DPI Water Expenditure Review

Final Report prepared for IPART

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Synergies Economic Consulting Pty Ltd
www.synergies.com.au

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This report was prepared by Martin van Bueren, Ross Muir, Pamela Dodd and Jordan Herd

Synergies
ECONOMIC CONSULTING

Brisbane
Level 8, 10 Felix Street
Brisbane QLD 4000
GPO Box 2605
Brisbane Qld 4001
P 61 7 3227 9500
F 61 7 3221 0404

Melbourne
Level 40, 140 William Street
Melbourne VIC 3000
P 61 3 9607 8499
F 61 3 9607 8491

Perth
Suite 7, 272 Hay Street
Subiaco WA 6008
P 61 407 348 612
F 61 7 3221 0404

Sydney
Level 28, 44 Market Street
Sydney NSW 2000
P 61 3 9089 8666
F 61 3 9089 8989

W www.synergies.com.au

Executive Summary

Synergies Economic Consulting (Synergies) in partnership with Cardno were engaged by the Independent Pricing and Regulatory Tribunal (IPART) to conduct a review of the efficiency of DPI Water's actual and forecast expenditure over the period 2011-12 to 2020-21. This review will inform IPART's 2016 Determination of water management prices for the forthcoming regulatory period.

Scope

The review comprises three parts, consistent with the different mechanisms for recovering costs from water users;

- water management charges,
- consent transaction charges, and
- water take measurement charges.

The review makes a strategic assessment of whether DPI Water is delivering services that meet customer needs at least cost. This strategic assessment is complemented by a technical review of DPI Water's cost accounting methods against accepted standards and identification of any errors. These assessments are used to build an overall picture of DPI Water's efficiency and prudency of costs

We assess expenditure and performance over the current determination period (a historical perspective over the period 2011-12 to 2015-16) and also undertake a forward-looking analysis of proposed service delivery and expenditure over the forecast period out to 2020-21.

The efficiency of DPI Water's operating and capital expenditure is assessed against the following criteria;

- whether the right mix and level of activities are being undertaken such that there are no gains to be achieved in refocusing resources across different areas,
- whether activities are being undertaken at 'least cost', with the most efficient combination of input resources (labour and capital), and
- whether activities are aligned to DPI Water's legislative obligations, strategic priorities and customer demands.

A prudence test is applied to assess whether, in the circumstances existing at the time, the decision to invest in an asset or activity is one that DPI Water, acting prudently, would be expected to make.

In addition, Cardno has reviewed DPI Water's contributions to the Murray-Darling Basin Authority (MDBA) and the Dumaresq-Barwon Border Rivers Commission (DBBRC).

Methodology

A number of procedural steps and methods were employed in the review, including;

- desktop review of DPI Water's submission
- detailed analysis of four activities to establish the efficiency of operating expenditure,
- evaluation of the efficiency and prudence of past and forecast capital expenditure for two capital projects,
- consultations with DPI Water executive,
- review of business cases and strategic plans,
- review of management processes, and
- benchmarking.

Monopoly services

The functional responsibilities of DPI Water have not changed since the 2011 Determination, with the exception of the Metropolitan Water Directorate (MWD), which now sits within DPI Water.

Over the forthcoming regulatory period, the MWD will review the 2010 Sydney Metropolitan Water Plan and the Lower Hunter Metropolitan Water Plan. While the costs of the Lower Hunter plan review will be recovered through a direct charge to Hunter Water Corporation, DPI Water proposes to include 70% of the costs of reviewing the Sydney Metropolitan Water Plan in its water charges.

DPI Water forecasts that the Sydney Metropolitan Water Plan review will cost $8.18 million over the next five years. In Synergies' view, only a subset of this cost relates to activities that constitute monopoly services as defined by the Water Services Order. The balance, assessed to be about 50% of total costs, relates to demand-supply management functions for urban water users.

Synergies accepts that demand-supply management and planning is an important component of water management and the efficient costs of this activity should be recovered from water users on an 'impactor pays' basis (i.e. Sydney metropolitan water

users). However, for the purpose of setting water licence charges we recommend that the cost of this function be excluded from DPI Water's monopoly services. We base this recommendation on the fact that:

- demand-supply management functions are distinctly different from DPI Water's other resource management activities; and
- the beneficiaries of these services are a defined subset of DPI Water's customer base – i.e. Sydney metropolitan water users.

We therefore recommend that half of the forecast $8.18 million expenditure on this activity be removed from DPI Water's cost base (i.e. a reduction of $4.09 million over five years).

Other changes

During the forthcoming regulatory period it is possible that the bulk water reforms proposed by the NSW government will lead to a significant realignment of the functions currently delivered by DPI Water and WaterNSW. DPI Water has proposed that any functions that are transferred to WaterNSW be managed through service agreements until prices can be adjusted in the next determination period.

DPI Water is proposing a number of changes to its activity structure, although the higher level activity groupings are proposed to remain largely intact. Our assessment is that the changes represent a reorganisation of existing activities into different groupings as opposed to any substantive change in the type of activity. DPI Water is proposing only one new activity (ecological condition monitoring).

Strategic overview of DPI Water's submission

DPI Water's operating expenditure for monopoly water management serviceshas declined in real terms (inflation adjusted) over the current determination period and is forecast to continue to decline over the next five years. Over a ten year period (2011-12 to 2020-21) the overall trend is for an average cost reduction of 3.4% real each year.

By 2013-14 (the third year of the current determination), DPI Water recorded operating expenditure below that allowed for by IPART.

DPI Water is forecasting a total operating cost base of $54.0 million[1] in 2015-16, down from an actual expenditure of $68.2 million at the start of the determination period in 2011-12 (in 2015-16 dollars). Over the forecast period, operating expenditure for monopoly services is forecast to decrease further in real terms from the 2015-16 budget estimate of $54.0 million to $49.7 million by 2020-21.

This cost reduction is driven primarily through a proposed 1.5% annual efficiency adjustment that is budgeted to take effect from 2017-18, together with an efficiency adjustment on the 2016-17 cost forecasts, which is introduced by not escalating the 2015-16 costs by inflation. Overheads are also forecast to decline.

Staff levels are reported to have declined over the current determination period, from 301 Full Time Equivalents (FTEs) in 2012-13 to 285 in 2015-16 (budgeted). The submission forecasts FTEs to increase to 292 by 2020-21, an additional seven FTEs compared to 2015-16. The projected increase in FTEs is at odds with the forecast decline in expenditure. Given that DPI Water's costs are predominantly salaries, the proposed cost reduction would imply that cost savings are to be made through means other than remuneration savings.

There is evidence to indicate that DPI Water has taken steps over the current determination period to implement initiatives that should yield efficiency improvements, including:

- rationalisation of the hydrometric network
- staff training to enable a more flexible workforce
- improvements to corporate information systems
- proactive engagement with customers; and
- development of a customer service charter.

At a high level, we are satisfied that DPI Water's forecast expenditure aligns with the service obligations and strategic priorities contained in the submission.

Scope for further efficiencies

Notwithstanding the improvements noted above, we find there is scope for further efficiencies over and above DPI Water's proposed cost reductions. In particular,

[1] Excluding water consents transactions, water take measurement services and NSW contributions to MDBA joint programs and DBBRC

- there is scope to reduce costs through better defining the standard required for its activities through strategic investment plans, cost benefit analysis and stress-testing of different service levels;
- there is scope to improve cost management practices, which in turn should generate efficiencies and cost savings; and
- there is scope for further efficiencies in periodically reviewing methods for service delivery, for example through assessing savings from outsourcing.

It is Synergies view that DPI Water has not met the standard set for it by IPART in the last review. This is born out by our detailed analysis of selected activities, the findings of which are set out below.

