulation system that effectively records water entitlements, approvals and conditions for water use.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W08-02	Consents management and licence conversion	The transcribing of water sharing provisions into licence conditions and the conversion of licences to the Water Management Act.	<ul style="list-style-type: none"> <li>• Licences cleansed for conversion to WMA.</li> <li>• Volumetric licence conversions.</li> <li>• Water sharing provisions transcribed into licence conditions.</li> <li>• Development of discretionary conditions.</li> </ul>	<p><b>Output measure</b></p> <p>Annual number of licences recorded on the public register plus number of access licence and approvals with updated conditions:</p> <ul style="list-style-type: none"> <li>• Current: All licences recorded on public register.</li> <li>• Forecast: All licences recorded on public register – the number varies from year to year.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of access licences and changes to licence details recorded on the public register within two months of implementation or update of sharing plan:</p> <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: 90%.</li> </ul>	Water regulation records maintained to reflect current regulatory requirements.
W08-03	Compliance management	The on-ground and remote monitoring activities (including investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions.	Compliance education, monitoring, and breach management/enforcement/ investigation.	<p><b>Output measure</b></p> <p>Number of breach reports received:</p> <ul style="list-style-type: none"> <li>• Current: 600.</li> <li>• Forecast: 600.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of non-basic landholder rights approvals audited each year:</p> <ul style="list-style-type: none"> <li>• 2%.</li> </ul> <p>Percentage of properties audited that are in compliance with licence and approval conditions (excluding those audited as part of investigating an alleged breach):</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul> <p>Percentage of breach reports risk assessed within 14 days of receipt:</p> <ul style="list-style-type: none"> <li>• 90%.</li> </ul> <p>Percentage of all cases finalised within 6 months:</p> <ul style="list-style-type: none"> <li>• 70%.</li> </ul>	Water take and use compliance with regulatory requirements.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
W08-99	Water consents overhead	The administrative overhead costs associated with water consent transactions, which are passed on to customers in the water management tariff.	Overhead support and facilities for consent transactions.	Overhead charge associated with consent transactions.	
<b>W09</b>	<b>Water consents transactions</b>	<b>The technical requirements for, and administration of, water consents transactions</b>			
W09-01	Water consents transactions	Transactions undertaken on a fee for service basis; including dealings, assessments, changes to conditions and new applications for water licences and approvals.	<ul style="list-style-type: none"> <li>Water consents transactions processed.</li> <li>Licences in compliance with regulatory requirements.</li> </ul>	<p><b>Output measure</b></p> <p>Number of applications processed:</p> <ul style="list-style-type: none"> <li>Current: 6,000</li> <li>Forecast: Process all applications received.</li> </ul> <p><b>Performance indicator</b></p> <p>Percentage of applications for licence dealings assignment of shares (71Q) processed within 20 days:</p> <ul style="list-style-type: none"> <li>90%.</li> </ul> <p>Percentage of applications for new access licences processed within 40 days:</p> <ul style="list-style-type: none"> <li>80%.</li> </ul> <p>Percentage of applications for water management work and use approvals processed within 60 days:</p> <ul style="list-style-type: none"> <li>80%.</li> </ul> <p>Percentage of applications to extend a water management work approval processed within 20 days:</p> <ul style="list-style-type: none"> <li>90%.</li> </ul> <p>Percentage of applications for an approval for a bore for domestic and stock rights processed within 10 days:</p> <ul style="list-style-type: none"> <li>90%.</li> </ul> <p>Percentage of legal searches completed within the preferred processing time frame:</p> <ul style="list-style-type: none"> <li>95%.</li> </ul>	Up-to-date documentation of licensed access and use of water.

Code	Activity Name	Statement of Activity	Outputs	Output Measure/Performance indicator	Outcome
<b>W10</b>	<b>Business and customer services</b>		<b>The customer, business and revenue collection services supporting the operation of the DPI Water.</b>		
W10-01	Customer management	All customer liaison activities; including responding to calls to licensing and compliance information lines; and producing communication and education materials such as website content and participation in customer forums.	Timely responses to customer enquiries.	<b>Output measure</b> Number of enquiries: <ul style="list-style-type: none"> <li>• Current: 10,000.</li> <li>• Forecast: 10,000.</li> </ul> <b>Performance indicator</b> Percentage of enquiries directly responded to at the time of the call/email: <ul style="list-style-type: none"> <li>• Current: 90%.</li> <li>• Forecast: Maintain or improve current status.</li> </ul>	Informed and satisfied customers.
W10-02	Business governance and support	The business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART.	Business systems, processes and administration for commercial operation of government monopoly water services.	<b>Output measure</b> <ul style="list-style-type: none"> <li>• Annual reporting to IPART and ACCC.</li> <li>• Annual performance reporting to customers.</li> </ul> <b>Performance indicator</b> Annual reporting within agreed timeline from end of financial year: <ul style="list-style-type: none"> <li>• Reporting to IPART and ACCC: 4 months.</li> <li>• Reporting to customers: 6 months.</li> </ul>	Water management activities supported and developed to meet stakeholder needs.
W10-03	Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.	Water billing and payment processing.	<b>Output measure</b> Number of bills issued: <ul style="list-style-type: none"> <li>• Current: 65,000.</li> <li>• Forecast: 65,000.</li> </ul> <b>Performance indicator</b> Percentage of billing revenue collected within 3 months of the bills being issued: <ul style="list-style-type: none"> <li>• Current: 93%.</li> <li>• Forecast: 95%.</li> </ul>	Revenue collected for water management activities.

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## Appendix D

### Service obligations for future activities

The water management and planning activities of DPI Water are carried out to satisfy statutory and other obligations on behalf of government. The following table sets out the service obligations applying to each of DPI Water activities.

Code	Activity name	Service obligation
<b>W01</b>	<b>Surface water monitoring</b>	
W01-01	Surface water quantity monitoring	<p>The operation and maintenance of flow reference points and water monitoring sites used to control, monitor and evaluate water take activities in compliance with:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Water Sharing Plans.</li> <li>○ The requirement relates to Chapter 2 Water management planning, Part 1, Division 1 Section 5 Water management principles (3) 'In relation to water sharing' and in accordance with Sections 20 Core provisions (2) and 21 Additional provisions (e) in Division 2 Water Sharing.</li> <li>○ Chapter 8, Part 2 the monitoring function for WAMC under Section 372 (1) (a1) to construct and operate gauging stations and other monitoring equipment.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Part 9 – Murray Darling Basin Authority (Administrative provisions), Section 172 – Authorities functions (delegated to States per sub section 2), (b) to measure, monitor and record the quality and quantity of the Basin water resources, including measuring, monitoring and recording.</li> <li>○ Murray Darling Basin Plan: <ul style="list-style-type: none"> <li>– Chapter 10 – Water resource plan requirements, Part 10 Measuring and monitoring.</li> <li>– Chapter 11 – Critical human water needs, 11.06 Process for assessing inflow prediction.</li> </ul> </li> </ul> </li> </ul>
W01-02	Surface water data management and reporting	<p>Reporting to water users as a requirement of:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Water Sharing Plans, Part 3: Basis for water sharing</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Provision of water information to the Bureau of Meteorology as the national custodian of water information under Part 7, Division 3 – Water Information.</li> <li>○ Part 2 – Management of Basin water resources, Division 2 – Water Resource Plans for particular water resources plan areas.</li> <li>○ Murray Darling Basin Plan: <ul style="list-style-type: none"> <li>– Chapter 10: Water resource plan requirements.</li> <li>– Chapter 11: Critical human water needs.</li> </ul> </li> </ul> </li> </ul>

Code	Activity name	Service obligation
W01-03	Surface water quality monitoring	<p>Monitoring of water quality in compliance with:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Sections 3(b), 5.(2)(c), being the Objects and Principles of the Act that both require protection and enhancement of water quality.</li> <li>○ Section 100, that requires the development of conditions and targets for major utility water licences to mitigate/manage cold water pollution.</li> <li>○ Section 372, that allows WAMC to collect data and conduct research for decision making on Water Quality management, including the setting of Water Quality Objectives.</li> <li>○ Water Sharing Plans: Water quality requirements specified.</li> <li>○ The National Water Quality Management Strategy (NWQMS) is a nationally agreed set of policies, processes and 21 guidelines documents for monitoring and assessing water quality. The NWQMS proposes that water quality plans be integrated into present-generation water allocation plans.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Monitoring water quality to meet targets required in the Murray Darling Basin Plan, Chapter 9 – Water Quality and Salinity Management Plan, Part 4 Water quality targets.</li> <li>○ Part 1A The Murray Darling Basin Agreement, Schedule 1, Schedule B: Basin Salinity Management.</li> </ul> </li> </ul>
W01-04	Surface water algal monitoring	<p>The monitoring and analysis of algal information in compliance with:</p> <ul style="list-style-type: none"> <li>• The NSW Algal Risk Management sub plan – a sub plan of the State Emergency Management Plan (<i>State Emergency and Rescue Management Act 1989</i>) that requires monitoring and management response to potentially toxic blue-green algae blooms.</li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Murray Darling Basin Plan, Part 4, section 9.18 sets water quality targets for recreational water used in the Monitoring Evaluation and Reporting (MER) framework for Basin Plan.</li> </ul> </li> </ul>
W01-05	Surface water ecological condition monitoring	<p>The collection of information and creation of performance indicators for aquatic ecological conditions for Water Sharing Plans under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Section 7: requires the classification of water sources.</li> <li>○ Section 10: requires work to be reviewed every 5 years to determine whether it has contributed to the principles of the Act (Part 5).</li> <li>○ Part 5 (Water Management Principles): require protection or restoration of a range of aquatic ecosystems.</li> <li>○ Monitoring of river condition is established and maintained to satisfy Section 372 (1)(b) of the <i>Water Management Act 2000</i>, particularly to conduct research, collect information and develop technology in relation to water management. Without information on river condition it is difficult to undertake impact assessment.</li> </ul> </li> </ul>
<b>W02</b>	<b>Groundwater monitoring</b>	
W02-01	Groundwater quantity monitoring	<p>Construction, operation and maintenance of a groundwater monitoring network in compliance with monitoring requirements under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Chapter 2, Division 1 Water Management Principles.</li> <li>○ Chapter 8, Part 2 the monitoring function for WAMC under Section 372 (1) (a1) to construct and operate gauging stations and other monitoring equipment.</li> <li>○ Water Sharing Plans and performance indicators in those plans.</li> </ul> </li> </ul>
W02-02	Groundwater quality monitoring	<p>Monitoring of groundwater quality in compliance with monitoring requirements under:</p> <ul style="list-style-type: none"> <li>• NSW Groundwater Quality Protection Policy: <ul style="list-style-type: none"> <li>○ Section 6.9 Monitoring that outlines the requirement to undertake groundwater quality monitoring.</li> </ul> </li> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Chapter 2, Division 1 Water Management Principles.</li> <li>○ Water Sharing Plans: monitoring against performance indicators in those plans.</li> <li>○ The monitoring function for WAMC under Section 372 (1).</li> </ul> </li> </ul>

Code	Activity name	Service obligation
W02-03	Groundwater data management and reporting	<p>Reporting to water users and stakeholders as a requirement of:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Water Sharing Plans, Part 3: Basis for water sharing.</li> </ul> </li> </ul> <p>Provision of water information to the Bureau of Meteorology as the national custodian of water information under :</p> <ul style="list-style-type: none"> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Part 7, Division 3 – Water Information.</li> <li>◦ Part 2 – Management of Basin water resources. Division 2 – Water Resource Plans for particular water resources plan areas.</li> <li>◦ Murray Darling Basin Agreement – Basin Plan – Chapter 10: Water resource plan requirements.</li> <li>◦ Murray Darling Basin Agreement – Basin Plan – Chapter 11: Critical human water needs.</li> </ul> </li> </ul>
<b>W03</b>	<b>Water take monitoring</b>	
W03-01	Water take data collection	<p>The measurement of water take in compliance with requirements specified under the:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Water Sharing Plans.</li> <li>◦ Chapter 7, Part 1 Conservation of Water, section 326 Directions to install and maintain metering equipment.</li> <li>◦ Chapter 8, Part 2 Water Administration Ministerial Corporation section 372A Metering equipment functions.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Division 1, Part 2, Subdivision B of Basin Plan.</li> </ul> </li> <li>• NWI Clause 87 requirement for metering.</li> <li>• NSW Water Extraction Management Policy 2007.</li> </ul>
W03-02	Water take data management and reporting	<p>The collection and reporting of water take for compliance with:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Water Sharing Plans specifying Long-Term Average Annual Extraction Limits (LTAAEL).</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Reporting Obligations in Part 2, Division 2 Subdivision F, and Part 7, Division 3: Water Information s126.</li> <li>◦ Part 9 Division 1 Section 172 Authorities functions: <ul style="list-style-type: none"> <li>– (b) to measure, monitor and record the quality and quantity of the Basin water resources, including measuring, monitoring and recording.</li> <li>– (v) the taking of water from the basin water resources.</li> </ul> </li> <li>◦ Murray Darling Basin Plan Chapter 10, Part 3, Division 3 Actual Take, Section10:15.</li> </ul> </li> </ul>

Code	Activity name	Service obligation
<b>W04</b>	<b>Water modelling and impact assessment</b>	
W04-01	Surface water modelling	<p>Development of surface water models to enable scenario creation and analysis to support water plan development required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Chapter 2: Part 1, Part 3 Divisions 3, 8 for: <ul style="list-style-type: none"> <li>– Specification of scenarios modelled.</li> <li>– LTAAEL (Long Term Average Annual Extraction Limit).</li> <li>– Water balance assessments and performance evaluation.</li> <li>– Stakeholder consultation.</li> <li>– Explicit reference to WSP model scenario in statutory WSPs.</li> </ul> </li> <li>○ Chapter 8, Part 2, Section 372(b) Functions of Ministerial Corporation.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Murray Darling Basin Plan: <ul style="list-style-type: none"> <li>– Chapter 6—Water that can be taken.</li> <li>– Chapter 8 Environmental Watering Plan.</li> <li>– Schedule 1, Schedule B, Basin Salinity Management and Chapter 9 Basin Plan, water Quality and Salinity Management Plan.</li> </ul> </li> </ul> </li> </ul> <p>Models to support water planning at a regional scale, including hydrologic/economic optimisation models for regional water strategies and metropolitan water planning:</p> <ul style="list-style-type: none"> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>○ Goal 1: Improve performance of the NSW economy.</li> <li>○ Goal 21: Secure potable water supplies.</li> </ul> </li> </ul>
W04-02	Groundwater modelling	<p>Groundwater models to provide information to support water plan development under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Chapters 2: Part 1, Part 3 Divisions 3, 8 for: <ul style="list-style-type: none"> <li>– Scenarios modelled.</li> <li>– LTAAEL (Long Term Average Annual Extraction Limit)</li> <li>– Water balance assessments and performance evaluation.</li> </ul> </li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ Murray Darling Basin Plan: Part 2, Division 1, Subdivision B.</li> </ul> </li> </ul>
W04-03	Water resource accounting	<p>Water Resource Accounting requirements under:</p> <ul style="list-style-type: none"> <li>• Intergovernmental Agreement on a National Water Initiative, Clauses 80-88.</li> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Water Accounting information (AWDs, trading, environmental water accounting, end of system flows) for review and evaluation of Water Sharing Plans.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>○ MDBA Water Audit Monitoring Reports under Murray Darling Basin Agreement transitioning to SDL (Sustainable Diversion Limits) reporting required for the Murray Darling Basin Plan.</li> <li>○ Water Accounting requirements for the Murray Darling Basin Plan.</li> <li>○ Provision of water information to the Bureau of Meteorology as the national custodian of water information under Subdivision F – Reporting Obligations (the reporting obligation of the Basin state is to report the quantity of water available from the water sources of the water resource plan area during that water accounting period).</li> </ul> </li> </ul>

Code	Activity name	Service obligation
<b>W05</b>	<b>Water management implementation</b>	
W05-01	Systems operation and water availability management	<p>Implementation and operation of equitable and sustainable water sharing under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 2 Water management planning.</li> <li>◦ Chapter 3 Water management implementation including providing input into WSP amendments and operational policies and procedures.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Part 2, Div 1 – Basin Plan, Sustainable water sharing.</li> </ul> </li> <li>• Water Management (General) Regulations: <ul style="list-style-type: none"> <li>◦ Part 10 Schedules 3 and 4 Water administration.</li> <li>◦ Part 10 Schedule 9 Savings Transitional and Other Provisions).</li> </ul> </li> </ul> <p>Managing water trade (including interstate trade) – limits, 'special' circumstances:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Section 71T and Section 71V Access Licence Dealing Principles Order.</li> </ul> </li> <li>• Ensuring compliance with Basin Plan trade rules under Basin Plan Chapter 12 Water Trading Rules including the protection of market sensitive information and the provision of information to inform water markets.</li> </ul> <p>Management of Snowy Water Licence:</p> <ul style="list-style-type: none"> <li>• <i>Snowy Hydro Corporatisation Act 1997</i>, Part 5.</li> </ul>
W05-02	Blue-green algae management	<p>The monitoring and management response to potentially toxic blue-green algae blooms in compliance with:</p> <ul style="list-style-type: none"> <li>• NSW Algal Risk Management sub plan – a sub plan of the State Emergency Management Plan (<i>State Emergency and Rescue Management Act 1989</i>).</li> </ul> <p>Managing the algal risk that may affect potable water supplies in NSW in compliance with:</p> <ul style="list-style-type: none"> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>◦ Goal 21 Secure potable water supplies.</li> </ul> </li> </ul>
W05-03	Environmental water management	<p>Management of licences for the purpose of adaptive environmental water:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Section 8E general provisions relating to access licences with adaptive environmental water conditions.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Environmental and supply considerations in Section 14.</li> <li>◦ Schedule F effect of Snowy scheme of Schedule 1 in the Murray Darling Basin Agreement.</li> </ul> </li> </ul>
W05-04	Water plan performance assessment and evaluation	<p>Performance monitoring and assessment of Water Sharing, Water Resource and Regional Water Plans under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Section 43A (3) review undertaken by the Natural Resources Commission in considering whether a plan should be extended, based on its contribution to natural resource management for each Local Land Service area.</li> <li>◦ Section 44 requires that management plans be audited at intervals no longer than 5 yearly. This is a requirement for an audit of implementation activities for each WSP, and other management plans (eg Floodplain management plans).</li> <li>◦ Division 3, Section 10 requires an evaluation every 5 years of the extent to which the activities of DPI Water have contributed to the Principles of the Act.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Schedule 12 of the Basin Plan sets monitoring, evaluation, and reporting obligations for basin states under the Basin Plan.</li> </ul> </li> </ul> <p>Monitoring and evaluation of regional water plans and strategies, including the metropolitan water plans for greater Sydney and the lower Hunter under:</p> <ul style="list-style-type: none"> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>◦ Goal 22: Protect Our Natural Environment; specifies completion of Water Sharing Plans as a priority action.</li> </ul> </li> </ul>

Code	Activity name	Service obligation
<b>W06</b>	<b>Water management planning</b>	
W06-01	Water plan development (coastal)	<p>Water planning as required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 2, Part 3 Management Plans, Division 1, Division 2 Water sharing, Division 3 Water use and Part 4 Minister's plans for the making of management plans for water sharing.</li> </ul> </li> <li>• Intergovernmental agreement on a National Water Initiative: <ul style="list-style-type: none"> <li>◦ As a signatory, NSW is required to prepare water plans consistent with the Initiative.</li> </ul> </li> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>◦ Goal 22: Protect Our Natural Environment; specifies completion of Water Sharing Plans as a priority action.</li> </ul> </li> </ul>
W06-02	Water plan development (inland)	<p>Water planning as required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 2, Part 3 Management Plans, Division 1, Division 2 Water sharing, Division 3 Water use and Part 4 Minister's plans for the making of management plans for water sharing.</li> </ul> </li> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Part 2 – Management of Basin water resources.</li> <li>◦ Murray Darling Basin Plan, Chapter 10 water resource plan requirements.</li> <li>◦ As a signatory to the Murray Darling Basin Plan, NSW has committed to preparing Water Resource Plans and Environmental Watering Plans by 2019/20.</li> </ul> </li> <li>• Intergovernmental agreement on a National Water Initiative: <ul style="list-style-type: none"> <li>◦ As a signatory, NSW is required to prepare water plans consistent with the Initiative.</li> </ul> </li> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>◦ Goal 22: Protect Our Natural Environment; specifies completion of Water Sharing Plans as a priority action.</li> </ul> </li> </ul>
W06-03	Floodplain management plan development	<p>Floodplain management planning as required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 2, Part 3 Management Plans, Division 1 and Division 5 Floodplain management and Part 4 Minister's plans that provide for the making of management plans for floodplain management.</li> </ul> </li> <li>• Water Management Partnership Agreement – Commonwealth of Australia and the State of New South Wales: <ul style="list-style-type: none"> <li>◦ The Priority Project 'NSW Healthy Floodplains' under this agreement requires NSW to develop Floodplain Management Plans for the north west catchments of the State.</li> </ul> </li> </ul>
W06-04	Drainage management plan development	<p>Drainage management planning as required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 2, Part 3 Management Plans, Division 4 Drainage management and Part 4 Minister's plans that provide for the making of management plans for drainage management.</li> </ul> </li> </ul>
W06-05	Regional planning and management strategies	<p>Development of regional water plans and management strategies for the benefit of current and future users that will enable metropolitan and regional areas to meet the water requirements of growing populations and commercial use:</p> <ul style="list-style-type: none"> <li>• <i>NSW 2021</i>: <ul style="list-style-type: none"> <li>◦ Goal 1: Improve performance of the NSW economy.</li> <li>◦ Goal 21: Secure potable water supplies.</li> </ul> </li> <li>• NSW Government tasked Metro Water with responsibility for delivering a new water plan to secure water supplies for the lower Hunter (CM11.205).</li> <li>• <i>State Infrastructure Strategy 2012</i> recommends that infrastructure planning for Sydney's next supply should commence as part of the current review of the 2010 Metropolitan Water Plan, and identifies the need for a major new water supply for the Hunter (timing to be verified by the Lower Hunter Water Plan).</li> </ul>

Code	Activity name	Service obligation
W06-06	Development of water planning and regulatory framework	Development of the water planning and regulatory framework to implement the requirements of the: <ul style="list-style-type: none"> <li>• Intergovernmental Agreement on a National Water Initiative.</li> <li>• <i>Water Management Act 2000</i>.</li> <li>• Murray Darling Basin Plan.</li> <li>• Murray Darling Basin Plan Implementation IGA.</li> <li>• NSW Floodplain Harvesting Policy.</li> <li>• NSW Aquifer Interference Policy.</li> </ul>
W06-07	Cross border and national commitments	Activities required to implement cross-border obligations under: <ul style="list-style-type: none"> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Murray Darling Plan.</li> <li>◦ Murray Darling Basin Agreement in Schedule 1 under Part 1A.</li> <li>◦ Basin Salinity Management Strategy in Schedule B of MDB Agreement in Schedule 1 under Part 1A.</li> <li>◦ Water Quality and Salinity Management Plan under Chapter 9 of the Murray Darling Basin Plan.</li> </ul> </li> <li>• Border Rivers Agreement under the <i>New South Wales – Queensland Border Rivers Act 1947</i>.</li> <li>• Bilateral Agreements on Interstate Trade.</li> </ul>
<b>W07</b>	<b>Water management works</b>	
W07-01	Water management works	River works service level agreements negotiated with relevant impactors and stakeholders. Operation and maintenance of salt interceptions schemes in compliance with salinity management requirements: <ul style="list-style-type: none"> <li>• <i>Water Act 2007 (Commonwealth)</i>: <ul style="list-style-type: none"> <li>◦ Salinity management requirement in Chapters 5, 9 and 11 of Murray Basin Plan.</li> <li>◦ Performance of works arrangements that enable NSW to comply with its formal salinity credit obligations in Schedule B to Murray Darling Basin Agreement in Schedule 1 under Part 1A of Water Act.</li> </ul> </li> </ul>
<b>W08</b>	<b>Water regulation management</b>	
W08-01	Regulation systems management	Regulation systems development and management to support: <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 3 Water management implementation: <ul style="list-style-type: none"> <li>– Part 2 Access Licences, Division 3A – Water access licence register, keeping a water access licence register, registration of security interest and registration of caveats Section 71 – Section 71D deals with the recording of licences in the Access Register.</li> <li>– Part 3 Approvals, Division 6 – Register of approvals Section 113 which states that a register must be kept of every application and approval.</li> </ul> </li> </ul> </li> <li>• <i>Water Management (General) Regulation 2011</i>: <ul style="list-style-type: none"> <li>◦ Part 2 – Access licences: <ul style="list-style-type: none"> <li>– Section 9 – applications generally.</li> <li>– Section 11 – matters to be included in register.</li> <li>– Section 14 – register available water determinations.</li> </ul> </li> </ul> </li> </ul>
W08-02	Consents management and licence conversion	Consents management and licence conversion to support: <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>◦ Chapter 3 Water management implementation: <ul style="list-style-type: none"> <li>– Division 3 – Conditions, duration and amendment to an access licence (s.67-70) which relates to the imposing of conditions on a licence after it has been granted.</li> </ul> </li> <li>◦ Provisions under Chapter 9, Schedule 10 Conversion of former entitlements to access licences and approvals.</li> </ul> </li> </ul>



Code	Activity name	Service obligation
W08-03	Compliance management	<p>Compliance management activities required under:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ To achieve the Objects of the Act, Chapter 1 Section 3, and State Water Management Outcomes Plan, Chapter 2 Section 6.</li> <li>○ Offences relating to Licences and Approvals, Chapter 3, Part 2, Division 1A Section 60A – Section 60I and Section 91A – Section 91N.</li> <li>○ Enforcement actions required in response to reported Breaches under Chapter 7 – enforcement Section 323 – Section 367B.</li> </ul> </li> </ul>
W08-99	Water consents overhead	Overhead relating to the marginal cost of Water consents transactions as required for the IPART Review of prices for the Water Administration Ministerial Corporation, Determination No. 4, 2010.
<b>W09</b>	<b>Water consents transactions</b>	
W09-01	Water consents transactions	<p>Administration and processing of water consent transactions consistent with:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>: <ul style="list-style-type: none"> <li>○ Chapter 3 Water management implementation, Part 1 – Domestic and Stock Rights sections 52-55.</li> <li>○ Chapter 3 Water management implementation, Part 2 Access Licences: <ul style="list-style-type: none"> <li>– Division 2 – Granting of Access licences Sections 61-70.</li> <li>– Division 4 – Dealings with an access licence sections 71L-71Z</li> </ul> </li> <li>○ Chapter 3 Water management implementation, Part 3 Approvals: <ul style="list-style-type: none"> <li>– Division 2 – application for approvals Section 92 – Section 109.</li> </ul> </li> <li>○ Various orders, for example Chapter 7 Enforcement, Part 1 Directions to landholder and other persons, Division 2, Conservation of Water, section 324 Temporary water restrictions.</li> </ul> </li> <li>• <i>Water Management (General) Regulation 2011</i>: <ul style="list-style-type: none"> <li>○ Part 2 – Access Licences, Divisions 1 General and 2 Exemptions, Section 4 – Section 21.</li> <li>○ Part 3 Approvals, Division 1 General Section 22 – Section 29, Division 2 Exemptions, Subdivision 2 Section 31 – Section 36.</li> </ul> </li> <li>• Water Sharing Plan rules under Part 3 Management Plans of the <i>Water Management Act 2000</i>, Division 2 Water Sharing and Division 3 Water Use.</li> <li>• <i>Native Titles Act 1993 (Commonwealth)</i>: Part 2, Section 17</li> <li>• <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>: Overlap between federal and state requirements is addressed via bilateral agreements or one off accreditation of state processes, as provided for in the <i>EPBC Act</i>.</li> <li>• <i>Environmental Planning and Assessments Act 1979</i>: Part 4 Development Assessment or Part 5 Environmental Assessment.</li> </ul>
<b>W10</b>	<b>Business and customer services</b>	
W10-01	Customer management	<p>Customer service that complies with:</p> <ul style="list-style-type: none"> <li>• DPI Water Customer Service Charter.</li> <li>• <i>NSW 2021</i>, Goal 30: Restore trust in State and Local Government as a service provider.</li> <li>• Quality Regulatory Services Initiative, NSW Department of Premier and Cabinet, 2014.</li> <li>• Customer Engagement on Prices For Monopoly Services, 2012 Independent Pricing And Regulatory Tribunal New South Wales.</li> </ul>
W10-02	Business governance and support	<p>Activities that comply with NSW Government financial management policy such as:</p> <ul style="list-style-type: none"> <li>• NSW Treasury Policy Papers and Guidelines: <ul style="list-style-type: none"> <li>○ TPP 15-01: Accounting Policy: Financial Reporting Code for NSW General Government Sector Entities.</li> <li>○ TPP 13 03: Total Asset Management (TAM) Submission Requirements.</li> <li>○ TPP 12-03: Risk Management Toolkit for the NSW Public Sector.</li> </ul> </li> </ul>

Code	Activity name	Service obligation
W10-03	Billing management	<p>Imposition of fees and charges:</p> <ul style="list-style-type: none"> <li>• <i>Water Management Act 2000</i>, Chapter 3 Water management implementation, Part 4 Finance.</li> <li>• <i>Independent Pricing and Regulatory Tribunal Act 1992</i>. <ul style="list-style-type: none"> <li>○ Implementation of price determinations and other reports undertaken by IPART under Part 3 of their Act.</li> </ul> </li> <li>• <i>Civil Procedure Act 2005 (NSW)</i>, interest rate payable under section 101(7).</li> </ul>

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## Appendix E

### Cost drivers for the allocation of W-code costs

Forecast costs are allocated to pricing water sources (a combination of water type and valley/area) based on a primary cost driver associated with each activity. Cost drivers used in the 2011 determination have been refined where necessary for the revised activities or as a result of enhanced information available on the existing cost drivers for the activity. Each cost driver assumes a consistent average cost allocation profile for the subject activity for the period of the determination. Separate cost drivers are used for allocating the NSW contributions to MDBA and DBBRC. The prefix to the name of the cost driver indicates the water types that are the subject of the cost driver (R: Regulated, U: Unregulated, G: Groundwater).

The cost drivers do not provide for allocation of costs paid for on a fee for service basis. The cost of monopoly water services provided on a fee for service basis to external organisations (such as hydrometric sites for WaterNSW or MDBA, water utilities, local councils, etc) is paid for by the revenue received for the service provided. The cost of services provided to these organisations is excluded from the water management charge.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
<b>W01</b>	<b>Surface water monitoring</b>				
W01-01	Surface water quantity monitoring	S58 R/U Relative cost of hydrometric stations	<p>The cost of surface water quantity monitoring is driven by the number and relative cost of hydrometric stations funded by DPI Water in each area. The stations are selected by using monopoly water service criteria for each pricing water source. The criteria are:</p> <ul style="list-style-type: none"> <li>• Specified in Water Sharing Plans (WSP).</li> <li>• Compliance rules and licence conditions.</li> <li>• WSP science and evaluation.</li> <li>• Environmental compliance.</li> <li>• Water quality and salinity monitoring.</li> <li>• Water modelling.</li> <li>• Water accounting and auditing.</li> </ul> <p>Only DPI Water funded portion of each station is costed to the water management charge.</p> <p>An 'impactor' assessment has been used for each station to decide the water type for user pays.</p>	S04 R/U Number of DPI Water funded hydrometric stations	<p><i>Activity formerly C01-01 and C01-06</i></p> <p>The stations costed to the water management charge are only included if specified by the selection criteria relating to the monopoly water service obligation and funded by DPI Water.</p> <p>The relative cost is used for each station as the cost ranges from 0.1 to 1.6 times the cost of a standard flow monitoring station, depending on the sophistication of service provided by the station. The relative cost accommodates arrangements where the level and flow measurement service is paid for by WaterNSW and the quality monitoring service is paid for by DPI Water.</p> <p>The number of stations costed to the water management charge is reduced compared to the current determination in order to provide a better service from the stations for which there is a mandatory requirement.</p> <p>The allocation of each station to water type is based on impactor pays.</p>
W01-02	Surface water data management and reporting	S05W R/U Numbers surface water sites subject to data management	<p>The cost of surface water data management and reporting relates to the number of active sites for which data is managed and reported to water users and other stakeholders. The sites are tagged for each pricing water source.</p> <p>Data management and reporting covers surface water quantity, quality, algal and ecological condition monitoring. It also includes publication of information collected from sites not owned by DPI Water, but required for management of water resources within NSW.</p>	S05 R/U Numbers surface water sites subject to data management.	<p><i>Activity formerly C01-02 and C01-05</i></p> <p>W01-02 uses the same cost driver as C01-02 except that the number of sites has been reduced to only include active sites for which data is currently being collected.</p> <p>C01-05, surface water quality and biological database management, used R/U extraction related entitlement as the cost driver. The cost driver now used for W01-02 is seen as a more appropriate cost driver for this additional component of W01-02.</p>

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W01-03	Surface water quality monitoring	S27 R/U Number of quality tests processed	The cost of surface water quality monitoring and analysis is driven by the number of DPI Water funded water quality tests for each surface pricing water source.	S07 R/U Number of sampling events at key sites	<i>Activity formerly C01-03 and part C04-01</i> The revised cost driver allocates cost based on the number of water quality tests instead of the number of sampling events. The change has been made to recognise the different profiles of tests undertaken in different locations. The cost includes sample collection, laboratory analysis (formerly in C04-01 water quality analysis), validation and encoding of results for each test.
W01-04	Surface water algal monitoring	S28 R/U Number of algal tests	The cost of surface water algal monitoring and analysis is driven by the number of DPI Water funded algal tests processed for each surface pricing water source.	S06 R/U Number of ecology, biology and algal sampling events	<i>Activity formerly C01-04 and part C04-01</i> The cost of this activity is more appropriately allocated by the number of algal tests instead of the number of sampling events. The cost includes sample collection, laboratory analysis (formerly in C04-01), validation and encoding of results for each test.
W01-05	Surface water ecological condition monitoring	S35 R/U River length	The cost of the activity relates to the length of rivers to be assessed for each surface pricing water source.	New activity	<i>New activity with parts of C01-04 and C06-03</i> A new cost driver has been developed for cost allocation of this activity.
<b>W02</b>	<b>Groundwater monitoring</b>				
W02-01	Groundwater quantity monitoring	S10W G Number of groundwater bore pipes monitored	The cost of groundwater quantity monitoring and analysis is driven by the number of active monitoring pipes that are maintained and monitored for each of the inland and coastal groundwater areas.	S10 G Number of active monitoring bores	<i>Activity formerly C02-01 and C02-04</i> Many monitoring bore sites have more than one pipe within a bore facilitating the monitoring of aquifers at different depths. More pipes means a requirement for more bore instrumentation and data collection. The cost driver has been enhanced to recognise the number of groundwater bore pipes maintained and monitored instead of just the number of bores.
W02-02	Groundwater quality monitoring	S29 G Number of quality tests	The cost of the activity is driven by and allocated on the number of quality tests undertaken for each of the groundwater areas.	S23 G Entitlement	<i>Activity formerly C02-02 and part C04-01</i> The cost driver has been changed from the use of groundwater entitlement for each area to the directly attributable activity of the number of quality tests undertaken. This change has been facilitated by the implementation of a structured groundwater quality testing program. The cost includes sample collection, laboratory analysis (formerly in C04-01 water quality analysis), validation and encoding of results for each test.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W02-03	Groundwater data management and reporting	S10W G Number of groundwater bore pipes monitored	The cost of the activity is allocated based on the number of active monitoring pipes in each groundwater area for which groundwater information is managed and reported to water users and other stakeholders.	S10 G Number of active monitoring bores	<i>Activity formerly C02-03</i> The cost driver has been changed to reflect the number of monitoring pipes for which data is collected. This recognises that a significant number of bores contain multiple pipes monitoring groundwater to different depths.
<b>W03 Water take monitoring</b>					
W03-01	Water take data collection	N/A	The cost of water take data collection is driven by the number of water supply works approvals that are metered. This cost is recovered on a fee for service basis in the meter service charge and meter reading charge.	S13 U/G Meter readings	<i>Activity formerly C03-01 and C03-03</i> This cost is recovered on a fee for service basis.
W03-02	Water take data management and reporting	S56 U/G Unregulated/ groundwater two-part water take	The cost of water take data collection is driven by the provision and management of systems required to receive, manage and report water take data. As the Water Take Measurement Strategy proposes an approach that will allow most licence holders to transition to a two-part tariff, the selected basis for allocating the water take data management and reporting activity is the forecast water take for each water source.	S14 R/U/G Meter readings	<i>Activity formerly C03-02</i> The revised cost driver recognises the implementation of a Water Take Measurement Strategy that will facilitate licence holders transitioning to a two-part tariff.
<b>W04 Water modelling and impact assessment</b>					
W04-01	Surface water modelling	S61 R/U Surface water modelling	The cost of surface water modelling involves systems resources and staff time developing, maintaining and enhancing models to address scenarios specified by water planners and other stakeholders. Cost allocation uses a cost allocation model based on the number and relative staff resource requirement of surface water modelling for each valley. The allocation model is validated against the number of staff modelling each surface water type.	S08 R/U Water modelling and impact assessment	<i>Activity formerly C05-01, C05-02, part C05-03</i> The cost driver for this activity is the same as for the current determination, except that the second stage of the cost driver uses forecast total water take instead of licensed entitlement.
W04-02	Groundwater modelling	S44 G Groundwater models	The cost of groundwater modelling uses a similar cost allocation model to surface water, using the number and relative staff resource requirement for the groundwater models relating to the inland and coastal areas.	S10 G Number of active monitoring bores	<i>Activity formerly C05-04</i> The previous cost driver that used the number of active monitoring bores has been replaced with a more groundwater modelling specific activity cost driver.



Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W04-03	Water resource accounting	S37 R/U/G Total water take	<p>The major cost is staff time working on general purpose water accounts and other water accounting reporting that is being progressively developed for each water source.</p> <p>The water resource accounting costs have been allocated based on the forecast total water take in each pricing water source.</p>	New activity	<p><i>Activity formerly part of C05-03</i></p> <p>The cost driver for this activity is similar to the cost driver (extraction related entitlement) that was used for C05-03, water balances and accounting, from which part of this new activity has been transferred.</p>
<b>W05 Water management implementation</b>					
W05-01	Systems operation and water availability management	S17W R/U/G Water operations complexity	<p>The cost of systems operation and water availability management relates to the staff time working on each water type and the operational complexity of the pricing water source for the activity.</p> <p>The cost is allocated to pricing water sources using a two-part allocation based first on the number of staff involved on each water type, then between valleys based on an assessment of the operational complexity of the valley/area for each water type.</p>	S17 R/U/G Operations complexity	<p><i>Activity formerly C06-01 and part C06-02</i></p> <p>The same cost driver is used as for the existing determination. The data in the cost driver is changed data to reflect the changed staff profile allocated to this activity and a revised assessment of operational complexity to comply with current water management plan requirements.</p> <p>W05-01 includes part of the previous activity C06-02, trading and accounts management, that was allocated using the two-part cost driver – entitlement and number of licences. The licence specific component of C06-02 has been transferred to W08, water regulation management. The remaining availability compliance assessment requirement for trading is related to systems operation and availability management for which the water operations complexity cost driver is considered appropriate.</p>
W05-02	Blue-green algae management	S41 R/U Risk rated BGA alerts	<p>The cost of blue-green algae management relates to staff time involved in state-wide algal management programs, and management of the incidence and severity of algal blooms experienced in each pricing water source.</p> <p>The revised cost driver reflects that areas with a higher incidence of risk alerts will incur a higher blue-green algae management cost..</p>	S16 R/U Blue-green algae standard sampling profile	<p><i>Activity formerly C06-04</i></p> <p>. The cost driver has been revised to recognise that the cost for this activity is associated with the incidence of risk alerts in a pricing area.</p>

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W05-03	Environmental water management	S42 R/U Environmental entitlement	The cost of environmental water management relates to the resource time spent on environmental monitoring and collaborative management of adaptive and held environmental water for each valley. The cost has been allocated based on the environmental entitlements held for each surface pricing water source.	S01 R/U/G Entitlement	<i>Activity formerly C06-05 and part C07-03</i> The revised cost driver better reflects the profile of cost related to this activity instead of the use of entitlement charge licensed share component in the existing determination.
W05-04	Water plan performance assessment and evaluation	S37 R/U/G Total water take	The cost of water plan performance monitoring and evaluation is driven by staff time on this activity. Performance assessment and evaluation processes are still very much in development. Approaches developed in one valley may be applied to other similar valleys. Adequate information is not available to make it practicable to differentiate the performance assessment and evaluation cost by pricing water source. Consequently forecast water take has been used as the method of allocating the costs of this activity to each pricing water source.	S18 R/U/G WSP activity	<i>Activity formerly C06-03</i> The previous cost driver used for this activity was the same as used for water management planning. Water plan performance monitoring and evaluation is still evolving as a result of knowledge, tools and techniques being developed for the purpose. The ongoing development and interdependent nature of the plan performance assessment and evaluation capability means it is not currently practicable to differentiate these costs by valley or area, other than by allocating the cost based on forecast total water take for each pricing water source.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
<b>W06</b>	<b>Water management planning</b>				
W06-01	Water plan development (coastal)	S54 R/U/G Planning coastal	<p>The cost of water planning relates to staff time required to develop, consult, review, extend, amend or replace each water management plan.</p> <p>Water planning is an administrative activity where planning approaches or planning components that may have taken a great deal of staff time to develop in one water source, can be applied to other similar water sources. The cost for each water source varies from year to year depending on the planning cycle or work required to address water management issues for that water source. There are currently 70 WSPs in operation and 12 WSPs in preparation. Some plans apply to one water type, others to two or three water types. Going forward WSPs will be merged to reduce the number of plans to 54 by the end of the future determination period. There is currently inadequate information to make it practicable to differentiate the planning cost by pricing water source. Consequently water planning costs have been allocated on the forecast total water take in each pricing water source. This cost sharing approach is consistent with NWI principle 5, where it is not practicable to differentiate the planning cost by pricing water source.</p> <p>The cost for coastal water management planning is separated from Inland planning in the cost forecasting process. The R/U/G planning coastal cost driver allocates these costs to the coastal pricing water sources based on total water take.</p>	S18 R/U/G WSP activity	<p><i>Activity formerly the coastal part of C07-01 and part C07-05</i></p> <p>Review of the cost driver for planning has identified that adequate information is not available to clearly identify and validate a cost driver. The previous allocations of costs were based on subjective assessments of the relative magnitude of effort required for each water sharing plan. In view of the ongoing development and interdependent nature of planning knowledge and capability, it is not currently practicable to clearly differentiate planning costs by pricing water source. For this reason the costs have been allocated based on forecast total water take.</p>

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W06-02	Water plan development (inland)	S55 R/U/G Planning inland	For the same reasons given in W06-01 above, water planning (inland) costs have been allocated based on the forecast total water take in each pricing water source.  The separation of inland and coastal valleys into different activities means that any long-term difference in cost as a result of service obligations under the <i>Water Act 2007 (Commonwealth)</i> will be appropriately recorded to inland pricing water sources.	S18 R/U/G WSP activity	<i>Activity formerly the coastal part of C07-01 and part C07-05</i>  Review of the cost driver for planning has identified that adequate information is not available to clearly identify and validate a cost driver. The previous allocations of costs were based on subjective assessments of the relative magnitude of effort required for each water sharing plan. In view of the ongoing development and interdependent nature of planning knowledge and capability, it is not currently practicable to clearly differentiate planning costs by pricing water source. For this reason the costs have been allocated based on forecast total water take.
W06-03	Floodplain management plan development	S33 R/U Floodplain management plans	The major cost is staff time required for each floodplain management plan. Cost is allocated based on an assessment of the relative incidence of flood management assets in the five pricing water sources where this planning is to be undertaken.	New activity	<i>Activity formerly part of C07-01</i>  A new cost driver has been developed for allocation of costs for this activity.
W06-04	Drainage management plan development	S34 R/U Drainage plans	The major cost is staff time required for each drainage management plan. Cost is allocated based on an assessment of the relative incidence of drainage management plan development in the three unregulated water type coastal pricing water sources where this planning is required.	New activity	<i>Activity formerly part of C07-01</i>  A new cost driver has been developed for allocation of costs for this activity.
W06-05	Regional planning and management strategies	S38 R/U/G Regional planning	The major cost is staff time required for tasks to satisfy strategic and regional water planning objectives. The key drivers for this activity are increased demand primarily from urban, industrial (including primary industry) development. Investigation of this requirement has identified that water entitlement held by utilities, and industry provides an appropriate profile for allocation of costs for this activity in the pricing water sources where this planning is required.	New activity	<i>Activity formerly part of C07-01</i>  A new cost driver has been developed for allocation of costs for this activity.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W06-06	Development of water planning and regulatory framework	S37 R/U/G Total water take	The major cost is staff time working on the planning and regulatory framework in response to water planning activities and water user requirements. Cost is allocated on the forecast total water take for each water source.	S20 R/U/G Extraction related entitlement	<i>Activity formerly C07-02 and part C07-05</i> The new cost driver is based on the same principles as the cost driver for this activity in the existing determination. The difference is that licensed entitlement was used to allocate costs to each pricing water source for unregulated and groundwater where a forecast total water take was not available.
W06-07	Cross border and national commitments	S57 R/U/G Water planning for national commitments	The cost of water planning for national commitments relates to staff time involved in and responding to national and interstate activities. The driver for this activity is the need to maximise water management outcomes for NSW water users. Cross-border and national commitments have a greater focus on inland water management activities. Consequently, the cost of this activity is allocated on forecast total water take for each water source with double the weighting of allocation on activities in inland pricing water sources.	S01 R/U/G Entitlement	<i>Activity formerly C07-04</i> The cost driver has been revised to more directly recognise total water take instead of entitlement in each water source and the weighted focus of this activity on inland water sources.
<b>W07</b>	<b>Water management works</b>				
W07-01	Water management works	S91W R/U/G Water management works project dollar cost	The cost of water management works relates to specific water management projects. The cost is allocated on the value of works in each of the pricing water sources creating the need for this work to be undertaken.	S91 R/U/G Water source specific projects	<i>Activity formerly C08-01</i> The cost driver for this activity is the same as the existing determination. However project costs used by the driver in the allocation now include those for salt interception schemes funded by DPI Water.
<b>W08</b>	<b>Water regulation management</b>				
W08-01	Regulation systems management	S02W R/U/G Number of water access licences	The cost for this activity is the resources required to develop, manage and maintain the systems for recording details of licences and approvals for each water source.  The cost is allocated based on the number of licences in each water source.	S02 R/U/G Number of licences	<i>Activity formerly part of C09-01</i> The cost driver is the same as the current determination.
W08-02	Consents management and licence conversion	S02W R/U/G Number of water access licences	The cost for this activity relates to the number of licences and approvals that need to be updated as a result of the revision of water sharing plans and changes initiated by consent transactions. The cost allocation by pricing water source is proportional to the number of licences in each water source.	S02 R/U/G Number of licences	<i>Activity formerly C09-02</i> The cost driver is the same as the current determination consistent with W08-01.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W08-03	Compliance management	S59 R/U/G Compliance risk profile numbers of licences	Compliance management comprises of preventative (education); detective (monitoring and audit); and investigative (breach investigation and enforcement) activities. This includes compliance education of licence holders, periodic audit of licences/approvals and response to breach reports. The incidence of breaches is higher where there is greater competition for water. For this reason cost allocation is based on a risk adjusted profile of the numbers of licences for each water source where the risk profile is based on the inland/coastal profile of breaches for each water type.	S03 R/U/G Entitlement and number of licences	<i>Activity formerly C09-03</i> The cost driver has been refined and informed by analysis of the incidence of breach reports. This analysis indicates broad correlation of the incidence with numbers of licences in each pricing water source except that the incidence of breaches is greater where there is more competition for water. The cost driver has therefore been adjusted to reflect the breach risk profile relating to the inland/coastal location of the pricing water source.
W08-99	Water consents overhead	S88W R/U/G Consent transactions	The cost of overheads relates to the volume of consent transactions for each water type in each water source.	S88 R/U/G Consent transactions	<i>Activity formerly C09-04</i> This cost driver is the same as the existing determination with updated transaction numbers for each water source.
<b>W09</b>	<b>Water consents transactions</b>				
W09-01	Water consents transactions	S88W R/U/G Consent transactions	The cost of water consents transactions relates to the number of transactions, the staff time and transaction specific disbursements required for each type of transaction. Transactions are subject to a separate activity costing to determine a fee for service tariff for each transaction The overhead cost of consent transactions is recorded in W08-99 for inclusion in the water management charge.	S88 R/U/G Consent transaction activity	<i>Activity formerly C10-01</i> This activity is subject to a separate costing process to determine the fee for service tariffs for water consent transactions.
<b>W10</b>	<b>Business and customer services</b>				
W10-01	Customer management	S50 R/U/G Number of customers	The cost of customer management is driven by calls or other communications from customers. The cost is allocated on the number of customers for each pricing water source.	New activity	<i>Activity formerly part of C09-01</i> Most of this activity was previously included in C09-01, licence administration, which was allocated on the number of licences for each water source. A new cost driver has been developed to reflect the number of customers for each water source.

Code	Activity	Cost driver*	Rationale for cost driver	2011 cost driver*	Change assessment
W10-02	Business governance and support	S37 R/U/G Total water take	The cost of business support relates to business systems, processes and administration required to deliver government monopoly water services for making available water to users. The cost is allocated based on the forecast total water take for each water source.	S20 R/U/G extraction related entitlement	<i>Activity formerly C11-02</i> The new cost driver is based on the same principle as the previous cost driver. The difference is that a forecast total water take is now available for unregulated and groundwater.
W10-03	Billing management	S14W R/U/G Number of bills issued per annum	Regulated river licences are billed quarterly; unregulated river and groundwater licences are billed annually. The cost for this activity relates to the number of invoices for each pricing water source.	S14 R/U/G Water bills (number of billable licences)	<i>Activity formerly C011-01</i> The data used for this cost driver has been revised to appropriately reflect the billing frequency for each water type.

\* The prefix to the name of the cost driver indicates the water types that are the subject of the cost driver (R: Regulated, U: Unregulated, G: Groundwater).



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# Appendix F

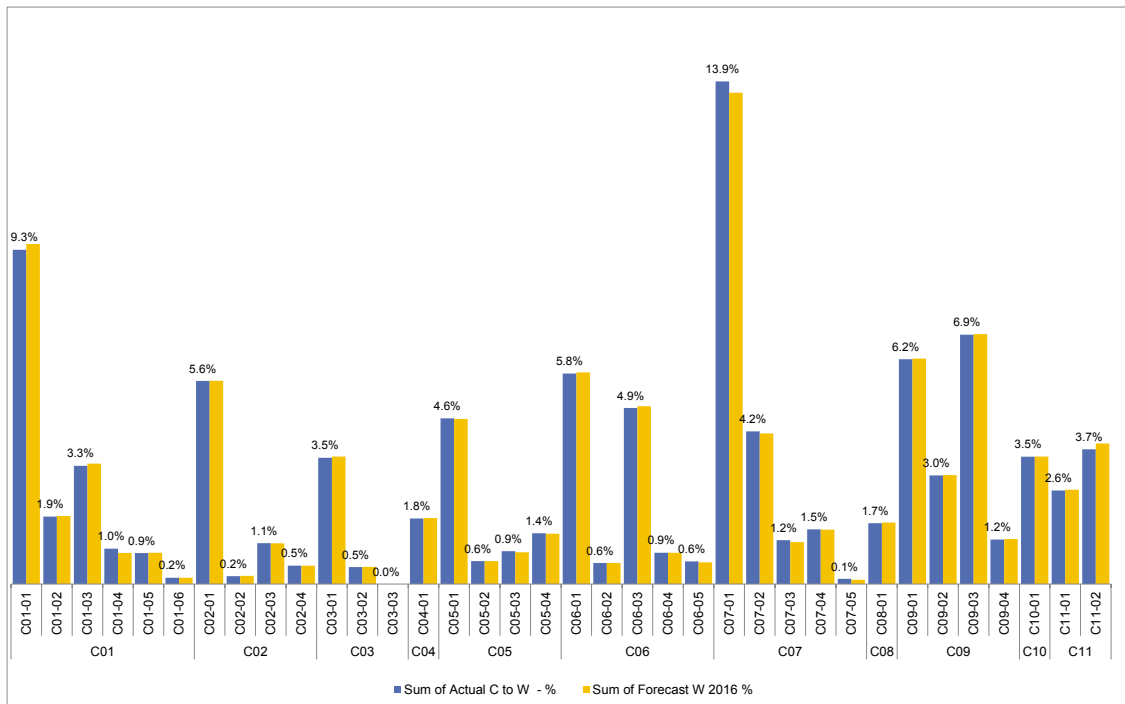
## Analysis of future revenue needs

**Table F.1: DPI Water forecast five-year water management activity costs by year  
(\$'000s, \$2015-16)**

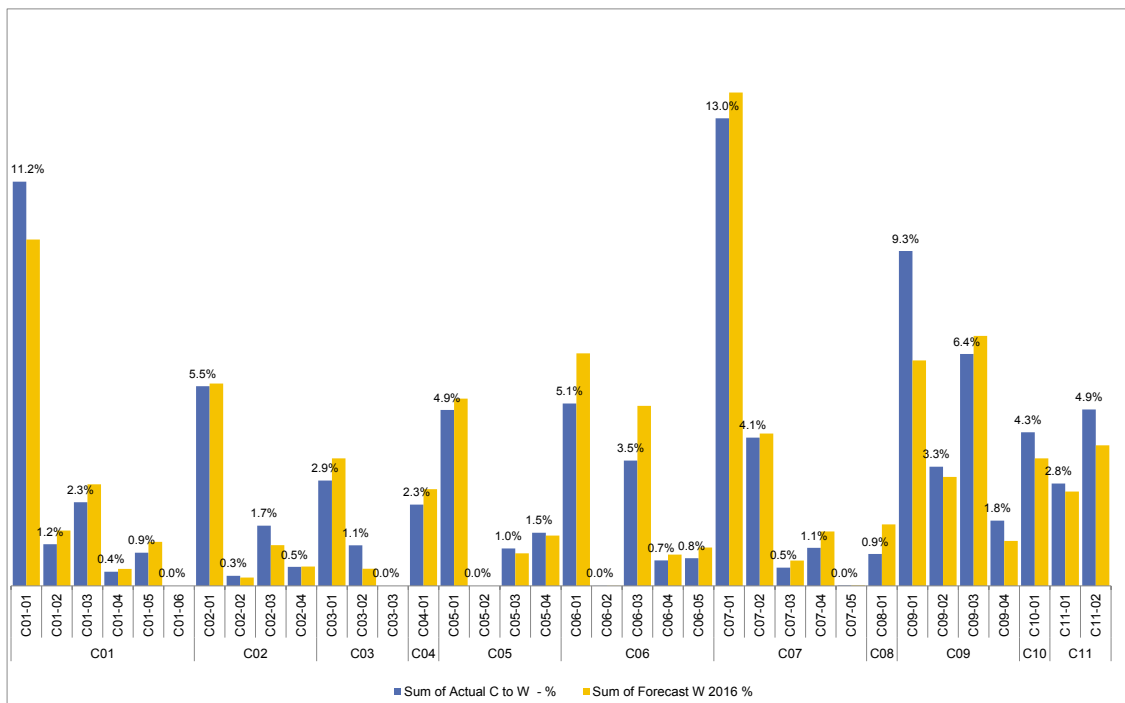
W-code	Activity	2016/17	2017/18	2018/19	2019/20	2020/21	Grand total
W01-01	Surface water quantity monitoring	5,291	5,207	5,130	5,057	5,022	25,706
W01-02	Surface water data management and reporting	1,562	1,537	1,514	1,492	1,479	7,585
W01-03	Surface water quality monitoring	2,511	2,473	2,436	2,399	2,363	12,182
W01-04	Surface water algal monitoring	705	694	684	673	663	3,419
W01-05	Surface water ecological condition monitoring	287	283	278	274	270	1,392
W02-01	Groundwater quantity monitoring	3,257	3,233	3,222	3,175	3,153	16,040
W02-02	Groundwater quality monitoring	224	221	217	214	212	1,089
W02-03	Groundwater data management and reporting	641	631	621	613	609	3,115
W03-02	Water take data management and reporting	269	265	261	257	256	1,308
W04-01	Surface water modelling	3,102	3,338	3,241	3,120	2,930	15,730
W04-02	Groundwater modelling	793	781	769	758	753	3,854
W04-03	Water resource accounting	451	447	440	431	429	2,198
W05-01	Systems operation and water availability management	3,831	3,764	3,708	3,655	3,769	18,726
W05-02	Blue-green algae management	490	483	476	469	462	2,380
W05-03	Environmental water management	1,016	1,000	985	971	960	4,933
W05-04	Water plan performance assessment and evaluation	2,616	2,577	2,538	2,500	2,540	12,772
W06-01	Water plan development (coastal)	1,962	1,950	1,944	1,959	2,026	9,841
W06-02	Water plan development (inland)	3,440	3,435	3,431	3,389	3,391	17,086
W06-03	Floodplain management plan development	81	32	32	32	31	208
W06-04	Drainage management plan development	32	31	31	30	30	155
W06-05	Regional planning/management strategies	3,093	3,583	3,531	2,418	2,409	15,034
W06-06	Development of water planning and regulatory framework	2,339	2,334	2,299	2,264	2,231	11,467

W-code	Activity	2016/17	2017/18	2018/19	2019/20	2020/21	Grand total
W06-07	Cross border and national commitments	856	843	831	1,014	1,004	4,548
W07-01	River management works	968	952	938	925	918	4,701
W08-01	Regulation systems management	1,361	1,340	1,320	1,300	1,281	6,602
W08-02	Consents management and licence conversion	1,217	1,199	1,181	1,163	1,146	5,905
W08-03	Compliance management	4,322	4,333	4,343	4,278	4,214	21,491
W08-99	Water consents overheads	719	717	717	717	717	3,588
W10-01	Customer management	1,843	1,816	1,789	1,762	1,735	8,945
W10-02	Business governance and support	1,860	1,832	1,804	1,778	1,753	9,027
W10-03	Billing management	1,483	1,460	1,439	1,417	1,396	7,194
<b>Total</b>		<b>52,621</b>	<b>52,793</b>	<b>52,150</b>	<b>50,506</b>	<b>50,151</b>	<b>258,222</b>