Insights from analysis of selected activities

Our detailed analysis of four selected activities, combined with consultations with DPI Water executive, revealed a number of concerns about DPI Water's expenditure forecasts and internal management processes.

Accounting for external funding

DPI Water does not routinely map external funding to each of its monopoly service activities. The descriptions of W code activities in DPI Water's submission do not separately identify what proportion of future activity under each code will be externally funded as opposed to being funded through water management charges.

Furthermore, without detailed information about what past costs have been offset using external funding at an activity level, it is difficult to draw any conclusions about the underlying efficiency of past expenditure

That being said, DPI Water did provide Synergies with a breakdown of Basin Plan funding and how this will be allocated to individual activities. We are satisfied that the cost of monopoly service activities funded through Basin Plan funding has been excluded from DPI Water's proposed costs.

We recommend that the same level mapping be applied for all sources of external funds and publicly reported through the IPART process. Greater transparency is needed about how external funds are being used to offset the cost of water management services. This will provide assurance and stakeholder confidence that costs are not being recovered twice. Such information would also assist to demonstrate which activities would cease if external funding was no longer available, and which activities (or service levels) would continue but instead be funded through water management charges.

Synergies has recommended a reporting template to assist with improving the transparency of how external funds are used to offset costs of water monopoly service activities (see Section 8).

Business processes and cost management

We are concerned about DPI Water's apparent ongoing difficulties in forecasting, managing and reporting costs at an activity level.

- Our detailed review highlighted a number of shortcomings to DPI Water's cost control and reporting systems that could apply more broadly across the organisation. These include issues with forecasting and cost reporting, lack of sufficient cost controls and lack of consideration of outsourcing.
- DPI Water's organisational structure does not, in all cases, align with the activity codes used for establishing prices. This means that actual and forecast costs for activities are built up through allocation of time spent by individuals that are potentially spread across multiple parts of the organisation. While this is not uncommon in regulated businesses, it does require accurate timesheet records and a robust system of activity-based cost accounting.
- It is evident from DPI Water's submission that incorrect cost allocation to activities has been a systemic problem over the current determination period. This not only makes it difficult for Synergies to assess the efficiency of historical expenditure (as it is not possible to distinguish between real changes in expenditure levels and variations that are simply an outcome of incorrect cost accounting), it also reduces our confidence that DPI Water is effectively managing its costs at an individual activity level.

Strategic frameworks for determining service levels

Our detailed review of activities found insufficient evidence of strategic frameworks for determining optimal service levels.

- There is little evidence of stress testing service levels or using cost benefit analysis to justify a particular choice of standards or targets. DPI Water has not sufficiently considered the marginal benefit and marginal cost of a change in service levels or what strategies are needed to deliver the service at least cost.
- We would expect further savings could be made through critical and thorough analysis of internal standards for each activity.

Benchmarking

It is difficult to obtain reliable or useful information from benchmarking DPI Water against other water management agencies, given these agencies do not produce detailed information about specific activities and costs on a comparable basis. However, we are able to benchmark certain aspects of DPI Water's costs, particularly overheads.

- Synergies drew on the results of a recent PwC report that benchmarked corporate overheads. This study suggests that DPI Water's overhead costs (which comprise 20% of operating costs) are higher than large government departments with operating budgets of greater than $500 million (where overheads typically comprise 7% of costs), but comparable to medium-sized departments (which benchmark at 14%). After allowing for the fact that these benchmarks only represent corporate overheads and not accommodation and computer leasing costs, we conclude that DPI Water's overhead costs (which do include the latter costs) are within range of those incurred by an efficient medium-sized department, but higher than those of a comparable large-size department.

Efficiency of operating expenditure

After taking into account a range of factors outlined in this report, we recommend specific adjustments to the forecast cost of two activities that were the subject of detailed analysis. These adjustments are:

- $1.25 million per annum reduction for water plan development (equivalent to a 23% reduction in forecast costs for this activity over five years); and
- $1.3 million per annum reduction for systems operation and water availability management (equivalent to a 34% reduction in forecast costs over five years).

Further, for all other activities we recommend that DPI Water's proposed operating costs be reduced by 5% per annum (relative to the proposed costs in $2015-16). This 5% reduction is additional to the 1.5% per annum efficiency gain forecast by DPI Water.

In aggregate, the recommended adjustments translate to a total reduction of around $27 million over the five year period, or 11% from that proposed by DPI Water. Table ES1 sets out our recommended annual adjustments. The same data are also shown graphically in Figure ES1.

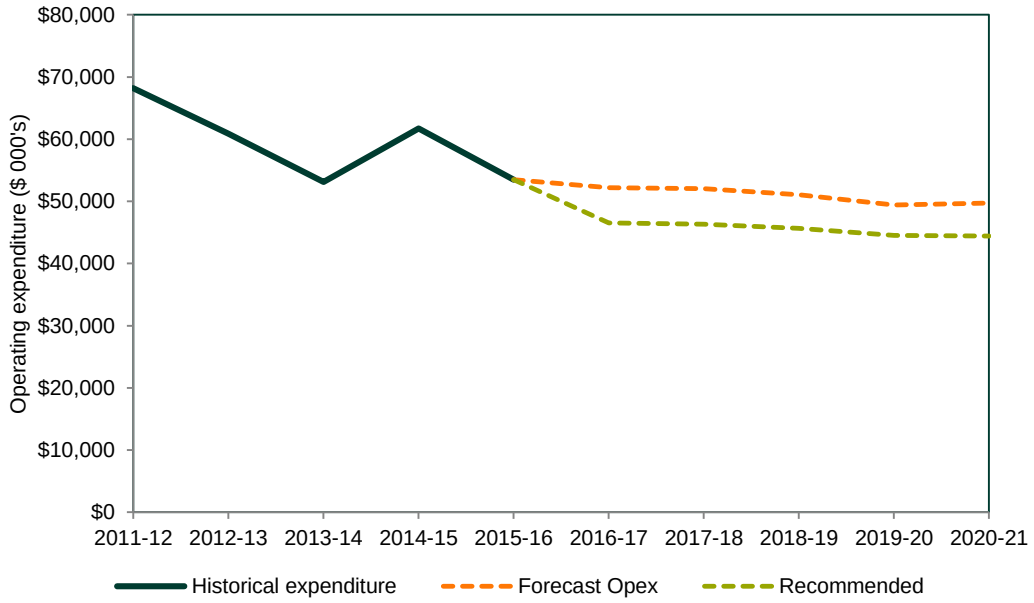
Table ES1 Proposed and recommended operating costs – water management services $'000 (2015-16)

	Current Budget 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total 2016-17 to 2020-21
Proposed opex	$53,982	$52,192	$52,035	$51,066	$49,428	$49,733	$254,455
Adjustment	$0	-$5,671	-$5,708	-$5,426	-$4,894	-$5,332	-$27,031
Recommended	**$53,982**	**$46,521**	**$46,327**	**$45,640**	**$44,534**	**$44,401**	**$227,424**

Note: Table shows total operating expenditure (as opposed to user share). Excludes costs for water consent transactions, meter reading services, and contributions to MDBA and DBBRC.

Source: DPI Water submission Table 7.1 (proposed operating expenditure) and Table 4.2 (2015-16 budget)

Figure ES1 Recommended operating expenditure relative to DPI Water forecast ($2015-16)



Note: Graph shows total operating expenditure (as opposed to user share). Excludes costs for water consent transactions, meter reading services, and contributions to MDBA and BRC

Data source: DPI Water submission and Synergies

The 5% per annum reduction is underpinned by Synergies' findings that further efficiency improvements can be achieved. Our assessment is that DPI Water displays the characteristics of a regulated business undergoing a 'first time' review. It presents systematic problems in cost reporting, monitoring outputs against activities, and less than adequate justification for service levels. First-time regulated businesses are typically found to propose operating expenditure that is 5% to 10% above efficient costs, and more often at the high end of this scale.