**Figure F.1: Conversion of actual 2016 C-codes to W-codes compared to W-codes for 2016 forecast**



**Figure F.2: Conversion of actual 2015 C-codes to W-codes compared to W-codes for 2016 forecast**



**Table F.2: W-code to C-code conversion matrix (percentage)**

	Water management and planning activities	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-01	W03-02	W04-01	W04-02	W04-03	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07	W07-01	W08-01	W08-02	W08-03	W08-99	W09-01	W10-01	W10-02	W10-03	
C01	Surface water monitoring																																		
C01-01	Surface water quantity monitoring	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C01-02	Surface water quantity data management and reporting	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C01-03	Surface water quality monitoring	–	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C01-04	Surface water ecology, biology and algal monitoring	–	–	–	70	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C01-05	Surface water quality and biological database management	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C01-06	Surface water monitoring assets management	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C02	Groundwater monitoring																																		
C02-01	Groundwater quantity monitoring	–	–	–	–	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C02-02	Groundwater quality monitoring	–	–	–	–	–	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C02-03	Groundwater database management	–	–	–	–	–	–	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C02-04	Groundwater monitoring assets management	–	–	–	–	–	100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

	Water management and planning activities	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-01	W03-02	W04-01	W04-02	W04-03	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07	W07-01	W08-01	W08-02	W08-03	W08-99	W09-01	W10-01	W10-02	W10-03
<b>C03</b>	<b>Surface and groundwater metering</b>																																	
C03-01	Metering operations - user owned	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C03-02	Metering data management	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C03-03	Metering operations - govt owned	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>C04</b>	<b>Surface water and groundwater analysis</b>																																	
C04-01	Water quality analysis	-	-	59	32	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>C05</b>	<b>Water modelling and impact assessment</b>																																	
C05-01	Water sharing/water management modelling	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C05-02	Resource assessments	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C05-03	Water balances and accounting	-	-	-	-	-	-	-	-	-	10	-	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C05-04	Groundwater modelling	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>C06</b>	<b>Water management implementation</b>																																	
C06-01	Systems operation and water availability management	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C06-02	Trading and accounts management	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C06-03	Plan performance monitoring and reporting	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



	Water management and planning activities	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-01	W03-02	W04-01	W04-02	W04-03	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07	W07-01	W08-01	W08-02	W08-03	W08-99	W09-01	W10-01	W10-02	W10-03		
C06-04	Blue-green algae management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C06-05	Environmental water management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C07	Water management planning																																			
C07-01	Water sharing plan development	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	60	1	-	14	-	-	-	-	-	-	-	-	-	-	-	-	
C07-02	Operational planning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
C07-03	Environmental water planning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C07-04	Cross-border and national commitments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	
C07-05	Water industry regulation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	42	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	
C08	River management works																																			
C08-01	River management works	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	
C09	Water consents administration																																			
C09-01	Consents administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	30	-	-	-	
C09-02	Licence conversion and entitlement specification	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	
C09-03	Compliance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	
C09-04	Water consents overhead	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	
C10	Water consents transactions																																			
C10-01	Water consents transactions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-	-	-	-	

	Water management and planning activities	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-01	W03-02	W04-01	W04-02	W04-03	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07	W07-01	W08-01	W08-02	W08-03	W08-99	W09-01	W10-01	W10-02	W10-03
<b>C11</b>	<b>Business administration</b>																																	
C11-01	Financial administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
C11-02	Business development	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
<b>C12</b>	<b>Capital Program</b>																																	
C12-01	Surface water assets renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C12-02	Groundwater assets renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C12-03	Water laboratory renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C12-04	Metering water use systems on unregulated rivers and groundwater	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C12-05	Integrated corporate water and ecological databases	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table F.3: Revenue needs for regulated rivers (\$'000 2015/16)**

	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-02	W04-01	W04-02	W04-03	W04-04
01. Border	223.85	99.22	155.81	10.56	92.18	0.00	0.00	0.00	0.00	0.00	452.22	0.00	49.50
02. Gwydir	168.74	79.37	309.02	0.00	243.83	0.00	0.00	0.00	0.00	0.00	472.29	0.00	102.66
03. Namoi	53.59	85.99	235.22	25.62	138.66	0.00	0.00	0.00	0.00	0.00	458.29	0.00	57.57
04. Peel	79.40	29.76	77.82	0.00	7.59	0.00	0.00	0.00	0.00	0.00	221.02	0.00	3.00
05. Lachlan	109.18	128.98	350.68	73.88	148.52	0.00	0.00	0.00	0.00	0.00	459.26	0.00	57.44
06. Macquarie	553.84	211.67	366.13	30.15	192.12	0.00	0.00	0.00	0.00	0.00	465.25	0.00	78.05
07. Far West	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08. Murray	287.84	231.51	657.74	492.98	935.00	0.00	0.00	0.00	0.00	0.00	728.61	0.00	377.48
09. Murrumbidgee	803.96	281.13	1,096.16	197.49	1,113.62	0.00	0.00	0.00	0.00	0.00	917.63	0.00	467.20
10. North Coast	43.67	16.53	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	22.22	0.00	0.16
11. Hunter	186.60	105.84	180.71	0.00	1.22	0.00	0.00	0.00	0.00	0.00	660.14	0.00	33.25
12. South Coast	0.00	19.85	45.18	0.00	0.16	0.00	0.00	0.00	0.00	0.00	44.44	0.00	1.06
<b>Total regulated rivers</b>	<b>2,510.67</b>	<b>1,289.85</b>	<b>3,474.46</b>	<b>830.68</b>	<b>2,873.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4,901.38</b>	<b>0.00</b>	<b>1,227.37</b>

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	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07
01. Border	869.57	18.31	0.00	143.14	0.00	417.89	0.00	0.00	2.78	193.83	53.85
02. Gwydir	881.39	16.65	0.00	296.88	0.00	856.63	0.00	0.00	17.15	401.98	111.67
03. Namoi	873.14	16.65	0.00	166.47	0.00	534.98	0.00	0.00	38.40	225.41	62.61
04. Peel	115.56	8.33	0.00	8.67	0.00	33.56	0.00	0.00	73.30	11.74	3.26
05. Lachlan	1,161.18	51.61	0.00	166.09	0.00	662.17	0.00	0.00	69.49	224.91	62.48
06. Macquarie	1,164.70	38.29	0.00	225.73	0.00	832.33	0.00	0.00	84.06	305.65	84.91
07. Far West	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08. Murray	1,797.62	174.82	0.00	1,091.60	0.00	4,304.75	0.00	0.00	195.03	1,478.11	410.60
09. Murrumbidgee	1,811.76	68.26	0.00	1,351.07	0.00	5,148.76	0.00	0.00	106.45	1,829.46	508.20
10. North Coast	5.75	5.00	0.00	0.45	23.47	0.00	0.00	0.00	0.00	0.60	0.08
11. Hunter	574.94	11.66	0.00	59.87	821.27	0.00	0.00	0.00	49.67	130.17	18.08
12. South Coast	11.50	3.33	0.00	3.04	178.54	0.00	0.00	0.00	0.00	4.12	0.57
<b>Total regulated rivers</b>	<b>9,267.11</b>	<b>412.91</b>	<b>0.00</b>	<b>3,513.01</b>	<b>1,023.28</b>	<b>12,791.06</b>	<b>0.00</b>	<b>0.00</b>	<b>636.33</b>	<b>4,805.98</b>	<b>1,316.31</b>

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	W07-01	W08-01	W08-02	W08-03	W08-99	W10-01	W10-02	W10-03	RoR, WC depreciation	Total revenue needs
01. Border	273.55	60.46	54.08	181.56	0.00	31.46	0.00	37.68	59.70	3,726.35
02. Gwydir	726.28	68.08	60.88	204.41	0.00	36.34	0.00	55.27	98.58	5,610.78
03. Namoi	410.49	103.69	92.74	311.35	0.00	53.19	0.00	90.47	85.44	4,461.25
04. Peel	22.08	30.73	27.49	92.29	0.00	15.97	0.00	44.82	17.47	1,007.49
05. Lachlan	432.38	241.85	216.31	726.20	0.00	125.44	0.00	280.22	134.77	6,638.22
06. Macquarie	567.39	217.30	194.34	652.47	0.00	115.25	0.00	200.74	143.70	7,297.11
07. Far West	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08. Murray	4,016.20	488.43	436.86	1,466.64	0.00	255.77	0.00	508.18	633.62	23,173.20
09. Murrumbidgee	3,989.02	249.47	223.11	749.06	0.00	127.66	0.00	249.97	510.25	23,664.48
10. North Coast	0.00	10.20	9.12	18.02	0.00	5.32	0.00	14.58	3.25	203.86
11. Hunter	0.00	229.93	205.64	406.11	0.00	119.24	0.00	234.29	104.84	4,698.12
12. South Coast	0.00	20.39	18.23	36.02	0.00	10.20	0.00	21.72	26.53	491.36
<b>Total regulated rivers</b>	<b>10,437.39</b>	<b>1,720.53</b>	<b>1,538.80</b>	<b>4,844.13</b>	<b>0.00</b>	<b>895.84</b>	<b>0.00</b>	<b>1,737.94</b>	<b>1,818.13</b>	<b>80,972.22</b>

**Table F.4: Revenue needs for unregulated rivers (\$'000 2015/16)**

	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-02	W04-01	W04-02	W04-03	W04-04
01. Border	502.32	69.46	153.00	15.07	20.53	0.00	0.00	0.00	0.00	0.45	39.52	0.00	2.30
02. Gwydir	224.32	102.52	152.45	0.00	24.19	0.00	0.00	0.00	0.00	0.08	39.54	0.00	2.29
03. Namoi	708.68	112.45	118.85	1.51	48.02	0.00	0.00	0.00	0.00	0.28	41.12	0.00	7.19
04. Peel	204.46	36.37	38.34	0.00	5.43	0.00	0.00	0.00	0.00	0.63	39.10	0.00	1.18
05. Lachlan	535.97	115.76	77.51	7.54	45.33	0.00	0.00	0.00	0.00	0.81	39.69	0.00	2.90
06. Macquarie	353.34	59.54	272.88	0.00	80.23	0.00	0.00	0.00	0.00	11.70	262.49	0.00	11.53
07. Far West	1,325.42	165.36	266.37	176.39	228.32	0.00	0.00	0.00	0.00	84.34	539.03	0.00	49.26
08. Murray	456.57	92.61	39.98	0.00	27.04	0.00	0.00	0.00	0.00	1.38	39.73	0.00	2.82
09. Murrumbidgee	1,167.23	162.05	229.54	28.64	60.08	0.00	0.00	0.00	0.00	1.88	62.46	0.00	4.82
10. North Coast	3,245.60	347.27	722.86	0.00	71.95	0.00	0.00	0.00	0.00	30.80	149.93	0.00	20.19
11. Hunter	1,329.99	221.60	180.71	6.03	48.10	0.00	0.00	0.00	0.00	86.50	38.83	0.00	43.00
12. South Coast	2,796.98	277.82	316.25	312.08	71.31	0.00	0.00	0.00	0.00	368.35	612.25	0.00	162.29
<b>Total unregulated rivers</b>	<b>12,850.88</b>	<b>1,762.81</b>	<b>2,568.74</b>	<b>547.26</b>	<b>730.54</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>587.20</b>	<b>1,903.70</b>	<b>0.00</b>	<b>309.77</b>

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	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07
01. Border	6.68	13.31	0.00	6.66	0.00	33.80	0.00	0.00	4.86	9.03	2.52
02. Gwydir	6.69	0.00	0.00	6.60	0.00	36.06	0.00	0.00	3.39	8.93	2.48
03. Namoi	7.62	1.67	0.00	20.80	0.00	113.84	0.00	0.00	5.64	28.18	7.82
04. Peel	6.43	0.00	0.00	3.40	0.00	15.16	0.00	0.00	25.02	4.59	1.28
05. Lachlan	6.78	5.00	0.00	8.38	0.00	42.98	0.00	0.00	23.59	11.36	3.15
06. Macquarie	8.40	13.31	0.00	33.34	0.00	158.53	0.00	0.00	219.84	45.14	12.54
07. Far West	635.98	104.89	0.00	142.43	0.00	546.28	0.00	0.00	25.42	192.85	53.56
08. Murray	6.80	1.67	0.00	8.18	0.00	42.74	0.00	0.00	31.01	11.06	3.07
09. Murrumbidgee	7.10	26.64	0.00	13.91	0.00	72.32	0.00	0.00	21.71	18.84	5.23
10. North Coast	6.27	76.59	0.00	58.40	631.53	0.00	0.00	0.00	238.60	79.06	10.97
11. Hunter	6.27	76.59	0.00	76.04	566.01	0.00	0.00	0.00	264.01	168.39	23.38
12. South Coast	6.27	226.43	0.00	469.32	2,164.54	0.00	0.00	0.00	4,815.18	635.49	88.26
<b>Total unregulated rivers</b>	<b>711.30</b>	<b>546.10</b>	<b>0.00</b>	<b>847.46</b>	<b>3,362.08</b>	<b>1,061.70</b>	<b>0.00</b>	<b>0.00</b>	<b>5,678.27</b>	<b>1,212.92</b>	<b>214.26</b>

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	W07-01	W08-01	W08-02	W08-03	W08-99	W10-01	W10-02	W10-03	RoR, WC depreciation	Total revenue needs
01. Border	15.54	63.20	56.51	312.03	0.00	34.58	0.00	78.93	32.56	1,518.67
02. Gwydir	16.13	37.33	33.40	184.38	0.00	19.50	0.00	48.95	28.20	1,006.68
03. Namoi	51.56	61.47	54.98	303.52	0.00	31.90	0.00	92.40	39.74	1,917.28
04. Peel	6.01	39.93	35.71	197.15	0.00	20.38	0.00	59.13	16.37	783.37
05. Lachlan	19.39	84.17	75.27	415.56	0.00	42.11	0.00	120.18	44.36	1,787.56
06. Macquarie	81.51	204.80	183.17	1,011.26	0.00	110.37	0.00	272.52	90.29	3,653.29
07. Far West	353.66	45.23	40.47	223.39	0.00	24.38	0.00	63.80	116.06	5,572.86
08. Murray	20.40	49.11	43.92	242.53	0.00	24.82	0.00	73.41	23.45	1,280.60
09. Murrumbidgee	31.89	146.35	130.89	722.63	0.00	76.69	0.00	203.21	77.38	3,374.37
10. North Coast	0.00	536.69	480.02	1,556.43	0.00	283.23	0.00	804.07	215.33	9,952.31
11. Hunter	0.00	441.90	395.23	1,281.54	0.00	231.37	0.00	638.81	227.59	6,744.48
12. South Coast	0.00	469.19	419.64	1,360.68	0.00	247.33	0.00	662.72	458.54	17,696.48
<b>Total unregulated rivers</b>	<b>596.11</b>	<b>2,179.37</b>	<b>1,949.21</b>	<b>7,811.10</b>	<b>0.00</b>	<b>1,146.66</b>	<b>0.00</b>	<b>3,118.13</b>	<b>1,369.87</b>	<b>55,287.96</b>

**Table F.5: Revenue needs for groundwater (\$'000 2015/16)**

	W01-01	W01-02	W01-03	W01-04	W01-05	W02-01	W02-02	W02-03	W03-02	W04-01	W04-02	W04-03	W04-04
13. Inland	0.00	0.00	0.00	0.00	0.00	10,642.92	598.09	2,063.65	0.00	461.16	65.27	2,822.06	212.03
14. Coastal	0.00	0.00	0.00	0.00	0.00	2,275.03	278.89	442.39	0.00	4.26	0.00	279.10	20.00
<b>Total groundwater</b>	0.00	0.00	0.00	0.00	0.00	12,917.95	876.98	2,506.04	0.00	465.42	65.27	3,101.16	232.03

	W05-01	W05-02	W05-03	W05-04	W06-01	W06-02	W06-03	W06-04	W06-05	W06-06	W06-07
13. Inland	4,995.19	0.00	0.00	613.13	0.00	2,331.37	0.00	0.00	295.44	830.24	230.62
14. Coastal	260.87	0.00	0.00	36.35	1,085.25	0.00	0.00	0.00	31.54	78.31	10.88
<b>Total groundwater</b>	5,256.06	0.00	0.00	649.48	1,085.25	2,331.37	0.00	0.00	326.98	908.55	241.50

	W07-01	W08-01	W08-02	W08-03	W08-99	W10-01	W10-02	W10-03	RoR, WC depreciation	Total revenue needs
13. Inland	0.00	878.34	785.59	3,431.07	0.00	506.64	0.00	1,454.70	1,620.67	35,976.01
14. Coastal	0.00	543.01	485.66	1,191.07	0.00	321.35	0.00	898.95	412.38	9,079.10
<b>Total groundwater</b>	0.00	1,421.35	1,271.25	4,622.14	0.00	827.99	0.00	2,353.65	2,033.05	45,055.11

**Table F.6: Asset lives used by Department of Industry to depreciate non-current assets**

<b>Asset class</b>	<b>Useful life (years)</b>
Buildings	40
Infrastructure	20
Business and computing equipment	4
Laboratory equipment	7
Specialised equipment	7
Intangibles	10
Furniture and fitting	10
Motor vehicles	7
Trailers and caravans	10
Marine vessels	7

## Appendix G

### Forecast share components

**Table G.1: Entitlement charge licence share component forecast (subject to fixed entitlement charge)**

Share component	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
<b>Regulated river</b>						
01. Border	266,360	266,360	266,360	266,360	266,360	266,360
02. Gwydir	536,505	536,505	536,505	536,505	536,505	536,505
03. Namoi	265,094	265,094	265,094	265,094	265,094	265,094
04. Peel	47,795	47,795	47,795	47,795	47,795	47,795
05. Lachlan	690,768	690,768	690,768	690,768	690,768	690,768
06. Macquarie	675,186	675,186	675,186	675,186	675,186	675,186
07. Far West	–	–	–	–	–	–
08. Murray	2,343,256	2,378,256	2,378,256	2,378,256	2,378,256	2,378,256
09. Murrumbidgee	2,708,451	2,708,451	2,708,451	2,708,451	2,708,451	2,708,451
10. North Coast	10,070	10,070	10,070	10,070	10,070	10,070
11. Hunter	208,831	208,831	208,831	208,831	208,831	208,831
12. South Coast	15,121	15,121	15,121	15,121	15,121	15,121
<b>Total – regulated river</b>	<b>7,767,437</b>	<b>7,802,437</b>	<b>7,802,437</b>	<b>7,802,437</b>	<b>7,802,437</b>	<b>7,802,437</b>
<b>Unregulated river</b>						
01. Border	44,031	44,031	44,031	44,031	44,031	44,031
02. Gwydir	47,848	47,848	47,848	47,848	47,848	47,848
03. Namoi	152,724	152,724	152,724	152,724	152,724	152,724
04. Peel	17,953	17,953	17,953	17,953	17,953	17,953
05. Lachlan	54,920	54,920	54,920	54,920	54,920	54,920
06. Macquarie	181,589	181,589	181,589	181,589	181,589	181,589
07. Far West	205,623	221,202	221,202	221,202	221,202	221,202
08. Murray	51,622	51,622	51,622	51,622	51,622	51,622
09. Murrumbidgee	96,817	96,817	96,817	96,817	96,817	96,817
10. North Coast	274,604	274,604	274,604	274,604	274,604	274,604
11. Hunter	671,636	671,636	671,636	671,636	671,636	671,636
12. South Coast	1,257,625	1,257,625	1,257,625	1,257,625	1,257,625	1,257,625
<b>Total – unregulated river</b>	<b>3,056,989</b>	<b>3,072,568</b>	<b>3,072,568</b>	<b>3,072,568</b>	<b>3,072,568</b>	<b>3,072,568</b>

Share component	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
<b>Groundwater</b>						
Murrumbidgee	340,046	340,046	340,046	340,046	340,046	340,046
Inland excluding Murrumbidgee	1,186,292	1,185,292	1,184,293	1,185,417	1,186,540	1,186,540
<i>Total – inland</i>	<i>1,526,338</i>	<i>1,525,338</i>	<i>1,524,340</i>	<i>1,525,464</i>	<i>1,526,587</i>	<i>1,526,587</i>
Coastal	370,365	370,770	371,175	371,580	371,985	371,985
<b>Total – groundwater</b>	<b>1,896,703</b>	<b>1,896,108</b>	<b>1,895,514</b>	<b>1,897,043</b>	<b>1,898,571</b>	<b>1,898,571</b>

**Table G.2: Water take charge only licence share component forecast – excluding floodplain harvesting licences (subject only to variable water take only charge)**

Share component	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
<b>Regulated river</b>						
01. Border	120,001	120,001	120,001	120,001	120,001	120,001
02. Gwydir	181,397	181,397	181,397	181,397	181,397	181,397
03. Namoi	115,479	115,479	115,479	115,479	115,479	115,479
04. Peel	–	–	–	–	–	–
05. Lachlan	3,125	3,125	3,125	3,125	3,125	3,125
06. Macquarie	49,998	49,998	49,998	49,998	49,998	49,998
07. Far West	–	–	–	–	–	–
08. Murray	502,579	502,579	502,579	502,579	502,579	502,579
09. Murrumbidgee	945,780	945,780	945,780	945,780	945,780	945,780
10. North Coast	–	–	–	–	–	–
11. Hunter	49,275	49,275	49,275	49,275	49,275	49,275
12. South Coast	1,300	1,300	1,300	1,300	1,300	1,300
<b>Total – regulated river</b>	<b>1,968,935</b>	<b>1,968,935</b>	<b>1,968,935</b>	<b>1,968,935</b>	<b>1,968,935</b>	<b>1,965,935</b>
<b>Unregulated river</b>						
01. Border	92	92	92	92	92	92
02. Gwydir	–	–	–	–	–	–
03. Namoi	–	–	–	–	–	–
04. Peel	–	–	–	–	–	–
05. Lachlan	–	–	–	–	–	–
06. Macquarie	47,831	47,831	47,831	47,831	47,831	47,831
07. Far West	12,650	12,650	12,650	12,650	12,650	12,650
08. Murray	–	–	–	–	–	–
09. Murrumbidgee	–	–	–	–	–	–
10. North Coast	–	–	–	–	–	–
11. Hunter	–	–	–	–	–	–
12. South Coast	–	–	–	–	–	–
<b>Total – unregulated river</b>	<b>60,573</b>	<b>60,573</b>	<b>60,573</b>	<b>60,573</b>	<b>60,573</b>	<b>60,573</b>

**Table G.3: Unregulated river entitlement charge licence share component forecast by 1-part and 2-part tariff**

	2015/16	2016/17	2017/18	2018/19	2019/20
<b>Forecast quantity of share component to which the 2-part tariff applies (excluding major utilities)</b>					
01. Border	1,824	1,824	1,824	1,824	1,824
02. Gwydir	757	757	757	757	757
03. Namoi	1,089	1,089	1,089	1,089	1,089
04. Peel	5,600	5,600	5,600	5,600	5,600
05. Lachlan	5,183	5,183	5,183	5,183	5,183
06. Macquarie	48,428	48,428	48,428	48,428	48,428
07. Far West	130,003	145,582	145,582	145,582	145,582
08. Murray	17,142	17,142	17,142	17,142	17,142
09. Murrumbidgee	16,687	16,687	16,687	16,687	16,687
10. North Coast	122,523	122,523	122,523	122,523	122,523
11. Hunter	151,706	151,706	151,706	151,706	151,706
12. South Coast	174,278	174,278	174,278	174,278	174,278
<b>Total share component subject to 2-part tariff (excluding major utilities)</b>	<b>675,220</b>	<b>690,799</b>	<b>690,799</b>	<b>690,799</b>	<b>690,799</b>
<b>Forecast quantity of share component to which the 1-part tariff applies</b>					
01. Border	42,207	42,207	42,207	42,207	42,207
02. Gwydir	47,091	47,091	47,091	47,091	47,091
03. Namoi	151,635	151,635	151,635	151,635	151,635
04. Peel	12,353	12,353	12,353	12,353	12,353
05. Lachlan	49,737	49,737	49,737	49,737	49,737
06. Macquarie	133,161	133,161	133,161	133,161	133,161
07. Far West	75,620	75,620	75,620	75,620	75,620
08. Murray	34,480	34,480	34,480	34,480	34,480
09. Murrumbidgee	80,130	80,130	80,130	80,130	80,130
10. North Coast	152,081	152,081	152,081	152,081	152,081
11. Hunter	180,855	180,855	180,855	180,855	180,855
12. South Coast	96,348	96,348	96,348	96,348	96,348
<b>Total share component subject to 1-part tariff</b>	<b>1,055,695</b>	<b>1,055,695</b>	<b>1,055,695</b>	<b>1,055,695</b>	<b>1,055,695</b>
<b>Major utilities share component (to which 2-part tariff applies)</b>					
Hunter Water Corporation	339,075	339,075	339,075	339,075	339,075
WaterNSW (Metropolitan)	987,000	987,000	987,000	987,000	987,000
<b>Total major utilities</b>	<b>1,326,075</b>	<b>1,326,075</b>	<b>1,326,075</b>	<b>1,326,075</b>	<b>1,326,075</b>
<b>Total entitlement charge share component</b>	<b>3,056,989</b>	<b>3,072,568</b>	<b>3,072,568</b>	<b>3,072,568</b>	<b>3,072,568</b>

**Table G.4: Groundwater entitlement charge licence share component forecast by 1-part and 2-part tariff**

	2015/16	2016/17	2017/18	2018/19	2019/20
<b>Forecast quantity of share component to which the 2-part tariff applies (excluding major utilities)</b>					
09. Murrumbidgee	321,148	321,148	321,148	321,148	321,148
Inland excluding Murrumbidgee	1,129,751	1,127,627	1,125,504	1,125,504	1,125,503
13. Inland groundwater	1,450,899	1,448,775	1,446,652	1,446,652	1,446,651
14. Coastal (excluding Hunter Water Corporation)	—	—	—	—	—
<b>Total share component subject to 2-part tariff (excluding major utilities)</b>	<b>1,450,899</b>	<b>1,448,775</b>	<b>1,446,652</b>	<b>1,446,652</b>	<b>1,446,651</b>
<b>Forecast quantity of share component to which the 1-part tariff applies</b>					
09. Murrumbidgee	18,898	18,898	18,898	18,898	18,898
Inland excluding Murrumbidgee	56,541	57,665	58,789	59,913	61,037
13. Inland groundwater	75,439	76,563	77,687	78,811	79,935
14. Coastal	341,365	341,770	342,175	342,580	342,985
<b>Total share component subject to 1-part tariff</b>	<b>416,804</b>	<b>418,333</b>	<b>419,862</b>	<b>421,391</b>	<b>422,920</b>
<b>Major Utilities share component (to which 2-part tariff applies)</b>					
Hunter Water Corporation	29,000	29,000	29,000	29,000	29,000
WaterNSW*	—	—	—	—	—
<b>Total major utilities</b>	<b>29,000</b>	<b>29,000</b>	<b>29,000</b>	<b>29,000</b>	<b>29,000</b>
<b>Total entitlement charge share component</b>	<b>1,896,703</b>	<b>1,896,108</b>	<b>1,895,514</b>	<b>1,897,043</b>	<b>1,898,571</b>

\* WaterNSW groundwater entitlement (see Table 8.5) is on a 1-part tariff.



## Appendix H

### 20-year historical water take for regulated rivers

**Table H.1: Regulated rivers 20-year average historical water take (showing adjustment for inclusion of Lowbidgee)**

Water year	01. Border	02. Gwydir	03. Namoi	04. Peel	05. Lachlan	06. Macquarie	08. Murray	09. Murrumbidgee	10. North Coast	11. Hunter	12. South Coast	TOTAL
1995/96	139,403	178,003	97,586	5,942	385,000	199,100	2,033,593	2,159,000	Not available	129,796	Not available	5,327,423
1996/97	169,812	394,616	198,965	5,641	436,000	348,937	2,372,284	2,611,000		150,067		6,687,322
1997/98	187,883	454,913	323,274	16,020	414,000	403,989	1,972,013	2,442,000		168,767		6,382,859
1998/99	164,331	374,762	216,487	5,561	278,000	336,071	2,063,827	2,119,000		102,505		5,660,545
1999/2000	180,863	417,837	246,478	7,309	285,000	385,748	1,252,922	1,713,000		118,977		4,608,134
2000/01	231,793	425,315	248,842	10,241	407,000	464,188	2,224,902	2,198,000		94,735		6,305,016
2001/02	182,622	443,145	280,340	14,671	439,572	545,664	2,076,048	2,254,000		110,970		6,347,032
2002/03	123,803	278,986	236,853	21,805	237,252	375,914	969,209	1,730,000		181,423		4,155,246
2003/04	100,542	159,250	80,653	13,325	43,510	174,168	1,306,721	1,655,000		142,400		3,675,569
2004/05	107,564	154,840	96,650	15,165	21,165	63,784	1,253,355	1,533,411	767	122,665	6,238	3,375,604
2005/06	134,417	218,496	141,325	14,753	112,436	180,723	1,645,963	1,933,148	767	159,825	6,328	4,548,181
2006/07	131,934	129,467	66,559	9,718	57,260	204,745	559,459	920,650	1,031	101,194	5,823	2,187,839
2007/08	112,269	79,132	51,212	9,080	30,777	30,867	226,469	458,044	786	106,795	5,623	1,111,054
2008/09	117,688	143,199	97,482	10,183	27,798	65,439	303,158	568,584	439	112,014	5,967	1,451,951
2009/10	100,850	46,959	75,152	17,517	11,787	73,820	414,876	823,285	943	115,811	2,006	1,683,006
2010/11	163,725	245,148	149,958	6,915	85,699	203,146	774,486	1,279,827	55	117,117	394	3,026,470
2011/12	134,200	200,724	128,272	4,219	212,769	296,618	1,671,275	1,738,526	104	112,713	1,547	4,500,966
2012/13	197,869	428,699	281,247	13,317	394,082	558,856	2,129,508	*2,276,806	476	124,314	3,673	6,408,847
2013/14	169,440	408,995	271,541	17,413	248,285	268,934	1,722,862	*1,682,120	953	118,474	3,642	4,912,659
2014/15	39,659	153,200	66,354	6,053	178,340	90,827	1,324,450	*1,704,741	102	101,450	2,130	3,667,306
Average measured water take (20 yrs)	144,533	266,784	167,761	11,242	215,287	263,577	1,414,869	1,690,007	584	124,601	3,943	4,303,188

Water year	01. Border	02. Gwydir	03. Namoi	04. Peel	05. Lachlan	06. Macquarie	08. Murray	09. Murrumbidgee	10. North Coast	11. Hunter	12. South Coast	TOTAL
Add 3-yr average measured water take for supplementary water (Lowbidgee)								61,174				61,174
Revised 20 year average water take	144,533	266,784	167,761	11,242	215,287	263,577	1,414,869	1,751,181	584	124,601	3,943	4,364,363
Regulated river floodplain forecast average measured water take												
Floodplain measured water take	41,000	118,000	48,000			29,000						236,000
Forecast average water take from 2017/18 onwards	185,533	384,784	215,761	11,242	215,287	292,577	1,414,869	1,751,181	584	124,601	3,943	4,600,363

\* Adjusted to exclude Lowbidgee

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# Appendix I

## Forecast measured and total water take

This appendix outlines the forecast measured and total water take for regulated rivers, unregulated rivers and groundwater.

For regulated rivers, Table I.1 shows the forecast water take.

For unregulated rivers, Table I.2 shows the forecast measured water take and Table I.3 shows the forecast total water take (including the measured water take volumes in Table I.2).

For groundwater, Table I.4 shows the forecast measured water take and Table I.5 shows the forecast total water take (including the measured water take volumes in Table I.5).

**Table I.1: Regulated river water take forecast – including expected implementation of floodplain harvesting measured water take (ML)**

Pricing water source	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
01. Border	144,533	144,533	144,533	144,533	144,533	144,533
01. Border FPH		41,000	41,000	41,000	41,000	41,000
02. Gwydir	266,784	266,784	266,784	266,784	266,784	266,784
02. Gwydir FPH		118,000	118,000	118,000	118,000	118,000
03. Namoi	167,761	167,761	167,761	167,761	167,761	167,761
03. Namoi FPH			48,000	48,000	48,000	48,000
04. Peel	11,242	11,242	11,242	11,242	11,242	11,242
05. Lachlan	215,287	215,287	215,287	215,287	215,287	215,287
06. Macquarie	263,577	263,577	292,577	292,577	292,577	292,577
06. Macquarie FPH			29,000	29,000	29,000	29,000
07. Far West	–	–	–	–	–	–
08. Murray	1,414,869	1,414,869	1,414,869	1,414,869	1,414,869	1,414,869
09. Murrumbidgee	1,751,181	1,751,181	1,751,181	1,751,181	1,751,181	1,751,181
10. North Coast	584	584	584	584	584	584
11. Hunter	124,601	124,601	124,601	124,601	124,601	124,601
12. South Coast	3,943	3,943	3,943	3,943	3,943	3,943
<b>Total water take</b>	<b>4,364,363</b>	<b>4,523,363</b>	<b>4,600,363</b>	<b>4,600,363</b>	<b>4,600,363</b>	<b>4,600,363</b>

**Table I.2: Unregulated river measured water take forecast – including expected implementation of floodplain harvesting measured water take (ML)**

Pricing water source	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
01. Border	730	730	730	730	730	730
02. Gwydir	303	303	303	303	303	303
03. Namoi	434	434	434	434	434	434
04. Peel	2,240	2,240	2,240	2,240	2,240	2,240
05. Lachlan	1,978	1,978	1,978	1,978	1,978	1,978
06. Macquarie	19,236	19,236	19,236	19,236	19,236	19,236
07. Far West	101,687	101,687	101,687	101,687	101,687	101,687
07. Far West FPH			30,000	30,000	30,000	30,000
08. Murray	4,561	4,561	4,561	4,561	4,561	4,561
09. Murrumbidgee	4,013	4,013	4,013	4,013	4,013	4,013
10. North Coast	48,885	48,885	48,885	48,885	48,885	48,885
11a. Hunter (excluding Hunter Water Corporation (HWC))	60,487	60,487	60,487	60,487	60,487	60,487
12a. South Coast (excluding WaterNSW (WNSW))	51,437	51,437	51,437	51,437	51,437	51,437
<b>Total measured water take excluding HWC/WNSW</b>	<b>295,992</b>	<b>295,992</b>	<b>325,992</b>	<b>325,992</b>	<b>325,992</b>	<b>325,992</b>
11b. Hunter (Hunter Water Corporation)	67,641	68,092	68,546	69,003	69,463	69,926
12b. South Coast (WNSW)	524,242	529,331	534,742	539,222	545,366	549,588
<b>Total measured water take (including HWC/WNSW)</b>	<b>887,876</b>	<b>893,415</b>	<b>929,280</b>	<b>934,217</b>	<b>940,821</b>	<b>945,507</b>

**Table I.3: Unregulated river total estimated water take forecast (including measured water take in Table I.2 and unmeasured water take) (ML)**

Pricing water source	2015/16	2016/17	2017/18	2018/19	2019/20	2019/20
01. Border	8,637	8,637	8,637	8,637	8,637	8,637
02. Gwydir	8,544	8,544	8,544	8,544	8,544	8,544
03. Namoi	26,971	26,971	26,971	26,971	26,971	26,971
04. Peel	4,402	4,402	4,402	4,402	4,402	4,402
05. Lachlan	10,871	10,871	10,871	10,871	10,871	10,871
06. Macquarie	43,205	43,205	43,205	43,205	43,205	43,205
07. Far West	154,609	154,609	154,609	154,609	154,609	154,609
07. Far West FPH	–	–	30,000	30,000	30,000	30,000
08. Murray	10,595	10,595	10,595	10,595	10,595	10,595
09. Murrumbidgee	18,036	18,036	18,036	18,036	18,036	18,036
10. North Coast	75,683	75,683	75,683	75,683	75,683	75,683
11. Hunter	159,831	160,281	160,735	161,192	161,652	162,116
12. South Coast	592,890	597,979	603,390	607,870	614,014	618,236
<b>Total estimated water take (including HWC/WNSW)</b>	<b>1,114,273</b>	<b>1,119,813</b>	<b>1,155,677</b>	<b>1,160,615</b>	<b>1,167,219</b>	<b>1,171,904</b>

**Table I.4: Groundwater measured water take forecast (ML)**

Pricing water source	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
13. Inland	755,099	755,099	755,773	755,773	755,773	755,773
14a. Coastal (excluding HWC)	0	0	0	0	0	0
14b. Coastal (HWC)	6,670	6,670	6,670	6,670	6,670	6,670
14. Coastal (total)	6,670	6,670	6,670	6,670	6,670	6,670
<b>Total measured water take (including HWC)</b>	<b>761,769</b>	<b>761,769</b>	<b>762,443</b>	<b>762,443</b>	<b>762,443</b>	<b>762,443</b>

**Table I.5: Groundwater total estimated water take forecast (including measured water take in Table I.4 and unmeasured water take) (ML)**

Pricing water source	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
13. Inland	794,044	794,044	794,718	794,718	794,718	794,718
14. Coastal (including HWC)	74,950	74,950	75,193	75,193	75,193	75,193
<b>Total estimated water take (including HWC)</b>	<b>868,994</b>	<b>868,994</b>	<b>869,911</b>	<b>869,911</b>	<b>869,911</b>	<b>869,911</b>

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## **Appendix J**

### **Composition of NSW contribution to the MDBA and DBBRC**

**Table J.1: MDBA operating expenditure for 2015/16 (\$'000 2015/16)**

MDBA item relevant to NSW	DPI Water or WaterNSW	Total NSW contribution	DPIW's share of total NSW contribution	DPIW's share of total NSW contribution inclusive of overheads	Not a monopoly service	W01-03 Surface water quality	W01-05 Surface water ecological monitoring	W04-01 Surface water models	W05-01 Systems operation and water availability	W06-02 MDB Water plan development	W07-01 Water management works	User share of program
User share for DPI Water activity						50%	50%	50%	100%	70%	50%	
To improve water security for all uses of Basin water resources												
Water markets – interstate water trade policy	DPIW	70	70	74	–	–	–	–	74	–	–	74
To optimise ecological outcomes of environmental water in the Basin												
TLM Planning Delivery – Barmah-Milliwah Forest	DPIW	165	165	174	–	–	–	–	–	174	–	122
TLM Planning Delivery Gunbower–Koondrook-Perricoota Forest	DPIW	165	165	174	–	–	–	–	–	174	–	122
TLM Planning Delivery Hattah Lakes	DPIW	83	83	87	–	–	–	–	–	87	–	61
TLM Planning Delivery Mouth Coorong Lower Lakes	DPIW	83	83	87	–	–	–	–	–	87	–	61
TLM Planning Delivery Chowilla Lindsay Walpolla	DPIW	183	183	192	–	–	–	–	–	192	–	135
TLM Planning Delivery – River Murray channel	DPIW	–	–	–	–	–	–	–	–	–	–	–
TLM Planning Delivery – Icon Site program management	DPIW	40	40	42	–	–	–	–	–	42	–	29
TLM Planning Delivery – Coordination annual environ water planning allocation	DPIW	189	189	199	–	–	–	–	–	199	–	139
TLM Planning Delivery – Portfolio fees and delivery charges	DPIW	1,284	1,284	1,352	–	–	–	–	–	1,352	–	946
TLM Planning Delivery – Delivery fees (defunct combined with above)	DPIW	–	–	–	–	–	–	–	–	–	–	–