User shares

IPART has adopted the "impactor pays" principle as the primary means for determining appropriate user shares. DPI Water states that the user shares proposed for the new W codes are consistent with existing user shares and the impactor pays principles previously determined for the corresponding C code activities. Synergies analysis finds that, with the exception of four activities, all activities have been assigned the expected user shares, as derived from the 2011 Determination C code user shares. After a detailed examination of those codes that were not as expected, we conclude that the proposed user shares are reasonable.

Cost drivers

Significant revisions have been made to the cost drivers, which DPI Water use to allocate a share of monopoly service costs to each pricing water source, with most costs proposed to be driven by a different cost driver than under the 2011 Determination. The changes proposed by DPI Water appear to be mostly sensible and efforts have been made to replace those cost divers that were relatively weak proxies for explaining the incidence of costs.

However, Synergies holds concerns over one of the proposed changes. Total water take, which was only used to allocate a minor proportion of costs under the 2011 Determination is now proposed to be the primary driver, used to allocate 26% of costs. If this is adopted, the cost of eight activities will be allocated to pricing water sources through water take.

This represents a significant shift from current practice, where entitlement volume is used as a principal cost driver. In the 2011 Determination, '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 (responsible for allocating 34% of costs). DPI Water's submission is now proposing that entitlement be used as a cost driver for only two activities.

The shift to total water take has been prompted by new information that has allowed water take estimates to be forecast for unregulated rivers and groundwater sources, for which reliable measures of water take were not formerly available.

But we argue that there is little advantage to adopting water take over entitlement volume – unless a causal relationship can be demonstrated between the amount of water taken and costs of service. We find that this is not the case for the majority of activities. Furthermore, water take forecasts are likely to be significantly more variable (than

entitlement volume) from one regulatory period to the next, leading to different cost allocation outcomes.

One option is to retain the existing set of cost drivers for the eight activities, where costs are allocated through entitlement volumes of unregulated and groundwater and through water take for regulated water sources. But if this is resulting in unacceptable levels of cross subsidisation between pricing water sources, an alternative option would be to allocate the costs for all eight activities using a reliability-weighted entitlement measure.

Efficiency of capital expenditure

DPI Water has put forward historical capital expenditure from 2011-12 to 2015-16 totalling $7.32 million, and forecast capital expenditure totalling $20.91 million (both net of external funding and in $2015-16).

In broad terms, most of DPI Water's historical capital expenditure appears to be efficient and we therefore recommend it be accepted into the Regulatory Asset Base (RAB).

Our proposed allowance for capital expenditure from 2016-17 to 2020-21 is set out in Table ES2.

Our assessment of the prudency and efficiency of forecast capital expenditure involved detailed reviews of the largest two projects proposed by DPI Water (refurbishment of the groundwater monitoring network and enhancements to the Water Access Licences system, which together comprised 97% of expenditure in the forecast period). These projects have not yet reached a stage of development at which firm findings can be made about their prudence and efficiency.

The $13.78 million of planned expenditure for the groundwater project (over five years) has not been justified through a business case and we have not been provided with information that sets out how the cost estimate has been derived, nor the scope of works proposed. Further, we understand that the planned expenditure pre-dates a recent review of the network, which found that there is scope for rationalising the network by reducing the number of monitoring pipes by nearly 10%. It is not clear what bearing this finding will have on the planned refurbishment program. But we note that the forecast $13.78 million for replacement and renewals represents just 5% of the network's replacement value of $256 million (or 1% investment per year over five years), which is a relatively small amount compared to the quantum of assets being managed.

It is recommended that DPI Water be required to justify the groundwater and licencing system projects ex-post at the next review before allowing expenditures to be accepted into the RAB.

It appears unlikely that the groundwater project can be delivered in the proposed timeframes, so we recommend a flatter expenditure profile. This results in a 13% reduction to the capital expenditure allowance over the period (or $2,812 million, $2015-16).

We are hesitant to require DPI Water to adopt specific regulatory lives, different to accounting lives, given the relatively small contribution of capital costs to user prices, and on the basis that DPI Water's useful lives for capital projects are broadly reasonable.

Table ES2 Forecast capital expenditure ($,000, $2015-16)

	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Capital program						
Proposed	3,776	5,428	5,215	5,529	5,482	25,430
Less external funding	0	0	0	0	0	0
Less third party	-135	-457	-425	-48	0	-1,065
Less grants	-2,450	-1,000	0	0	0	-3,450
Net capital expenditure						
Proposed	**1,191**	**3,971**	**4,790**	**5,481**	**5,482**	**20,915**
Recommended	**1,191**	**3,971**	**3,790**	**4,575**	**4,576**	**18,103**

Note: Table shows total capital expenditure (as opposed to user share)

Efficiency of water consent transaction services

DPI Water has demonstrated its capacity to refine business process and resource utilisation in processing water consents. Accordingly, fees for these transactions should be subject to an ongoing saving at the same level as proposed for DPI Water's other operating costs.

We therefore recommend IPART accept DPI Water's proposed water consent transaction charges, but apply a 1.5% efficiency adjustment each year.

Efficiency of water take measurement services

In 2011, IPART requested that NOW undertake a review of its metering strategy in time for the 2016 Determination. This review has commenced, with a discussion paper in field, but the strategy is yet to be finalised. However, DPI Water has incorporated some expected outcomes to its metering forecasts, which has influenced costs and charges. The strategy contemplates cost benefit analysis for various options. We have made recommendations about certain matters that should be considered as part of this analysis, such as the additional benefits from telemetry, the type of metering data required and the importance of the price signal for meter reading services.

We are satisfied that the meter service costs represent the efficient, incremental costs of this service. It is important to note that these costs do not include any provision for renewal or replacement. The tariffs should be aligned to the unit costs to DPI Water for different meter sizes, which are more contemporary than those estimated by the ACCC. The discount for user reading should also align with the difference in costs, which appear to be $105 per annum.

Our recommended charges are outlined in section 10.3.2. Ideally, the discount for self-reading should also reconcile with the incremental cost (charge) of meter reading. While the difference may be sending confusing price signals as is, this discount is only likely to apply to a very small number of customers.

DPI Water's proposed meter take reading / assessment service charges reasonably reflect the efficient incremental cost of this service.

Efficiency of MDBA and DBBRC contributions

Cardno reviewed the efficiency of MDBA and DBBRC contributions. It examined:

- the governance and cost sharing arrangements for MDBA and DBBRC services as a means of setting out the context in which the contributions are made and the ability of DPI Water to influence and have oversight over the contributions it is determined to be responsible for collecting;
- the approach that DPI Water takes to allocate contributions to users;
- trends in historical and proposed contributions at an activity level; and
- relevant publically available information relating to the effectiveness and efficiency of the MDBA's activities.

For the purposes of its submission, DPI Water has based its forecast annual contribution to MDBA on maintaining its 2015-16 level of contributions (i.e. $10.1 million) constant in nominal terms. This figure is approximately half of the actual 2011-12 contribution, which was $20.7 million in $2015-16.

Cardno observes that the reduced contribution level partly reflects the NSW Government's dissatisfaction with the governance, transparency and efficiency of MDBA costs. It prompted NSW to reduce its contribution levels.

Cardno recommends that no adjustment be made to DPI Water's proposed revenue needs for MDBA and DBBRC contributions.

Further, it is recommended that the proposed user shares for MDBA contributions (55%) and DBBRC contributions (68%) be accepted on the basis that DPI Water has provided details in its submission on each of the MDBA/DBBRC activities being funded and individual user shares for each activity, which appear consistent with the impactor pays principle.

The recommended expenditure forecasts are shown in Table ES3 below.

Table ES3 Recommended expenditure – contributions to MDBA and DBBRC $'000 (2015-16)

	Current Budget 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total 2016-17 to 2020-21
NSW contribution to MDBA							
Total expenditure	10,091	9,623	9,388	9,159	8,935	8,760	45,865
User share (%)	18%	55%	55%	55%	55%	55%	55%
User share ($)	$1,825	5,337	5,206	5,079	4,955	4,818	25,226
NSW contribution to DBBRC							
Total expenditure	407	396	364	358	349	340	1,807
User share (%)	68%	68%	68%	68%	68%	68%	68%
User share ($)	277	269	248	243	237	232	1,229

Source: Current user share of $1.825 million is obtained from DPI Water submission, page 165, and represents the 2011 Determination allowance of $1.69 million ($2009-10) converted to $2015-16.

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Figures and Tables

1 Introduction

1.1 Background

The Independent Pricing and Regulatory Tribunal (IPART) is conducting a review of the prices charged for monopoly water management services in NSW under the Independent Pricing and Regulatory Tribunal (Water Services) Order 2004. Within NSW, the Department of Primary Industries – Water (DPI Water) is responsible for providing water management services on behalf of the Water Administration Ministerial Corporation (which is the responsible legal entity for the services). IPART has asked Synergies to review the efficiency of DPI Water's historical and proposed water management costs. Synergies has undertaken this review in partnership with Cardno.

DPI Water was formed on 1 July 2015, replacing the New South Wales Office of Water (NOW). Its role is to provide water resource management to ensure the long term sustainability of water resources, allow continued water extraction and maintain the health of the natural ecosystem.

The current responsibilities of DPI Water are closely linked to those of WaterNSW. In broad terms, DPI Water is responsible for water planning and management while Water NSW is responsible for water operations, including the physical storage of water in dams and weirs.

1.2 Review objectives and scope

This review will inform IPART's 2016 Determination of water prices for the forthcoming regulatory period.

It examines historical water management costs related to activities undertaken by DPI Water over the current determination period, which extends from 1 July 2011 to 30 June 2016. This period comprises four years of actual expenditure and one year of budgeted expenditure (i.e. 2015-16).

IPART's 2011 Determination set prices for a three-year period, 1 July 2011 to 30 June 2014. A new determination was originally scheduled to be made commencing 1 July 2015. However, following requests from DPI Water, the commencement of the current review was deferred for two separate one-year periods. This decision was made to allow for clarification of the impacts on DPI Water of NSW Government policies relating to the Murray-Darling Basin Plan and the NSW Bulk Water Reforms. Prices for the entire deferral period were set at the same nominal level as prices in 30 June 2014.

The forecast period for the current review refers to the next five year period from 1 July 2016 through to 30 June 2021.

1.3 Terms of Reference

The terms of reference for the review comprise three parts.

1.3.1 Part 1: Water management prices

To assist IPART in its determination of DPI Water's revenue requirement and prices for its monopoly water management services, Synergies was requested to:

- conduct a strategic review of DPI Water's water management monopoly services as a whole, taking into account the recent bulk water sector reform in NSW;
- review and confirm the definition of DPI Water's monopoly services, the user share of costs, and the cost allocation model;
- assess the efficiency of DPI Water's historical and proposed operating expenditure;
- assess the efficiency and prudence of DPI Water's historical and proposed capital expenditure;
- review DPI Water's asset management and capital expenditure system, and re-evaluate the opening 2011 value of DPI Water's Regulatory Asset Base (RAB); and
- assess DPI Water's past performance against its current output measures and review and recommend output measures for the next determination period.

1.3.2 Part 2: Consent transaction charges

The objective of this part is to assist IPART in its determination of DPI Water's administrative fees and charges, including any new charges proposed by DPI Water. This includes the administration of applications, renewals, permanent transfers and temporary transfers of water licences administered under the *Water Management Act 2000* (WMA) and any proposed new charges under Chapter 3 of the WMA. In the 2011 Determination, IPART set consent transaction fees and charges based on the efficient incremental costs. Overheads and indirect costs associated with provision of water consent transaction services are recovered through the water management services charge.

1.3.3 Part 3: Meter service and reading charges

The objective of this part is to assist IPART in its determination of DPI Water's meter service and reading charges for unregulated rivers and groundwater sources. In the 2011 Determination, IPART determined separate meter service and reading charges for

government-installed and customer-owned meters on unregulated rivers and groundwater sources, in a separate block and based on the 'impactor pays' principle.

1.4 Report structure

The report is organised as follows

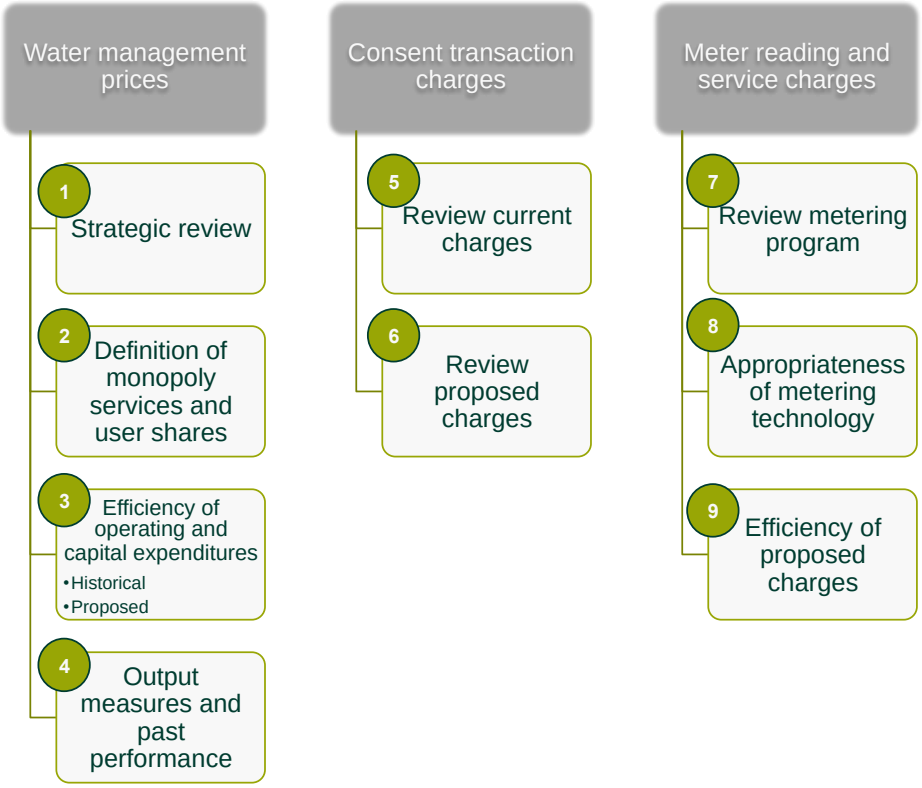
- Section 2 sets out the approach and methods used for the efficiency review
- Section 3 reviews the monopoly services that DPI Water is proposing to form its cost base for pricing purposes, and assesses the proposed user shares
- Section 4 contains a strategic review of DPI Water's pricing submission, including an assessment of proposed expenditures against identified strategic priorities and water management legislative functions, and a review of the proposed cost drivers for allocating costs to water sources
- Section 5 summarises the findings of a detailed efficiency analysis of four selected activities
- Section 6 contains findings and recommendations on the overall efficiency DPI Water's historical and forecast operating expenditures, including MDBA/DBBRC contributions
- Section 7 contains findings and recommendations on the efficiency of historical and forecast capital expenditures
- Section 8 examines DPI Water's past performance against current output measures and reviews the proposed set of performance measures for the forecast period
- Section 9 contains the efficiency review of water consent transaction processing and service charges
- Section 10 contains the efficiency review of water take measurement services and DPI Water's proposed strategy for measuring water take for those sources that are not currently metered.