MDBA item relevant to NSW	DPI Water or WaterNSW	Total NSW contribution	DPIW's share of total NSW contribution	DPIW's share of total NSW contribution inclusive of overheads	Not a monopoly service	W01-03 Surface water quality	W01-05 Surface water ecological monitoring	W04-01 Surface water models	W05-01 Systems operation and water availability	W06-02 MDB Water plan development	W07-01 Water management works	User share of program
TLM Modelling – TLM Modelling Support	DPIW	69	69	73	–	–	–	–	–	73	–	51
To improve the understanding of river health												
Monitoring and Evaluation Program – Pest Fish Management	DPIW	21	21	22	–	–	22	–	–	–	–	11
Monitoring and Evaluation Program – Showcase methods to restore river health	DPIW	4	4	4	–	–	4	–	–	–	–	2
River Murray Water Quality – Program management – water quality monitoring	DPIW	63	63	67	–	67	–	–	–	–	–	33
River Murray Water Quality – Data Collection – biological monitoring	DPIW	65	65	68	–	68	–	–	–	–	–	34
TLM Condition Monitoring – Barmah-Milliwah Forest	DPIW	118	118	124	–	–	124	–	–	–	–	62
TLM Condition Monitoring – Gunbower-Koondrook-Perricoota	DPIW	125	125	132	–	–	132	–	–	–	–	66
TLM Condition Monitoring – Hatta Lakes	DPIW	69	69	72	–	–	72	–	–	–	–	36
TLM Condition Monitoring – Mouth Corong Lower Lakes	DPIW	75	75	79	–	–	79	–	–	–	–	39
TLM Condition Monitoring – Chowilla Lindsay Walpolla	DPIW	149	149	157	–	–	157	–	–	–	–	78
TLM Condition Monitoring – System Scale	DPIW	20	20	21	–	–	21	–	–	–	–	11
TLM Monitoring – Intervention and risk compliance monitoring	DPIW	425	425	448	–	–	448	–	–	–	–	224
TLM Monitoring – Program management	DPIW	81	81	85	–	–	85	–	–	–	–	43

<b>MDBA item relevant to NSW</b>	<b>DPI Water or WaterNSW</b>	<b>Total NSW contribution</b>	<b>DPIW's share of total NSW contribution</b>	<b>DPIW's share of total NSW contribution inclusive of overheads</b>	<b>Not a monopoly service</b>	<b>W01-03 Surface water quality</b>	<b>W01-05 Surface water ecological monitoring</b>	<b>W04-01 Surface water models</b>	<b>W05-01 Systems operation and water availability</b>	<b>W06-02 MDB Water plan development</b>	<b>W07-01 Water management works</b>	<b>User share of program</b>
Environmental M&E (Environmental Monitoring and Evaluation) – scoping study	DPIW	200	200	211	–	–	211	–	–	–	–	105
MDFRC (Murray Darling Freshwater Research Centre) – Core contribution	DPIW	250	250	263	–	–	263	–	–	–	–	132
To reduce adverse impacts on river and ecosystem health												
Water Quality and Salinity Management – Policy reviews, Schedule B, End of Valley targets	DPIW	176	176	185	–	185	–	–	–	–	–	93
Water Quality and Salinity Management – Establish and maintain salinity registers	DPIW	95	95	100	–	100	–	–	–	–	–	50
Water Quality and Salinity Management – Annual reporting	DPIW	8	8	8	–	8	–	–	–	–	–	4
Water Quality and Salinity Management – Audit and compliance	DPIW	70	70	73	–	73	–	–	–	–	–	37
Water Quality and Salinity Management – Program management (BSMS)	DPIW	52	52	55	–	55	–	–	–	–	–	27
To continuously build an evidence base to support the implementation of the Basin plan												
Water Resources – Core modelling	DPIW	238	238	250	–	–	–	250	–	–	–	125
To improve availability and accessibility of evidence to the community, government and industry												
Secretariat	DPIW	109	109	114	114	–	–	–	–	–	–	–
TLM Indigenous partnership	DPIW	120	120	126	–	–	–	–	–	126	–	88

MDBA item relevant to NSW	DPI Water or WaterNSW	Total NSW contribution	DPIW's share of total NSW contribution	DPIW's share of total NSW contribution inclusive of overheads	Not a monopoly service	W01-03 Surface water quality	W01-05 Surface water ecological monitoring	W04-01 Surface water models	W05-01 Systems operation and water availability	W06-02 MDB Water plan development	W07-01 Water management works	User share of program
To build, maintain and improve River Murray system assets												
Cat 1b Water Assets NSW – Lake Victoria	DPIW	222	222	234	234	–	–	–	–	–	–	–
Environmental Structures Water Assets NSW – NSW River Channel Management	DPIW	538	538	567	–	–	–	–	–	–	567	283
Murray Mouth Sand Pumping SA	DPIW	1,500	1,500	1,580	–	–	–	–	–	–	1,580	790
RMW Office Asset Management Str – SISchemes	DPIW	52	52	55	–	–	–	–	–	–	55	27
Operate/Maintain existing SIS – SIS Barr Creek	DPIW	146	146	153	–	–	–	–	–	–	153	77
Operate/Maintain existing SIS – SIS Mildura-Merbein	DPIW	182	182	192	–	–	–	–	–	–	192	96
Operate/Maintain existing SIS – SIS Pyramid Creek	DPIW	46	46	49	–	–	–	–	–	–	49	24
Operate/Maintain existing SIS – SIS Malle Cliffs	DPIW	253	253	266	–	–	–	–	–	–	266	133
Operate/Maintain existing SIS – SIS Buronga	DPIW	164	164	172	–	–	–	–	–	–	172	86
Operate/Maintain existing SIS – SIS other monitoring	DPIW	30	30	32	–	–	–	–	–	–	32	16
Operate/Maintain existing SIS – SIS Upper Darling Glenvilla	DPIW	51	51	54	–	–	–	–	–	–	54	27
Operate/Maintain existing SIS – SIS Rufus River	DPIW	35	35	37	–	–	–	–	–	–	37	18
Operate/Maintain existing SIS – SIS Woolpunda	DPIW	525	525	553	–	–	–	–	–	–	553	276
Operate/Maintain existing SIS – SIS Waikerie	DPIW	316	316	332	–	–	–	–	–	–	332	166
Operate/Maintain existing SIS – SIS Loxton	DPIW	283	283	298	–	–	–	–	–	–	298	149

MDBA item relevant to NSW	DPI Water or WaterNSW	Total NSW contribution	DPIW's share of total NSW contribution	DPIW's share of total NSW contribution inclusive of overheads	Not a monopoly service	W01-03 Surface water quality	W01-05 Surface water ecological monitoring	W04-01 Surface water models	W05-01 Systems operation and water availability	W06-02 MDB Water plan development	W07-01 Water management works	User share of program
Operate/Maintain existing SIS – SIS Bookpurnong	DPIW	235	235	248	–	–	–	–	–	–	248	124
Operate/Maintain existing SIS – SIS Pike/Mundic	DPIW	82	82	86	–	–	–	–	–	–	86	43
Operate/Maintain existing SIS – SIS Murtho	DPIW	109	109	114	–	–	–	–	–	–	114	57
Operate/Maintain existing SIS – SIS other performance monitoring	DPIW	70	70	73	–	–	–	–	–	–	73	37
River operations												
WaterNSW projects	WNSW	14,468	–	–	–	–	–	–	–	–	–	–
Overheads												
Corporate Overhead – Goal 1	DPIW	31	31	–	–	–	–	–	–	–	–	–
Corporate Overhead – Goal 2	DPIW	348	348	–	–	–	–	–	–	–	–	–
Corporate Overhead – Goal 3	DPIW	136	136	–	–	–	–	–	–	–	–	–
<b>Total user share of program</b>					–	278	809	125	74	1,754	2,430	5,469
<b>Total program</b>		<b>24,680</b>	<b>10,212</b>	<b>10,212</b>	<b>348</b>	<b>556</b>	<b>1,617</b>	<b>250</b>	<b>74</b>	<b>2,505</b>	<b>4,860</b>	<b>10,212</b>

### Key

Term	Definition
BSMS	Basin Salinity Management Strategy
DPIW	DPI Water
Environmental M&E	Environmental Monitoring and Evaluation

Term	Definition
EWMP	Environmental Works and Measures
Goal 1 – Integrated Water Management	Sustainable water planning and management arrangements that optimise the social, economic and environmental outcomes from the use of Basin water resources.
Goal 2 – River and Ecosystem Health	Protect, restore or improve the ecological health and resilience of the Basin's key environmental assets and water dependent ecosystems.
Goal 3 – Knowledge into Action	Develop authoritative information, monitoring and research in partnerships with governments, scientists, and communities, to underpin decision making and adaptive management.
MDFRC	Murray Darling Freshwater Research Centre
RMW	River Murray Water
SIS	Salt Interception Scheme
TLM	The Living Murray project
WNSW	WaterNSW

### Additional information

Additional information on some of the MDBA Joint Programs can be found at the following locations:

- Murray Darling Basin Authority – [www.mdba.gov.au](http://www.mdba.gov.au)
- Basin Salinity Management Strategy – [www.mdba.gov.au/search/site/bsms](http://www.mdba.gov.au/search/site/bsms)
- The Living Murray environmental works and measures – [www.mdba.gov.au/what-we-do/managing-rivers/TLM-environmental-works-and-measures](http://www.mdba.gov.au/what-we-do/managing-rivers/TLM-environmental-works-and-measures)
- The Murray Darling Freshwater Research Centre (research partnerships) – [www.mdfrc.org.au](http://www.mdfrc.org.au)
- Environmental Monitoring and Evaluation – <http://www.mdba.gov.au/what-we-do/mon-eval-reporting/environmental-monitoring-and-evaluation>

**Table J.2: DBBRC operating expenditure for 2015/16 (\$'000 2015/16)**

	DPI Water or WaterNSW	Total NSW contribution	DPI Water's share of total contribution WNSW share of contributions	DPI Water's share of total NSW contribution inclusive of overheads	W01-01 Surface water quantity monitoring	W01-03 Surface water quality	W02-01 Groundwater quantify monitoring	Total
Surface water monitoring	DPIW	278	278	349	349			244
Water quality and biological monitoring	DPIW	39	39	49		49		24
Groundwater assessment and modelling	DPIW	7	7	9			7	7
River operation and maintenance	WNSW	551	551	693				
Corporate overheads		225	225					
User share of program					244	24	7	275
<b>Total</b>		<b>1,100</b>	<b>1,100</b>	<b>1,100</b>	<b>349</b>	<b>49</b>	<b>7</b>	<b>405</b>



# Appendix K

## Pricing information

**Table K.1: Regulated river proposed prices**

Regulated river	2013/14 to 2015/16		2016/17		2017/18		2018/19		2019/20		2020/21		Full cost recovery	
Pricing water source	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take	Entitle- ment	Water take
01. Border	\$2.32	\$1.79	\$2.32	\$1.79	\$2.37	\$1.85	\$2.38	\$1.86	\$2.38	\$1.86	\$2.38	\$1.86	\$2.38	\$1.86
01. Border with FPH	\$2.32	\$1.79	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71	\$2.19	\$1.71
02. Gwydir	\$1.37	\$1.26	\$1.39	\$1.20	\$1.43	\$1.22	\$1.46	\$1.25	\$1.50	\$1.29	\$1.54	\$1.32	\$1.78	\$1.53
02. Gwydir with FPH	\$1.37	\$1.26	\$1.39	\$1.20	\$1.43	\$1.22	\$1.46	\$1.25	\$1.50	\$1.29	\$1.54	\$1.32	\$1.57	\$1.35
03. Namoi	\$2.75	\$1.88	\$2.77	\$1.85	\$2.83	\$1.89	\$2.83	\$1.89	\$2.83	\$1.89	\$2.83	\$1.89	\$2.83	\$1.89
03. Namoi with FPH	\$2.75	\$1.88	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74	\$2.60	\$1.74
04. Peel	\$2.33	\$3.71	\$2.26	\$4.01	\$2.32	\$4.12	\$2.37	\$4.22	\$2.43	\$4.33	\$2.49	\$4.44	\$3.64	\$6.56
05. Lachlan	\$1.86	\$2.14	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10	\$1.57	\$2.10
06. Macquarie	\$1.98	\$1.90	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88	\$1.74	\$1.88
06. Macquarie with FPH	\$1.98	\$1.90	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82	\$1.69	\$1.82
07. Far West	—	—	—	—	—	—	—	—	—	—	—	—	—	—
08. Murray	\$1.50	\$0.97	\$1.46	\$1.05	\$1.50	\$1.07	\$1.54	\$1.09	\$1.58	\$1.12	\$1.62	\$1.15	\$1.62	\$1.15
09. Murrumbidgee	\$1.23	\$0.79	\$1.22	\$0.81	\$1.25	\$0.82	\$1.28	\$0.84	\$1.32	\$0.87	\$1.35	\$0.89	\$1.50	\$0.99
10. North Coast	\$5.58	\$5.54	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64	\$4.48	\$6.64
11. Hunter	\$2.73	\$1.75	\$2.69	\$1.84	\$2.76	\$1.88	\$2.83	\$1.93	\$2.90	\$1.98	\$2.97	\$2.03	\$3.62	\$2.51
12. South Coast	\$5.00	\$5.61	\$4.57	\$7.27	\$4.68	\$7.45	\$4.80	\$7.64	\$4.92	\$7.83	\$5.04	\$8.02	\$5.34	\$8.54
Minimum annual charge	\$105.34		\$150.00		\$150.00		\$150.00		\$150.00		\$150.00			

FPH = flood plain harvesting

**Table K.2: Unregulated river proposed prices**

Unregulated rivers	2013/14 to 2015/16			2016/17			2017/18			2018/19			2019/20			2020/21		
Pricing water source	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment
04A. North West	\$3.73	\$1.60	\$5.34	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77	\$2.31	\$2.46	\$4.77
06A. Central West	\$5.87	\$2.52	\$8.39	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54	\$2.66	\$2.88	\$5.54
07. Far West	\$4.67	\$2.00	\$6.67	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77	\$4.20	\$2.57	\$6.77
07. Far West with FPH	\$4.67	\$2.00	\$6.67	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40	\$4.22	\$2.18	\$6.40
08. Murray	\$6.77	\$2.91	\$9.67	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88	\$2.65	\$4.23	\$6.88
09. Murrumbidgee	\$8.30	\$3.55	\$11.85	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03	\$3.27	\$5.76	\$9.03
10. North Coast	\$7.00	\$3.00	\$10.01	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82	\$4.74	\$5.08	\$9.82
11. Hunter	\$2.30	\$2.17	\$4.48	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39	\$1.29	\$2.10	\$3.39
12. South Coast	\$2.26	\$1.48	\$3.74	\$2.10	\$1.80	\$3.90	\$2.15	\$1.83	\$3.98	\$2.21	\$1.86	\$4.07	\$2.27	\$1.89	\$4.16	\$2.27	\$1.89	\$4.16
Minimum annual charge	\$105.34			\$150.00			\$150.00			\$150.00			\$150.00			\$150.00		

FPH = flood plain harvesting

**Table K.3: Groundwater proposed prices**

Groundwater	2013/14 to 2015/16			2016/17			2017/18			2018/19			2019/20			2020/21		
Pricing water source	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment	2-part entitle-ment	Water take	1-part entitle-ment
09. Murrumbidgee	\$2.47	\$1.07	\$3.53	\$2.13	\$1.72	\$3.85	\$2.18	\$1.77	\$3.95	\$2.24	\$1.81	\$4.05	\$2.29	\$1.85	\$4.14	\$2.35	\$1.90	\$4.25
13. Inland	\$4.86	\$2.09	\$6.95	\$3.99	\$3.23	\$7.22	\$3.99	\$3.23	\$7.22	\$3.99	\$3.23	\$7.22	\$3.99	\$3.21	\$7.20	\$3.99	\$3.21	\$7.20
14. Coastal	\$4.07	\$1.85	\$5.92	\$2.01	\$3.75	\$5.76	\$2.01	\$3.75	\$5.76	\$2.01	\$3.75	\$5.76	\$2.01	\$3.74	\$5.75	\$2.01	\$3.74	\$5.75
Minimum annual charge	\$105.34			\$150.00			\$150.00			\$150.00			\$150.00			\$150.00		

**Table K.4: Mapping of pricing to water sharing plans (WSPs) and water sources**

Pricing water source	Water sources included in WSP	WSP at 2020
<b>Regulated river</b>		
01. Border	All water sources	NSW Border Rivers Regulated River Water Source 2009 <sup>^</sup>
02. Gwydir	All water sources	Gwydir Regulated River Water Source 2002*
03. Namoi	All water sources except Peel	Upper Namoi and Lower Namoi Regulated River Water Sources 2003*
04. Peel	Peel valley water source	Peel regulated water source in Upper Namoi and Lower Namoi Regulated River Water Sources 2003*
05. Lachlan	All water sources	Lachlan Regulated River Water Source 2003* includes merged Belubula Regulated River Water Source 2012
06. Macquarie	All water sources	Macquarie and Cudgong Regulated Rivers Water Source 2003*
08. Murray	All water sources	New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2003*
09. Murrumbidgee	All water sources	Murrumbidgee Regulated River Water Source 2003*
10. North Coast	All water sources	Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010
11. Hunter	All water sources	Hunter Regulated River Water Source 2003*
	All water sources	Paterson Regulated River Water Source 2007 <sup>^</sup>
12. South Coast	All water sources	Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011
<b>Unregulated river</b>		
04a. North West	All water sources	NSW Border Rivers Unregulated and Alluvial Water Sources 2012
	All water sources	Gwydir Unregulated and Alluvial Water Sources 2012
	All water sources	Namoi Unregulated and Alluvial Water Sources 2012 includes Peel Valley Unregulated Water Source 2010
06a. Central West	All water sources	Lachlan Unregulated and Alluvial Water Sources 2012
	All water sources	Castlereagh (below Binnaway) Unregulated and Alluvial Water Sources 2011
	All water sources	Macquarie Bogan Unregulated and Alluvial Water Sources 2012
07. Far West	All water sources	Barwon-Darling Unregulated and Alluvial Water Sources 2012
	All water sources	Intersecting Streams Unregulated and Alluvial Water Sources 2011
	All water sources	North Western Unregulated and Fractured Rock Water Sources 2011
08. Murray	All water sources	Lower Murray-Darling Unregulated and Alluvial Water Sources 2011
	All water sources	Murray Unregulated and Alluvial Water Sources 2010
09. Murrumbidgee	All water sources	Murrumbidgee Unregulated and Alluvial Water Sources 2012