2 Review methods and approach

This review examines whether DPI Water's proposed expenditure represents the best and most cost effective way of meeting customer needs for the relevant monopoly service.

The review comprises three parts (water management prices, consent transactions and meter reading and service charges) consistent with the different mechanisms for recovering costs from users. Synergies has disaggregated the review further into nine discrete tasks, as presented in Figure 1.

Figure 1 Key tasks of the efficiency review



2.1 Overview

The review makes a strategic assessment of whether DPI Water is delivering services that meet customer needs at least cost. This strategic assessment is complemented by a technical review of DPI Water's cost accounting methods against accepted standards and identification of any errors in accounting for costs.

This review assesses expenditure and performance over the current determination period (a backward-looking perspective) and also undertake a forward-looking analysis

of proposed service delivery and expenditure over the forecast period. These assessments are used to build an overall picture of DPI Water's efficiency and prudency of costs. The criteria applied to examine efficiency and prudency are outlined below.

2.1.1 Efficiency and prudency

An 'efficiency test' is used to determine how much of DPI Water's proposed expenditure (operating and capital) for the upcoming determination period will go into IPART's determination of DPI Water's revenue requirement. The efficiency test examines whether DPI Water's proposed expenditure represents the best and most cost effective way of meeting the community's need for the relevant services. We use the following criteria to assess efficiency:

- An evaluation is made of whether the right mix and level of activities are being undertaken such that there are no gains to be achieved in refocusing effort/resources across different areas. Synergies does not perform cost benefit analyses of different investment alternatives, instead we review whether there is demonstrable evidence that DPI Water has examined the cost-benefit of different services and service levels

- We assess the alignment of DPI Water's activities to its legislative functions, strategic priorities, and customer demands. This includes an evaluation of how well DPI Water is monitoring its service levels and demand for those services and whether it has adequate processes in place to responding to changing demands and circumstances

- An evaluation is made of the 'technical efficiency' of DPI Water's activities. This involves an assessment of whether activities are being undertaken at 'least cost', and with the most efficient combination of input resources (labour and capital). This includes considerations about whether the right level, intensity and sophistication of inputs are being applied to deliver a particular outcome or service. We examine DPI Water's decision-making and prioritisation processes, information management systems, procurement, contracting, and so on.

A 'prudence test' is applied to assess whether, in the circumstances existing at the time, the decision to invest in an asset or activity is one that DPI Water, acting prudently, would be expected to make. In assessing prudence, we assess both how the decision was made, and how the investment was executed. We apply the test to both capital and operating expenditures.

- In the case of capital projects undertaken over the current determination period, the test involves an examination of where the asset has been built (ie, the construction

or delivery and operation of the asset), having regard to information available at the time.

- Actual capital expenditure in the current determination period that is assessed to be prudent and efficient is rolled into DPI Water's regulatory asset base (RAB) for the start of the upcoming determination period, for the purposes of calculating allowances for return on and return of capital
- In examining forecast expenditure on future capital projects, the prudency test examines the consistency of this expenditure with DPI Water's longer-term capital expenditure program.
- In the case of operating expenditure, an assessment is made of whether the activity scope and standards are prudent based on the information available at the time the activity or program was designed (we also examine whether DPI Water implement program monitoring and evaluation as a means of adapting programs to changing circumstances or refining the approach to service delivery in response to feedback on what is working and what is not).

The findings of the strategic review are used to inform conclusions and recommendations on the level of efficient operating revenue requirement, which are presented in section 6.

2.2 Methods

A number of procedural steps and methods were employed in the review to formulate our recommendations. These are summarised below.

2.2.1 Sample of projects for detailed analysis

Synergies selected four activities for detailed analysis of operating expenditures. In addition, two capital projects were selected to evaluate the efficiency and prudence of capital expenditures (past and forecast).

A sampling approach was necessary due to the large number of individual activities performed by DPI Water (33 in total for the forecast period) and the impracticality of assessing all aspects of the business. Results from the analysis of the sample of activities enabled inferences to be made about the efficiency of the balance of activities that contribute to DPI Water's regulated cost base.

The sample activities were selected on the basis of a number of criteria:

- the sample of activities must comprise projects that sum to at least 10% by value of total operating expenditure and at least 10% by number of DPI Water's activity codes
- similarly, the sample of capital projects must comprise projects that sum to at least 10% of DPI Water's forecast capital program by value and by number
- activities that were of significant scale in terms of operating expenditure as a percentage of total DPI Water operating costs
- activities with a user share of 50% or more
- consideration was given to whether actual expenditure on the activity has varied by a large margin relative to IPART allowed expenditure (we opted to include at least one activity in the sample that met this criterion as a means of investigating reasons for the variation)
- consideration was given to whether DPI Water is proposing significant changes in resourcing levels for the activity in the forecast period compared to actual expenditure in the current determination period
- consideration was given to whether there were suitable performance benchmarks available for the activity, against which DPI Water's expenditure levels could be compared and assessed
- a preference was given to activities that had been examined in detail in the previous 2010 review by PwC (with the aim of assessing how DPI Water responded to the recommendations made).

The detailed analysis of selected projects formed an important part of the review because it enabled insight into the adequacy of DPI Water's business processes and project management systems.

2.2.2 Consultations with DPI Water executive

Synergies met with members of DPI Water's executive team and activity leaders for each of the selected activities. The purpose of these meetings was to seek clarification on specific aspects of the pricing submission and invite DPI Water staff to elaborate on points raised in the submission, through for example, provision of additional evidence to demonstrate the efficiency of forecast revenue needs. A total of 13 interviews were convened over the course of the review, plus a meeting with the submission coordinator, who provided an introductory overview of the DPI Water proposal.

2.2.3 Review of business cases and strategic plans

In addition to reviewing DPI Water's submission, cost model and information return, Synergies requested examples of:

- business cases
- strategic plans
- customer surveys
- policy documents; and
- business processes underpinning each of the selected activities/projects.

Where these documents were supplied, we assessed the quality and adequacy of the documents and the extent to which the plans and processes were being used by management to guide service delivery.

2.2.4 Review of management processes

Our review of DPI Water's submission and interviews with relevant staff focused on a number of areas of management, including:

- evidence of reallocation of resources to meet changing priorities
- evidence of stress-testing (service levels and outcomes from marginal changes in resourcing)
- adequacy of business rules, processes and systems
- rationale for resourcing strategy (e.g. insourcing versus outsourcing)
- costing and reporting systems (appropriateness of drivers used to allocate costs, integrity of the cost allocation process)
- expenditure governance
- adequacy of prioritisation frameworks
- adequacy of monitoring processes.

2.2.5 Benchmarking

Where possible we sought suitable benchmarks from comparable water resource management agencies to allow a comparative analysis of DPI Water's cost per unit of service against those being achieved in other jurisdictions. For example, benchmarks

were obtained for water planning costs, hydrometric stations, water consent transactions and corporate overheads.

2.3 Information sources

The following information sources were used for the review.

- DPI Water's submission, incorporating an End of Determination Report
- DPI Water's Annual Information Return (AIR), an Excel spreadsheet containing:
  - historical expenditure data (over the current determination period) for the existing activity codes
  - detailed concordance between existing activity codes and proposed codes
  - forecast expenditure data for proposed activity codes
  - changes to current user shares and user shares for new or revised activity codes
  - detailed cost allocation model (cost drivers) in both old and new activity codes
- DPI Water's financial cost model for the next regulatory period
- DPI Water's 'Appendix L Report 2014-15', which sets out performance outputs and outcomes against Schedule L (Schedule of Monopoly Service Order outputs to 2014), which is contained in IPART's final report accompanying the 2011 Determination.[2]
- Dollar values and inflation rates (supplied by IPART).

In addition to the above, DPI Water supplied various supplementary information over the course of the review in response to three separate information requests made by Synergies on the following dates: 25 September, 1 October, 12 October, 12 November, and 17 November.

DPI Water responded to each of these requests.

[2] IPART, *Review of Prices for the Water Administration Ministerial Corporation - Final Report*, February 2011; page 303

3 DPI Water's monopoly services

This section contains a review of the monopoly services proposed by DPI Water in its pricing submission. The emphasis of the review is on the types of services to be delivered, as opposed to the level of service, which is examined in subsequent sections. The purpose of the review is to assess the validity of including each of the nominated services in the regulatory cost base and, conditional on inclusion, whether the nominated share of costs to be recovered from users is appropriate. The rationale for excluding particular services from the cost base is also examined. Our review focuses on those activities and services that have changed, or are proposed to change, since the 2011 Determination.

3.1 Definition of DPI Water's monopoly services

Under clause 3 of the Independent Pricing and Regulatory Tribunal (Water Services Order) 2004, services that involve the following are government monopoly services for the purposes of the IPART Act:

- the making available of water, or
- the making available of the WAMC's water supply facilities, or
- the supplying of water, whether by means of the WAMC's water supply facilities or otherwise.

Accordingly, IPART may determine prices for these monopoly services. In practice, the services outlined in the Water Services Order can be variously interpreted as the regulations do not provide practical guidance on those water management activities that should be included as monopoly services.

Definitions of the water management monopoly services referred to in the Water Services Order were provided in IPART's Final Report supporting the 2011 Determination.[3] These are summarised below:

> In interpreting this clause for this (and past) determinations, we have adopted a broad interpretation of the phrase 'the making available of water' to include activities necessary to ensure water resources are managed on a sustainable basis to support long-term use. For example, we have included activities related to the assessment, allocation, planning, monitoring and reporting of water resources, as far as these activities are undertaken to ensure supply to users.

[3] IPART, *Review of prices for the Water Administration Ministerial Corporation for the NSW Office of Water, from 1 July 2011*, Final Report, February 2011

> We also had regard to the objectives of the National Water Initiative (NWI), and the guidance this agreement provides on setting prices for water management services. For example, we have complied with the NWI's direction to exclude (when setting prices) any costs related to Ministerial and Parliamentary services and to the development and refinement of overarching policy frameworks from efficient costs.

Synergies adopts these conventions for our review. In addition, we note that activities relating to the assessment, allocation, planning, monitoring and reporting of water resources have monopoly service characteristics as they are typically provided by a single government entity and there is limited scope (by virtue of regulation or lack of commercial incentive) for another party to provide these services.

3.2 DPI Water's roles 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.

In its submission, DPI Water identifies its goal and challenge as being:[4]

> 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.

The areas of core business for DPI Water and key responsibilities are identified as:

- 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

[4] DPI Water submission, page 41

- Regulation of local water utilities.

These functional responsibilities have not changed since the 2011 Determination, with the exception that the Metropolitan Water Directorate now sits within DPI Water, having previously been part of the NSW Department of Finance, Services and Innovation. This change occurred in 2014. The implications of this for DPI Water's monopoly services are examined in sub section 3.3.3 below.

Bulk water reforms proposed by the NSW government have the potential to affect some of the functions and services delivered by DPI Water over the forecast period. In 2013, the NSW government commissioned a review to investigate the potential for improved efficiency in the provision of bulk water in the state. Stage one of the 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. DPI Water expects that the reforms will lead to a significant realignment of the functions currently delivered by DPI Water and WaterNSW.[5]

As the details of this reform are not yet finalised, DPI Water has prepared its pricing submission on a business as usual basis. They have proposed a 'plug out/plug in' approach whereby any functions that are transferred to WaterNSW be managed through service agreements between DPI Water and WaterNSW until prices can be adjusted in the next determination period.

3.3 New activities since 2011 Determination

DPI Water currently structures its activities into 11 activity groups which, in aggregate, contain 36 discrete activities. DPI Water's activity groupings are proposed to remain largely intact for the forecast period. The only change is that of 'analytical services for water quality programs'. This is currently defined as an individual activity group (coded C04). In the forecast period DPI Water is proposing that analytical services continues to be delivered, but not as a stand-alone activity. Therefore, the total number of activity groups reduces from 11 to 10.

Beneath the high-level group structure, DPI Water is proposing a number of changes to its activities. The key changes are outlined below.

[5] DPI Water submission, page 40

3.3.1 Surface water ecological monitoring

Only one new activity code is being proposed for the forecast period – 'surface water ecological condition monitoring'. This will be undertaken as part of the 'surface water monitoring' activity group. Ecological condition monitoring will be undertaken using a river condition reporting tool called the River Condition Index. The output of this activity is provision of long term reporting on river condition, which is designed to allow the root cause of river condition decline to be identified and monitored. We assess this activity as being consistent with a water management monopoly service. DPI Water is proposing to recover 50% of the cost of this activity from water users.

3.3.2 Floodplain management plan development

While this is not strictly a new activity, as 19 statutory floodplain management plans (FMPs) are currently operating, DPI Water has designated a separate, new activity code for FMP development (whereas under the current structure this activity is contained with the generic Water Sharing Plan Development code). DPI Water has recently commenced development of five new FMPs for rural floodplains in the Barwon-Darling, Gwydir, Border Rivers, Macquarie and Namoi valleys. These plans are scheduled to be completed over the forecast period and are to be funded by the Commonwealth under the Healthy Flood Plains program ($20.2 million over two years, $2015-16).[6]

FMPs 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 flooding. A 0% user share has been assigned to this activity by DPI Water on the basis that the activity deals with legacy issues and has significant community benefits.

3.3.3 Metropolitan Water Directorate activities

In 2014 the Metropolitan Water Directorate (MWD) was incorporated into DPI Water. Its key functions are to:

- Lead whole-of-government water planning for greater Sydney and the lower Hunter regions.
- 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*.

[6] DPI Water submission, table 7.3

- Deliver an integrated community engagement and social research program in support of water planning and policy.

Metropolitan water plans are strategic, non-statutory plans that identify supply and demand measures to secure water supplies necessary to support population and business growth. They include contingency measures for drought, and supporting environmental flow objectives. The metropolitan water plans are special purpose plans within the regional water strategy framework.

Prior to 2014, the MWD was part of the NSW Department of Finance, Services and Innovation. Synergies understands that the former NOW coordinated some aspects of metropolitan water planning, but it did not have a lead role. As at 2009, the former NOW reported that it had 7 FTEs assigned to metropolitan water planning activities.[7] Now that the MWD is a unit within DPI Water, the agency will take on full responsibility for metropolitan water planning, monitoring and review of the plans. DPI Water has advised Synergies that it has budgeted between 10 and 13 FTEs per annum over the next five years for reviewing the Sydney and Lower Hunter Metropolitan Water Plans (Table 1).

DPI Water's proposal

For the forthcoming regulatory period, DPI Water is proposing to include all metropolitan water planning functions as a monopoly service. This includes a review of the 2010 Metropolitan Water Plan for Sydney and the Lower Hunter Metropolitan Water Plan (the latter of which was developed in 2014 and is scheduled for review within the forecast determination period).