Pricing water source	Water sources included in WSP	WSP at 2020
10. North Coast	All water sources	Brunswick Unregulated and Alluvial Water Sources*
	All water sources	Clarence Unregulated and Alluvial Water Sources*
	All water sources	Coffs Harbour Area Unregulated and Alluvial Water Sources 2009 <sup>^</sup> includes merged Bellinger River Area Unregulated and Alluvial Water Sources 2008
	All water sources	Hastings Unregulated and Alluvial Water Sources*
	All water sources	Macleay Unregulated and Alluvial Water Sources*
	All water sources	Nambucca Unregulated and Alluvial Water Sources*
	All water sources	Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010
	All water sources	Tweed River Area Unregulated and Alluvial Water Sources 2010
11. Hunter	All water sources	Central Coast Unregulated Water Sources 2009 <sup>^</sup>
	All water sources	Hunter Unregulated and Alluvial Water Sources 2009 <sup>^</sup>
	All water sources	Lower North Coast Unregulated and Alluvial Water Sources 2009 <sup>^</sup>
12. South Coast	All water sources	Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011
	All water sources	Clyde Unregulated and Alluvial Water Sources*
	All water sources	Deua Unregulated and Alluvial Water Sources*
	All water sources	Greater Metropolitan Region Unregulated River Water Sources 2011
	All water sources	Snowy Genoa Unregulated and Alluvial Water Sources*
	All water sources	Towamba River Unregulated and Alluvial Water Sources 2010
	All water sources	Tuross Unregulated and Alluvial Water Sources*
	All water sources	Murrah-Wallaga Area Unregulated and Alluvial Water Sources 2010
<b>Groundwater</b>		
13. Inland	All water sources	Barwon-Darling Unregulated and Alluvial Water Sources 2012
	All water sources	Castlereagh (below Binnaway) Unregulated and Alluvial Water Sources 2011
	All water sources	Gwydir Unregulated and Alluvial Water Sources 2012
	All water sources	Intersecting Streams Unregulated and Alluvial Water Sources 2011
	All water sources	Lachlan Unregulated and Alluvial Water Sources 2012
	All water sources	Lower Gwydir Groundwater Source 2003 <sup>^</sup>
	All water sources	Lower Lachlan Groundwater Source 2003 <sup>^</sup>
	All water sources	Lower Macquarie Groundwater Sources 2003 <sup>^</sup>
	All water sources	Lower Murray Shallow Groundwater 2012 includes merged Lower Murray Groundwater Source 2006
	All water sources	Lower Murray-Darling Unregulated and Alluvial Water Sources 2011
	All water sources	Lower Murrumbidgee Groundwater Sources 2003 <sup>^</sup>
	All water sources	Macquarie Bogan Unregulated and Alluvial Water Sources 2012
	All water sources	Murray Unregulated and Alluvial Water Sources 2011

Pricing water source	Water sources included in WSP	WSP at 2020
	All water sources	Murrumbidgee Unregulated and Alluvial Water Sources 2012
	All water sources	Namoi Unregulated and Alluvial Water Sources 2012
	All water sources	North Western Unregulated and Fractured Rock Water Sources 2011
	All water sources	NSW Border Rivers Unregulated and Alluvial Water Sources 2012
	All water sources	NSW Great Artesian Basin Groundwater Sources 2008 <sup>^</sup>
	All water sources	NSW Great Artesian Basin Shallow Groundwater Sources 2011
	All water sources	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011
	All water sources	NSW Murray Darling Basin Porous Rock Groundwater Sources 2011
	All water sources	Upper and Lower Namoi Groundwater 2003 <sup>^</sup> includes merged Peel Valley Alluvium and Fractured Rock Water Sources 2010
14. Coastal	All water sources	Bega and Brogo Rivers Area Regulated, Unregulated and Alluvial Water Sources 2011
	All water sources	Brunswick Unregulated and Alluvial Water Sources*
	All water sources	Clarence Unregulated and Alluvial Water Sources*
	All water sources	Clyde Unregulated and Alluvial Water Sources*
	All water sources	Coffs Harbour Area Unregulated and Alluvial Water Sources 2009 <sup>^</sup> includes merged Bellinger River Area Unregulated and Alluvial Water Sources 2008
	All water sources	Deua Unregulated and Alluvial Water Sources*
	All water sources	Greater Metropolitan Region Groundwater Sources 2011
	All water sources	Hastings Unregulated and Alluvial Water Sources*
	All water sources	Hunter Unregulated and Alluvial Water Sources 2009 <sup>^</sup>
	All water sources	Lower North Coast Unregulated and Alluvial Water Sources 2009 <sup>^</sup>
	All water sources	Macleay Unregulated and Alluvial Water Sources*
	All water sources	Murrah-Wallaga Area Unregulated and Alluvial Water Sources 2010
	All water sources	Nambucca Unregulated and Alluvial Water Sources*
	All water sources	North Coast Coastal Sands*
	All water sources	North Coast Fractured and Porous Rock*
	All water sources	Richmond River Area Unregulated, Regulated and Alluvial Water Sources 2010
	All water sources	Snowy Genoa Unregulated and Alluvial Water Sources*
	All water sources	South Coast Groundwater*
	All water sources	Towamba River Unregulated and Alluvial Water Sources 2010
	All water sources	Tuross Unregulated and Alluvial Water Sources*
	All water sources	Tweed River Area Unregulated and Alluvial Water Sources 2010

\* New plan or merge scheduled to commence prior to 1 July 2016.

<sup>^</sup> Scheduled to be reviewed and replaced/extended in the future determination period.

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# Appendix L

## Bill impacts information

**Table L.1: Estimated bill impacts for a median regulated river licence**

Valley	Median entitlement	Average water take	Current bill	2016/17	2017/18	2018/19	2019/20	Total real change	Year 1 \$ change	Period change \$
01. Border	136	35%	\$400	\$400	\$409	\$411	\$411	3%	\$0	\$11
01. Border with FPH	136	35%	\$400	\$378	\$378	\$378	\$378	-5%	-\$21	-\$21
02. Gwydir	972	35%	\$1,762	\$1,762	\$1,807	\$1,846	\$1,899	8%	-\$1	\$137
02. Gwydir with FPH	972	35%	\$1,762	\$1,762	\$1,807	\$1,846	\$1,899	8%	-\$1	\$137
03. Namoi	246	49%	\$905	\$906	\$925	\$925	\$925	2%	\$1	\$21
03. Namoi with FPH	246	49%	\$905	\$851	\$851	\$851	\$851	2%	-\$54	-\$54
04. Peel	120	24%	\$384	\$384	\$395	\$404	\$414	8%	\$0	\$29
05. Lachlan	272	31%	\$687	\$605	\$605	\$605	\$605	-12.0%	-\$82	-\$82
06. Macquarie	196	37%	\$527	\$479	\$479	\$479	\$479	-9.0%	-\$49	-\$49
06. Macquarie with FPH	196	37%	\$527	\$465	\$465	\$465	\$465	-12%	-\$63	-\$63
07. Far West										
08. Murray	221	54%	\$447	\$446	\$458	\$470	\$482	8%	-\$1	\$35
09. Murrumbidgee	380	59%	\$645	\$643	\$659	\$675	\$697	8%	-\$2	\$53
10. North Coast	120	6%	\$708	\$584	\$584	\$584	\$584	-18%	-\$124	-\$124
11. Hunter	118	47%	\$418	\$419	\$429	\$440	\$451	8%	\$0	\$33
12. South Coast	141	26%	\$911	\$912	\$934	\$958	\$982	7.7%	\$0	\$70

**Table L.2: Estimated bill impacts for a median unregulated river licence on 2-part tariff**

Valley	Median entitlement	Average water take	Current bill	2016/17	2017/18	2018/19	2019/20	Total real change	Year 1 \$ change	Period change \$
01. Border	96.5	40%	\$422	\$318	\$318	\$318	\$318	-25%	-\$104	-\$104
02. Gwydir	108.5	40%	\$474	\$357	\$357	\$357	\$357	-25%	-\$117	-\$117
03. Namoi	135	40%	\$590	\$444	\$444	\$444	\$444	-25%	-\$145	-\$145
04. Peel	65	40%	\$284	\$214	\$214	\$214	\$214	-25%	-\$70	-\$70
05. Lachlan	75	38%	\$512	\$282	\$282	\$282	\$282	-45%	-\$230	-\$230
06. Macquarie	75	40%	\$515	\$285	\$285	\$285	\$285	-45%	-\$230	-\$230
07. Far West	142	70%	\$862	\$851	\$851	\$851	\$851	-1.0%	-\$10	-\$10
07. Far West with FHP	142	70%	\$862	\$815	\$815	\$815	\$815	-5%	-\$46	-\$46
08. Murray	107	27%	\$808	\$404	\$404	\$404	\$404	-50%	-\$403	-\$403
09. Murrumbidgee	60	24%	\$549	\$279	\$279	\$279	\$279	-49%	-\$270	-\$270
10. North Coast	45	40%	\$369	\$305	\$305	\$305	\$305	-17%	-\$64	-\$64
11. Hunter	88	26%	\$252	\$162	\$162	\$162	\$162	-36%	-\$91	-\$91
12. South Coast	99	50%	\$297	\$297	\$303	\$311	\$317	7%	\$0	\$20

**Table L.3: Estimated bill impacts for a median unregulated river licence on a 1-part tariff**

Pricing water source	Median entitlement	Average water take	Current bill	2016/17	2017/18	2018/19	2019/20	Total real change	Year 1 \$ change	Period change \$
01. Border	96.5	–	\$515	\$460	\$460	\$460	\$460	-11%	-\$55	-\$55
02. Gwydir	108.5	–	\$580	\$518	\$518	\$518	\$518	-11%	-\$63	-\$63
03. Namoi	135	–	\$721	\$644	\$644	\$644	\$644	-11%	-\$77	-\$77
04. Peel	65	–	\$347	\$310	\$310	\$310	\$310	-11%	-\$37	-\$37
05. Lachlan	75	–	\$629	\$415	\$415	\$415	\$415	-34%	-\$214	-\$214
06. Macquarie	75	–	\$629	\$415	\$415	\$415	\$415	-34%	-\$214	-\$214
07. Far West	142	–	\$947	\$961	\$961	\$961	\$961	2%	\$14	\$14
07. Far West with FHP	142	–	\$947	\$907	\$907	\$907	\$907	-4%	-\$40	-\$40
08. Murray	107	–	\$1,035	\$735	\$735	\$735	\$735	-29%	-\$300	-\$300
09. Murrumbidgee	60	–	\$711	\$542	\$542	\$542	\$542	-24%	-\$169	-\$169
10. North Coast	45	–	\$450	\$442	\$442	\$442	\$442	-2%	-\$8	-\$8
11. Hunter	88	–	\$394	\$298	\$297	\$297	\$297	-25%	-\$96	-\$97
12. South Coast	99	–	\$370	\$386	\$394	\$403	\$411	11%	\$16	\$41

**Table L.4: Estimated bill impacts for a median groundwater licence on 2-part tariff**

Pricing water source	Median entitlement	Average water take	Current bill	2016/17	2017/18	2018/19	2019/20	Total real change	Year 1 \$ change	Period change \$
09. Murrumbidgee	188	52%	\$569	\$569	\$583	\$598	\$613	8%	-\$0	\$43
13. Inland	188	52%	\$1,118	\$1,066	\$1,065	\$1,065	\$1,065	-5%	-\$52	-\$53
14. Coastal	93	23%	\$418	\$268	\$267	\$267	\$267	-36%	-\$150	-\$151

**Table L.5: Estimated bill impacts for a median groundwater licence on a 1-part tariff**

Pricing water source	Median entitlement	Average water take	Current bill	2016/17	2017/18	2018/19	2019/20	Total real change	Year 1 \$ change	Period change \$
09. Murrumbidgee	188	–	\$664	\$724	\$742	\$760	\$779	17%	\$60	\$116
13. Inland	188	–	\$1,307	\$1,357	\$1,355	\$1,355	\$1,354	4%	\$51	\$47
14. Coastal	93	–	\$551	\$537	\$536	\$535	\$535	-3%	-\$14	-\$16

**Table L.6: Increase in numbers of licences on minimum annual charge as a result of increase to \$150**

Pricing water source	2015/16 Licences	2016/17 Licences	2017/18 Licences	2018/19 Licences	2019/20 Licences	2015/16 to 2016/17 %Change	2015/16 to 2019/20 % Change
<b>Regulated river</b>							
01. Border	208	252	246	245	245	21%	18%
01. Border with FPH	208	254	254	254	254	22%	22%
02. Gwydir	302	308	308	307	306	2%	1%
02. Gwydir with FPH	302	308	308	307	306	2%	1%
03. Namoi	348	398	395	295	395	14%	14%
03. Namoi with FPH	348	399	399	399	399	15%	15%
04. Peel	43	58	56	56	55	35%	28%
05. Lachlan	914	1,008	1,008	1,008	1,008	10%	10%
06. Macquarie	1,064	1,166	1,166	1,166	1,166	10%	10%
06. Macquarie with FPH	1,064	1,170	1,170	1,170	1,170	10%	10%
07. Far West							
08. Murray	2,339	2,494	2,486	2,471	2,460	7%	5%
09. Murrumbidgee	1,030	961	947	935	926	10%	9%
10. North Coast	15	17	17	17	17	13%	13%
11. Hunter	868	959	951	947	940	10%	8%
12. South Coast	66	74	74	74	74	12%	12%-
<b>Unregulated river</b>							
04A. North West	281	728	728	728	728	159%	159%
06A. Central West	312	1,112	1,112	1,112	1,112	256%	256%
07. Far West	38	92	92	92	92	142%	142%
07. Far West with FPH	38	92	92	92	92	142%	142%
08. Murray	52	177	177	177	177	240%	240%
09. Murrumbidgee	124	495	495	495	495	299%	299%
10. North Coast	1,052	1,861	1,861	1,861	1,861	77%	77%
11. Hunter	827	1,867	1,867	1,867	1,867	126%	126%
12. South Coast	1,598	2,285	2,285	2,285	2,285	43%	43%
<b>Groundwater</b>							
13. Inland	2,112	2,404	2,404	2,404	2,404	14%	14%
14. Coastal	1,799	2,378	2,378	2,378	2,378	32%	32%
<b>Total</b>	<b>17,392</b>	<b>21,270</b>	<b>21,227</b>	<b>21,193</b>	<b>21,165</b>	<b>38%</b>	<b>38%</b>
<b>Total with FPH</b>	<b>17,392</b>	<b>21,277</b>	<b>21,243</b>	<b>21,210</b>	<b>21,182</b>	<b>38%</b>	<b>38%</b>

**Table L.7: Regulated river – 5-year bill impact percentage (at average activation rate for the pricing water source)**

Pricing water source	2016/17	2017/18	2018/19	2019/20	2020/21
01. Border	0%	2%	3%	3%	3%
01. Border with FPH	-5%	-5%	-5%	-5%	-5%
02. Gwydir	0%	3%	5%	8%	11%
02. Gwydir with FPH	0%	3%	5%	8%	11%
03. Namoi	0%	2%	2%	2%	2%
03. Namoi with FPH	-6%	-6%	-6%	-6%	-6%
04. Peel	0%	3%	5%	8%	10%
05. Lachlan	-12%	-12%	-12%	-12%	-12%
06. Macquarie	-9%	-9%	-9%	-9%	-9%
06. Macquarie with FPH	-12%	-12%	-12%	-12%	-12%
07. Far West					
08. Murray	0%	3%	5%	8%	11%
09. Murrumbidgee	0%	2%	5%	8%	11%
10. North Coast	-18%	-18%	-18%	-18%	-18%
11. Hunter	0%	3%	5%	8%	10%
12. South Coast	0%	2%	5%	8%	10%

**Table L.8: Unregulated river – 5-year bill impact percentage (at average activation rate for the pricing water source)**

Pricing water source	2016/17		2017/18		2018/19		2019/20		2020/21	
	2-part average for water source	1-part tariff	2-part average for water source	1-part tariff	2-part average for water source	1-part tariff	2-part average for water source	1-part tariff	2-part average for water source	1-part tariff
04A. North West	-25%	-11%	-25%	-11%	-25%	-11%	-25%	-11%	-25%	-11%
06. Central West	-45%	-34%	-45%	-34%	-45%	-34%	-45%	-34%	-45%	-34%
07. Far West	-1%	1%	-1%	1%	-1%	1%	-1%	1%	-1%	1%
07. Far West with FHP	-5%	-4%	-5%	-4%	-5%	-4%	-5%	-4%	-5%	-4%
08. Murray	-51%	-29%	-51%	-29%	-51%	-29%	-51%	-29%	-51%	-29%
09. Murrumbidgee	-49%	-24%	-49%	-24%	-49%	-24%	-49%	-24%	-49%	-24%
10. North Coast	-17%	-2%	-17%	-2%	-17%	-2%	-17%	-2%	-17%	-2%
11. Hunter	-36%	-24%	-36%	-24%	-36%	-24%	-36%	-24%	-36%	-24%
12. South Coast	0%	4%	2%	6%	5%	9%	7%	11%	7%	11%

**Table L.9: Groundwater – 5-year bill impact percentage (at average activation rate for the pricing water source)**

Pricing water source	2016/17		2017/18		2018/19		2019/20		2020/21	
	Average for water source	1-part tariff	Average for water source	1-part tariff	Average for water source	1-part tariff	Average for water source	1-part tariff	Average for water source	1-part tariff
09. Murrumbidgee	0%	9%	2%	12%	5%	15%	8%	17%	10%	20%
13. Inland	-5%	4%	-5%	4%	-5%	4%	-5%	4%	-5%	4%
14. Coastal	-36%	-3%	-36%	-3%	-36%	-3%	-36%	-3%	-36%	-3%



# Appendix M

## Information that IPART is seeking from DPI Water

The following table outlines IPART's requirements as stated in the Guidelines for Water Agency Pricing Submissions (November 2014) document.