DPI Water has structured its activities such that metropolitan water planning is part of larger activity group (W06-05), referred to as "regional planning and management strategies". Metropolitan water plans are regarded by DPI Water to be "special purpose plans within the regional water strategy framework":[8]

> 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.

[7] See page 33 of IPART's 2011 Final Report on the review of prices for the Water Administration Ministerial Corporation.

[8] DPI Water submission, page 150

Table 1 provides a breakdown of DPI Water's forecast costs and FTEs for W06-05, which includes reviews of the two metropolitan water plans and development of six regional water strategies.[9]

Table 1 Forecast costs and FTEs for regional planning and management strategies

	2016-17	2017-18	2018-19	2019-20	2020-21	Total
	$'000	$'000	$'000	$'000	$'000	$'000
Sydney Metropolitan Water Plan	1,971.24	2,138.98	1,702.50	842.96	1,522.03	8,177.71
Lower Hunter regional planning	442.92	752.32	1,146.88	1,152.82	443.82	3,938.76
6 Regional water strategies	679.27	691.52	681.15	422.04	443.18	2,917.16
Forecast costs for W06-05	**3,093.43**	**3,582.82**	**3,530.53**	**2,417.82**	**2,409.03**	**15,033.63**
Costs recovered from Hunter Water Corporation	-399.64	-713.12	-1,023.97	-999.90	-395.77	-3,532.40
Net cost	**2,693.79**	**2,869.70**	**2,506.56**	**1,417.92**	**2,013.26**	**11,501.23**
FTEs	Nos	Nos	Nos	Nos	Nos	
Sydney Metropolitan Water Plan	6.1	7.8	8.5	7.0	6.8	
Lower Hunter Metropolitan Plan	4.2	4.3	4.3	2.7	2.9	
6 Regional water strategies	4.2	4.4	4.4	2.7	2.9	
Total FTEs	**14.4**	**16.4**	**17.1**	**12.3**	**12.5**	

Note: All costs in 2015-16 dollars
Source: Data provided to by DPI Water to Synergies by email on 17 November 2015

In summary, the data show:

- Between 6 and 8 FTEs will be assigned to Sydney Metropolitan regional planning and management strategies over the forecast period (with a total forecast expenditure of $8.18 million over the next five years, $2015-16).
- A further 4 FTEs will be assigned to the Lower Hunter regional planning and management strategies including the review process (reducing to 2.85 FTEs by 2020-21). The Lower Hunter review process is forecast to cost $3.9 million over the next five years ($2015-16). $3.5 million of this cost is to be recovered from Hunter Water Corporation, which DPI Water has netted off its proposed revenue needs.[10]
- The balance of forecast FTEs and costs for this activity ($2.9 million over five years, $2015-16) will be assigned to developing six regional water strategies.

[9] Data received by email on 17 November 2015

[10] Synergies notes that the Hunter Water costs have been included in the totals for W06-05 in Table F1 of DPI Water's submission but have been excluded from DPI Water's proposed revenue needs, which are summarised in Table 1.2 of the submission.

DPI Water is proposing that 70% of the net cost of W06-05 is to be recovered from water users. Costs are allocated to those regions that are scheduled to require a regional water strategy or metropolitan plan review over the forthcoming regulatory period. For those regions that meet this criterion, costs are then allocated pro rata across water pricing sources within these regions on the basis of entitlement volume.[11] When these allocation rules are applied, most of the cost (72.5%) is allocated to regulated river sources in the South Coast region. And of this share, 78% accrues to WaterNSW (metropolitan) – i.e. the former Sydney Catchment Authority.[12]

Assessment

Synergies has assessed whether all metropolitan water planning activities should be deemed monopoly services and therefore included in the regulatory cost base. We also examined DPI Water's proposed allocation of Sydney Metropolitan Water Plan costs to water users.

The proposal to include all metropolitan water planning as a monopoly service is inconsistent with IPART's 2011 Determination. For the 2011 Determination PwC recommended, and IPART accepted, that half of the former NOW's FTEs assigned to metro water planning activities (i.e. 3.5 FTEs) be removed from the forecast revenue requirement because some of the activities undertaken did not fit with the definition of monopoly services contained in the Water Services Order. These activities related to assessment of demand management measures, water infrastructure planning, water industry competition and recycling strategies.

Synergies examined the range of activities that are expected to be undertaken as part of the forthcoming review of the 2010 Sydney Metropolitan Water Plan. Key issues for the review are listed on the MWD website as being:[13]

- the impact of changes to the information and policies underpinning the 2010 portfolio (or mix) of water supply and demand measures
- identifying the optimal portfolio of water supply and demand management measures to secure water in drought and for growth over the next 50 years
- impacts of flood management options at Warragamba Dam on water security

[11] DPI Water Submission, page 306

[12] Tables G1 and G3 in DPI Water's submission show that WaterNSW (metropolitan) holds 987,000 ML of the 1,257,625 ML of unregulated river entitlement in the South Coast region of NSW

[13] MWD website, http://www.metrowater.nsw.gov.au/planning-sydney/updating-plan/current-review; Accessed 20 November 2015

- potential impacts of climate change on long term water supply
- identifying the community's values and preferences for securing a sustainable water supply system for people and the environment
- an assessment of the benefits and costs of a potential new, variable environmental flow regime from Warragamba Dam to help protect and improve the condition of the Hawkesbury-Nepean River

While some of these activities are consistent with the Water Services Order definition of monopoly services (e.g. flood management and assessment of environmental flow regime), the other activities relate to managing the demand-supply balance. This function is distinctly different to DPI Water's other monopoly services, which are directed more generally towards resource management, resource assessment, water allocation, protection of entitlement integrity and so on.

Synergies accepts that demand-supply management and planning is an important component of water management and the efficient costs of this activity should be recovered from water users on an 'impactor pays' basis (i.e. Sydney metropolitan water users). However, for the purpose of setting water licence charges we recommend that the cost of this function be excluded from DPI Water's monopoly services. We base this recommendation on the fact that:

- demand-supply management functions are distinctly different from DPI Water's other resource management activities; and
- the beneficiaries of these services are a defined subset of DPI Water's customer base – i.e. Sydney metropolitan water users.

We assess that about 50% of DPI Water's costs of reviewing the Sydney Metropolitan Water Plan relate to demand-supply management and planning. We therefore recommend that half of the forecast $8.18 million expenditure on this activity be removed from DPI Water's cost base (i.e. a reduction of $4.09 million over five years).

3.4 Exclusions from the cost base

A number of DPI Water's services have been excluded from the regulatory cost base. These are discussed below.

3.4.1 Policy development

As required under NWI pricing principles, DPI Water has excluded costs associated with supporting Ministerial or Parliamentary services and high-level policy development.[14]

3.4.2 Externally funded activities

DPI Water refers to a number of water management monopoly service activities that are externally funded by the Commonwealth. DPI Water reports in its submission that the cost of these activities has been removed from forecast operating revenue requirements. Page 176 of the submission contains a list of activities to be undertaken over the forecast period that will be externally-funded. A total of $53.45 million of external revenue is expected. The grants are as follows:

- Murray-Darling Basin Plan activities: The *Water Act 2007 (Commonwealth)* places a number of obligations on State jurisdictions located in the Murray-Darling Basin. These include regulatory framework development, developing Water Resource Plans (WRPs) that are consistent with the Basin Plan, WRP implementation, information provision, consultation, reporting and negotiation with the Commonwealth. The cost of these activities is wholly funded by the Commonwealth through a grant to the NSW government (DPI Water has forecast grant revenue of $29.6 million over four years to 2019-20)
- Floodplain management plan development ($20.17 million)
- Aboriginal Water Initiative ($3.64 million)

DPI Water does not routinely map external funding to each of its monopoly service activities. However, it did provide Synergies with a breakdown of Basin Plan funding and how this will be allocated to individual activities. We are satisfied that the cost of monopoly service activities funded through Basin Plan funding has been excluded from DPI Water's proposed costs.