**Table M.1: IPART checklist of submission contents**

Requirement	Location in this submission
An executive summary has been included	Chapter 1
A separate plain English summary document has been provided	Plain English summary
Role and functions of the agency have been explained	Chapter 3
Performance over current determination period	
Service levels.	Chapter 4
Historical revenue. Data presented in nominal \$. Totals or comparisons done in real \$ of last year of current determination period.	Chapter 5
Sales volumes and customer connections (or volume of water entitlements for WaterNSW and DPI Water).	Chapter 5
Historical operating expenditure. Data presented in nominal \$. Totals or comparisons done in real \$ of last year of current determination period.	Chapter 5
Historical capital expenditure. Data presented in nominal \$. Totals or comparisons done in real \$ of last year of current determination period.	Chapter 5
Implementation of current determination under s18(5) IPART Act.	Chapter 4
Standards of service	
Explained service levels (quantity, quality and scope) for next determination period.	Chapter 6
Forecast operating expenditure	
5 years of future operating costs by service are provided.	Chapter 7
Operating costs are in real \$ of last year of current determination period.	Chapter 7
Drivers, justification and services levels are explained.	Chapter 6 (Future monopoly services and strategies) Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)

Requirement	Location in this submission
A robust business case for proposed operating expenditure is presented.	Chapter 6 (Future monopoly services and strategies) Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Explained key assumptions underlying forecasts and identified risks.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Explained potential efficiency gains.	Chapter 6 (Future monopoly services and strategies) Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Forecast capital expenditure	
5 years of capital expenditure by service is provided.	Chapter 7
Long-term investment plan is provided (at least 10 years).	Chapter 7
Capital expenditure is in real \$ of last year of current determination period.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 10 (water take measurement services)
Drivers, justification and service levels explained.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 10 (water take measurement services)
A robust business case for proposed capital expenditure is presented.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 10 (water take measurement services)
Explained key assumptions underlying forecasts and identified risks.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)

Requirement	Location in this submission
Explained potential efficiency gains.	Chapter 7 (water planning and management revenue needs) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Recycled water	
Information has been provided as per IPART's 2006 recycled water pricing guidelines and IPART's 2011 recycled water avoided costs guidelines.	Not in scope
Elements of regulatory framework	
Length of determination period.	Chapter 6
Other issues eg, form of regulation, measures to mitigate demand risk, prices charged between agencies.	Chapter 3
Proposed WACC, depreciation and asset lives	
Proposed WACC, WACC components and supporting analysis.	Chapter 7
Outline of proposed depreciation method.	Chapter 7
Proposed asset lives.	Chapter 7
Tax allowance	
Forecast tax depreciation and cash and asset contributions that contribute to regulated activities.	Chapter 7
Sales volumes	
Sales volumes and methodology used to forecast sales.	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Customer numbers or entitlement forecasts	
Connection numbers by year and service (metropolitan water utilities).	Not applicable
Entitlement and licence numbers by year, valley, water source and type (bulk water utilities).	Chapter 8 (water management)
Outstanding issues from the previous determination	
Explanations of how outstanding issues have progressed with a summary of analysis in appendix.	See Table M.2 below
Proposed prices	
Proposed tariffs for each service over the next 5 years (real \$ of last year of current determination period).	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Estimates of LRMC and SRMC of water supply (metropolitan water utilities).	Not applicable
Estimate(s) of SRMC of sewerage services (metropolitan water utilities).	Not applicable

Requirement	Location in this submission
Impacts of proposed prices	
Indicative bill impacts in nominal \$ over the next 5 years (can also provide in both real \$ and nominal \$ in executive summary).	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Transitional arrangements to manage or mitigate price changes.	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Rebates and other measures to mitigate price impacts.	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Other impacts, environment, section 15 etc.	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Analysis of affordability.	Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Financial impacts on the agency.	Chapter 7
Quality assurance requirements	
QA check has been performed.	Appendix N
CEO's declaration has been provided and signed.	Page i

The outstanding issues from the previous determination are outlined below in Table M.2. They were identified by IPART under 'outstanding issues from IPART's 2011 determination' in its letter to the DPI Water commissioner, dated 28 March 2014.

**Table M.2: Outstanding issues from the previous determination**

Outstanding issue	Location in this submission
Ring-fencing of activities related to monopoly services from other expenditures.	Chapter 4
Improvements to capital planning and asset management systems.	Chapter 4
Improvements to billing, administration and expenditure systems.	Chapter 4
Provision of time and accurate reporting of outcomes achieved.	Chapter 4
Facilitation of greater consultation with users about DPI Water's performance, expenditures and revenue.	Chapter 4
Delivery of the forecast water resource activities that justify IPART's allowance of costs, with the provision of progress reports.	Chapter 4

Outstanding issue	Location in this submission
Consider a policy on levying water management charges on domestic and stock and other basic rights holders.	Chapter 4
Undertake a cost-benefit analysis of the goal of metering 95 per cent of licensed entitlements, and share it with users.	Chapter 4
Develop a clear framework regarding how DPI Water makes decisions about the type and location of meters, having regard to the future level of efficient operating costs.	Chapter 4 Chapter 6

In addition, the following issues are addressed, as requested by IPART under ‘issues for this review’ in its letter to the DPI Water commissioner, dated 28 March 2014.

**Table M.3: IPART issues for this review checklist**

Requirement	Location in this submission
How DPI Water’s prices relate to its prudent and efficient costs of providing its monopoly services.	Chapter 6
Any changes to DPI Water’s regulatory or operating environment since the last determination.	Chapter 3
A list of regulatory assets, to establish the value of the regulatory asset base.	Chapter 7
Murray Darling Basin Authority (MDBA) and Dumaresq Barwon Border Rivers Commission (DBBRC) costs, and what proportion, if any, will be passed through into prices.	Chapter 7

The following table is provided as a checklist to Appendix F in the IPART issues paper ‘Review of prices for the Water Administration Ministerial Corporation’, published in June 2015.

**Table M.4: IPART issues paper Appendix F checklist**

Requirement	Location in this submission
Monopoly service activities	
1 NOW’s proposed monopoly service activities for the 2016 Determination. Where NOW is proposing to change, add or remove activities, it needs to provide a rationale and justification for these changes, as well as linking the current services to new services, to allow us to assess the changes.	Chapter 6
Length of determination period	
2 NOW’s proposed length of determination period, and rationale for the preferred length.	Chapter 6
Operating expenditure over the current and upcoming determination periods	
3 NOW’s water management operating expenditure over the 2011 determination period (as well as 2014-15 and 2015-16), including levels of expenditure, the drivers of this expenditure, activities carried out and outcomes achieved. Information on actual MDBA and BRC expenditures recovered from NOW over the 2011 determination period should also be included.	Chapter 4 Chapter 5
4 Identification and explanation of variations between NOW’s actual operating expenditure over the 2011 determination period and expenditure allowed by us when we set prices in the 2011 determination.	Chapter 4 Chapter 5

Requirement	Location in this submission
<p>5 NOW's forecast water management operating expenditure from 2015-16 to 2020-21, and a clear explanation of the methodology and major assumptions used to develop these forecasts, including:</p> <ul style="list-style-type: none"> <li>• drivers of and justifications for this expenditure, activities to be carried out and outcomes to be achieved</li> <li>• a clear explanation of how NOW's forecast expenditure relates to water management service or activity levels, and the drivers or justifications for these service/activity levels</li> <li>• what indications there are (if any) of stakeholder willingness to pay for service/activity levels</li> <li>• the extent to which NOW has carried out options analysis for proposed water management activity expenditures (including, for example, testing contestability of tasks and services provided and conducting cost benefit or business case analysis)</li> <li>• identification and explanation of the trend in NOW's forecast operating expenditure from 2015/16 to 2020/21 and the relationship between this trend and NOW's obligations and standards, having regard to expected productivity improvements, historical expenditures, trends in input prices, relevant benchmarks and other relevant factors</li> <li>• a detailed description of NOW's current and forecast efficiency programs and the potential for efficiency gains and how these have been factored into forecast expenditures</li> <li>• forecast MDBA and BRC expenditures to be recovered from NOW and water users from 2015/16 to 2020/21 and the basis for this forecast.</li> <li>• NOW's approach to allocating indirect (ie, common or shared) costs, and the rationale for this allocation, including: <ul style="list-style-type: none"> <li>◦ the allocation of indirect costs between NOW's regulated water management activities and its other activities/functions – including steps taken to 'ring fence' non-regulated costs</li> <li>◦ the allocation of indirect water management costs across valleys, water sources and water users, where applicable.</li> </ul> </li> </ul>	<p>Chapter 6 Chapter 7 Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)</p>
Capital expenditure over the current and upcoming determination periods	
<p>6 NOW's actual and forecast water management capital expenditure over the 2011 determination period (as well as 2014-15 and 2015-16), including drivers of this expenditure, water management activities carried out and outcomes achieved.</p>	Chapter 5
<p>7 Identification of variations between NOW's actual capital expenditure over the 2011 determination period and the expenditure allowed by us when we set prices in the 2011 determination, including a clear and detailed explanation of these variations (positive or negative).</p>	Chapter 5
<p>8 NOW's forecast water management capital expenditure program from 2015-16 to 2020-21, including identification and explanation of:</p> <ul style="list-style-type: none"> <li>• drivers of and justifications for this expenditure, water management activities to be carried out and outcomes to be achieved</li> <li>• how NOW's forecast expenditure relates to water management service or activity levels, and the drivers or justifications for these service/activity levels</li> <li>• indications (if any) of stakeholder willingness to pay for discretionary items of capital expenditure</li> <li>• the relationship between trends in forecast capital expenditure over 2015-16 to 2020-21 and NOW's obligations and service standards, having regard to historical expenditures, relevant benchmarks and any other relevant factors</li> <li>• the robustness of business cases or cost benefit analyses for this expenditure (including the extent of options analysis), the practicality of the projects being delivered within the proposed timeframe, and the basis for cost estimates.</li> </ul>	<p>Chapter 6 Chapter 7 Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)</p>

Requirement	Location in this submission
<p>9 NOW's approach to allocating or apportioning any shared or common capital cost items and the rationale for this allocation, including:</p> <ul style="list-style-type: none"> <li>the allocation of costs between NOW's regulated water management activities and its other activities/functions - including steps taken to 'ringfence' non-regulated costs</li> <li>the allocation of NOW's water management capital costs across valleys, water sources and water users, where applicable.</li> </ul>	<p>Chapter 4 Chapter 5 Chapter 7</p>
Determining the opening RAB	
<p>10 Its proposed opening value of RAB in 2016-17 and the basis for this valuation (eg, capital expenditure to be included by asset/expenditure item and year of expenditure). We require a full list of regulatory assets assigned by activity code and user share.</p>	Chapter 7
Determining the return of capital	
<p>11 NOW's proposed depreciation allowance for its existing and new assets, including the means of calculating this allowance, the justification for this methodology, the assumptions underpinning the calculations (eg, asset values and average asset lives) and the justification or rationale for these assumptions.</p>	Chapter 7
Determining the rate of return (WACC)	
<p>12 The proposed rate of return on NOW's regulatory assets from 2016-17 to 2020-21.</p>	Chapter 7
Contributions from the Commonwealth Government and other sources	
<p>13 The value, timing and description of any contributions (including contributed assets) to NOW from governments and/or other sources.</p>	<p>Chapter 8 (water management) Chapter 9 (consent transactions) Chapter 10 (metering services)</p>
<p>14 Any implications of these contributions for future expenditure/operations (eg, efficiency savings, changes to maintenance requirements, etc), and how these effects have been factored into cost forecasts.</p>	<p>Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)</p>
Output measures	
<p>15 NOW's delivery of services outlined in the schedule of monopoly service outputs in the 2011 Determination.</p>	Chapter 4
<p>16 NOW's performance against the annual reporting measures and end of determination measures that we outlined in the 2011 Final Report.</p>	Chapter 4
<p>17 Performance and reporting of outcomes against the other outstanding areas we identified in the 2011 Final Report.</p>	Chapter 4
User shares and cost recovery	
<p>18 The rationale/basis for any changes that NOW proposes to the activity codes or cost shares included in the 2011 determination.</p>	Chapter 6
<p>19 User cost shares for new activities proposed by NOW and the rationale and justification for these cost shares.</p>	Chapter 6
<p>20 Where NOW proposes changes to existing activity codes, or introduces new codes, these codes should be described in such a way as to enable efficient mapping back to historical cost codes and expenditures.</p>	Chapter 6

Requirement	Location in this submission
21 Identification and explanation of variations between NOW's target revenue and actual revenue over the 2011 determination period, and the implications of these variations for NOW's water management activities/performance.	Chapter 5
Water management charges	
22 NOW's proposed charges or prices for 2016-17 to 2020-21, and the reasoning or justification for each proposed price, including: <ul style="list-style-type: none"> <li>the relationship between the price and NOW's costs of service provision</li> <li>the relationship between the proposed price structure and the price structure of the 2011 determination, including the rationale/basis for any proposed variation and an analysis of any transitional issues</li> <li>the relationship between the proposed price level and the price level of the 2011 determination, including the rationale/basis for the proposed variation and an analysis of any transitional issues</li> <li>analysis of any 'willingness to pay' information available to NOW</li> <li>NOW's methodology for the calculation of the price, including major assumptions.</li> </ul>	Chapter 6 Chapter 7 Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
Forecast entitlements, volumes, licences	
23 Volumes of water extracted from regulated rivers, unregulated rivers and groundwater sources (usage data) over the 2011 determination period; comparison of forecast usage volumes for regulated rivers used in 2011 determination with actual data; and the reasons for any significant variations.	Chapter 4
24 Forecasts of water volumes extracted from regulated rivers, unregulated rivers and groundwater sources over 2015-16 to 2020-21; and the methodology, assumptions and data sources used in developing these forecasts.	Chapter 8
25 The impact on its water management activities/services over: <ul style="list-style-type: none"> <li>the 2011 determination period as a result of lower than expected revenue (due to lower than expected water availability/usage)</li> <li>the upcoming determination period if revenue is again lower than forecast.</li> </ul>	Chapter 5 (current) Chapter 8 (water management) Chapter 9 (water consent transactions) Chapter 10 (water take measurement services)
26 The number of entitlements, unit shares and licences over the 2011 determination period, including the number of customers paying the minimum bill.	Chapter 5
27 The number of entitlements, unit shares and licences from 2015/16 to 2020/21, including the number of customers expected to be paying the minimum bill, and the methodology or data underpinning these forecasts.	Chapter 8
28 The amount of additional allocations that could be made available to users by NOW (eg, supplementary, floodplain harvesting etc).	Chapter 8
29 The number of licences converted (from entitlement volumes under the WA to unit shares under the WMA) over the 2011 determination period and forecast conversion numbers from 2015-16 to 2020-21.	Chapter 4
30 The number of unregulated river licensees that are (or will be) charged a two-part tariff, including the number of licensees that moved to a two-part tariff over the 2011 determination period, and the number of licensees that are forecast to move to a two-part tariff from 2015-16 to 2020-21.	Chapter 5 (current) Chapter 8 (forecast)
Supplementary and other licences	
31 Proposals in relation to supplementary water and high flow licences; licensing of floodplain harvesting water extractions; development of policies on return flow credits and stormwater harvesting.	Chapter 6



Requirement	Location in this submission
Customers on minimum bill	
32 Number of customers on minimum bill by water source, and fee exemptions if any.	Chapter 5 Chapter 8
Metering charges	
33 Historical and forecast activities, expenditure and revenue related to the metering roll-out program including that funded by the Commonwealth.	Chapter 4 (current) Chapter 5 (current) Chapter 7 (forecast) Chapter 10 (forecast)
34 Efficient costs of metering, cost-benefit analysis of stated metering targets.	Chapter 4 (current) Chapter 10 (forecast)
35 Impact from improved metering on: <ul style="list-style-type: none"> <li>• water resource planning and management</li> <li>• trade in water allocations.</li> </ul>	Chapter 4 (current) Chapter 6 Chapter 10 (forecast)
36 Framework for deciding on appropriate meter types for various locations.	Chapter 4 (current) Chapter 10 (forecast)
Consent transactions	
37 The number and types of consent transactions and other administration fees and charges for services under Chapter 3 of the WMA over the 2011 determination period.	Chapter 4 Chapter 9
38 The forecast number and types of consent transactions and other administration fees and charges for services under Chapter 3 of the WMA over 2015-16 to 2020-21, and the basis for this forecast.	Chapter 9
39 NOW's proposed consent transaction charges for the 2016 Determination, and the justification for its proposed charges.	Chapter 9
40 Any new consent transaction charges that are proposed for the 2016 Determination and the justification of the charges.	Chapter 9

Table M.5 outlines how this submission meets the annual reporting measures identified in Table 13.1 of IPART's 2011 final report on the Review of Prices for the WAMC.

**Table M.5: Report Against IPART Annual Reporting Measures**

Measure	DPI Water response
<p>Financial reports, which include the following information by valley or in the case of groundwater by the inland/coastal divisions:</p> <ul style="list-style-type: none"> <li>• Revenue collected from water charges.</li> <li>• Operating expenses separately identified by activity codes.</li> <li>• Current year allowed expenditure and actual expenditures.</li> <li>• Explanation of the variation between allowed operating/capital expenditures and actual expenditure.</li> <li>• FTE staff reports on the resources allocated to each activity code.</li> </ul>	<p>See description in Chapter 4. Reporting measures included:</p> <ul style="list-style-type: none"> <li>• Annual Information Return and Appendix L performance report to IPART, due by the end of October each year.</li> <li>• Annual return to the ACCC, under the Water Charge (Planning and Management Information) Rules 2010.</li> </ul>
<p>Reports of actual revenue received from the Commonwealth in relation to Scenario 2 expenditure</p>	<ul style="list-style-type: none"> <li>• Reporting to customers on water planning and management activities, the cost, service levels and performance of these services.</li> </ul>
<p>Reports of progress against delivery of key monopoly service outputs including:</p> <ul style="list-style-type: none"> <li>• Expanding the hydrometric network by 128 stations to a total of 513 by 2014/15, and increasing the frequency of visits to these stations to 6 visits a year to improve the monitoring information available to NOW (DPI Water) and users.</li> <li>• Completing the Water Sharing planning process and its implementation.</li> <li>• Publishing and implementing outstanding operational plans and policies.</li> <li>• Ensuring that 90% of transactions for the permanent transfer of access licences are processed within 28 days.</li> <li>• Ensuring that 60% of all other transactions and approvals are processed within 3 months.</li> <li>• Ensuring that 100% of licence breaches reported are actioned.</li> </ul>	
<p>Reports of cost driver units or volumes by valley – including the volume of cost driver units by cost code, water source (regulated river, unregulated river and groundwater) and valley – eg, for C01-01 this would include the number of office-funded gauging sites for each regulated river and unregulated river valley</p>	

# Appendix N

## Quality assurance assessment

### A I T H E R

Nick Milham  
A/Director Commercial Analysis & Pricing  
DPI Water  
By email

Dear Nick

#### Quality assurance review

In September 2015, Aither undertook a quality assurance review of the data and associated information within the New South Wales Department of Primary Industries – Water's (DPIW) 2015 pricing submission to the New South Wales Independent Pricing and Regulatory Tribunal (IPART).

This letter confirms Aither's quality assurance review and independent verification of DPIW's 2015 pricing submission to IPART.

Aither undertook an initial quality assurance of DPIW's pricing submission to IPART by reconciling all figures and numerical data included in the submission with information and data that could be located in the Annual Information Return (AIR). The reconciliation task focused on confirming whether the data in the submission is accurately, consistently and correctly sourced to the AIR. Where discrepancies were identified, Aither documented these clearly for inclusion in a written report to DPIW.

In some instances, numerical data located in DPIW's submission were based on calculations of separate data in the AIR or other source documents (some that Aither did not review due to time constraints). In instances where the data used was easily identifiable in the AIR and the calculations relatively 'simple' (such as converting dollar amounts from nominal to real), Aither attempted to replicate calculations to reconcile data. However, where more 'complex' calculations were required or data used could not easily be identified, Aither noted these for DPIW's consideration.

It should be noted that, due to time constraints, Aither's independent review only included the reconciliation of all numerical data included in DPIW's submission to DPIW's AIR for accuracy, completeness and consistency, and **did not include assurance of information located in documents not reviewed by Aither or the calculations underpinning or used to derive the data. Our assessment was undertaken in a short period of time between 1 and 9 September 2015.**

In addition to reconciling all of the data contained within the submission and AIR, Aither also verified that all of the information requested by IPART in its Issues Paper, IPART Guidelines and other correspondence was provided by DPIW in its submission and AIR. Where discrepancies were identified, Aither similarly noted these for DPIW's consideration.

Following the data reconciliation and verification process, Aither provided DPIW with a draft report for comment which documented all incomplete, inaccurate or inconsistent data identified by Aither in DPIW's submission and AIR. DPIW were provided with a period of time to review Aither's draft report

and respond to Aither's documentation. Aither was pleased to act as independent reviewer of DPIW's pricing submission. Please refer to Aither's final report entitled *Quality assurance review – DPI Water 2015 IPART Pricing Submission* for further information. Alternatively, please do not hesitate to contact Chris Olszak (Director – Aither) on 0425 707 170 or at [chris.olszak@aither.com.au](mailto:chris.olszak@aither.com.au).

Kind regards

Chris Olszak  
*Director*

Thursday 10 September 2015

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**AITHER**  
*Quality assurance review*

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