That being said, there greater transparency is needed in the public reporting of how external funds are being used to offset the cost of water management services. The descriptions of W code activities in DPI Water's submission do not separately identify what proportion of future activity under each code will be externally funded as opposed to being funded through water management charges. In section 8 Synergies recommends a reporting template, which would assist this objective of greater transparency.

[14] DPI Water submission, page 178

3.4.3 Fee for service activities

DPI Water expects to generate approximately $12.6 million each year in 'fee for service' revenue. This is for monopoly services provided to customers on a fee for service basis. It includes provision of hydrometric data to WaterNSW, MDBA, water utilities, and local councils. The cost of services provided to these organisations is excluded from the water management charge. Synergies is satisfied that resources utilised to supply these services have been appropriately ring-fenced from the cost base.

3.5 Assessment of proposed user shares

This section assesses the appropriateness of user shares proposed by DPI Water for the forecast determination period. First, the principles used by DPI Water to determine user shares are compared to the principles set out in the 2011 Determination. Second, the proposed user shares by activity are compared with Synergies' expectations of appropriate user shares based on application of 2011 Determination principles.

IPART has adopted the 'impactor pays' principle as the primary means for determining appropriate user shares. Application of this principle results in costs being allocated according to the relative contributions the community and users make to costs. DPI Water states that:[15]

> "The user shares proposed by DPI Water for the new W-code activities… are consistent with existing user shares and impactor pays principles previously determined for the current C-code activities."

If this statement is true, it should be possible to independently derive DPI Water's proposed W-code user shares from the equivalent C-code user shares defined by the 2011 Determination. Synergies has done this analysis and we find that with the exception of four activities, all have been assigned the expected user shares.[16] As such, Synergies concludes that the majority of proposed user shares are appropriate as they are not materially different to those approved by the 2011 Determination.

The four activities for which proposed user shares do not match expectations are presented in Table 2 and discussed below.

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[15] DPI Water submission, page 119

[16] Expected user shares have been derived from the 2011 Determination C-code user shares, converted to W-codes using DPI Water's W-code to C-code conversion matrix and weighted according to 2015-16 operating expenditure by activity. For example, if a W-code activity is made up of the whole of one C-code activity with a user share of 100% and 2015-16 operating expenses of $1 million and the whole of a second C-code activity with a user share of 50% and 2015-16 operating expenses of $1 million, a user share of 75% would be expected.

Table 2 Comparison of proposed and expected user shares

	W02-02	W04-03	W06-03	W06-04
DPI Water's proposed user shares	100%	50/100%[a]	0%	0%
Expected user shares based on C-code user shares	78%	100%	70%	70%

a For activity W04-03 (Water resource accounting), DPI Water propose a user share of 100% in their submission and a user share of 50% in their information returns.

Source: DPI Water submission and information returns, Synergies estimates

Groundwater quality monitoring (W02-02)

Activity W02-02 is formed from 100% of the previous C02-02 activity, which has a user share of 100% and expenditure of $123,000 in 2015-16 and 9% of the previous C04-01 activity, which has a user share of 50% and expenditure of $1.05m in 2015-16. Based on these figures, a user share of 78% is expected. DPI Water's adoption of a 100% user share implies that 100% (not 50%) of C04-01 is to be recovered from water users. Synergies regards this to be acceptable because the activity in question is 'analysis of water quality samples'. It is reasonable to expect that users should pay all of the 9% portion of total costs that are allocated to groundwater quality monitoring.

Water resource accounting (W04-03)

DPI Water propose a user share of 100% in their submission but have reported a user share of 50% incorporated in the AIR. DPI Water have confirmed that this is an error in the AIR and that the user adopted to calculate its forecast prices is 100%.

Floodplain and drainage management planning (W06-03 and W06-04)

The W06-03 and W06-04 activities were both previously part of Water Sharing Plan Development (C07-01). This activity had a user share of 70% in the 2011 Determination. DPI Water is proposing a 0% user share and justify this on the basis that "both these activities are dealing with legacy issues and have significant community benefits." Synergies accepts the justification provided, but notes that the change in policy position will mean costs currently recovered from users for FMPs and drainage management plan development will no longer be recovered. In 2015-16 the cost of the two activities, net of external funding from the Commonwealth, is approximately $100,000.

3.5.1 Recommended user shares

Table 3 presents our recommended user shares for all activities, which are consistent with those proposed by DPI Water.

Table 3 Recommended user shares

Activity	User share (%)	Activity	User share (%)	Activity	User share
W01-01	70	W04-02	100	W06-06	75
W01-02	50	W04-03	100	W06-07	50
W01-03	50	W05-01	100	W07-01	50
W01-04	50	W05-02	50	W08-01	100
W01-05	50	W05-03	0	W08-02	100
W02-01	100	W05-04	50	W08-03	100
W02-02	100	W06-01	70	W08-99	100
W02-03	100	W06-02	70	W09-01	100
W03-01	100	W06-03	0	W10-01	100
W03-02	100	W06-04	0	W10-02	70
W04-01	50	W06-05	70	W10-03	100

Source: Synergies

4 Strategic review of DPI Water's Submission

This section provides a high-level review of DPI Water's submission. We begin with an overview of reported trends in historical and forecast operating expenditures and staffing levels. We then assess the key elements of the submission, including:

- efficiency of overheads and indirect costs;
- the justification for proposed changes to DPI Water's activity structure;
- changes to the resources assigned to each activity group, relative to the current determination period;
- the degree of alignment between forecast expenditures and identified strategic priorities and DPI Water's legislative functions;
- appropriateness of cost drivers for allocating costs to different pricing water sources; and
- validity of water take forecasts used to assign costs to pricing water sources.

Our review focuses on factors reported by DPI Water as being responsible for proposed changes in service levels, expenditures and allocation methods since the 2011 Determination.

4.1 Operating expenditure trends

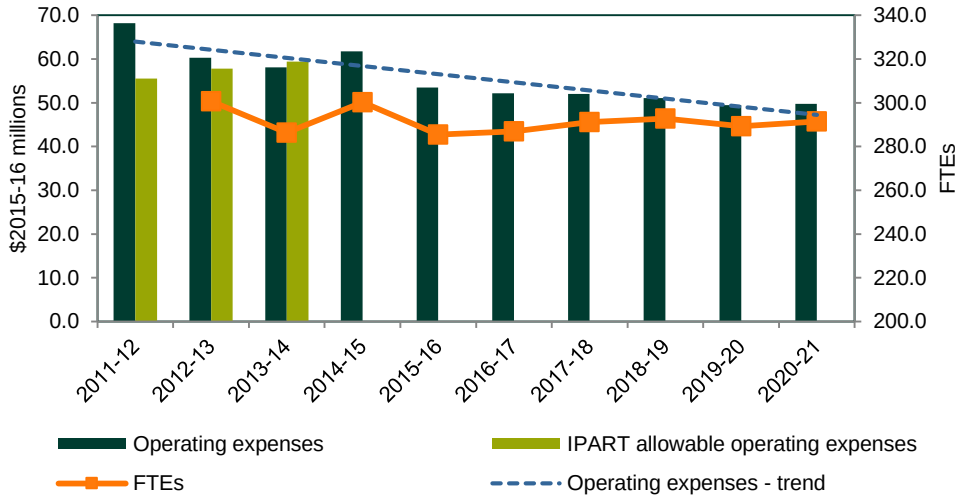
DPI Water's real (i.e. inflation adjusted) operating expenditure for water management services has followed, and is set to continue, a downward trend over the ten-year period 2011-12 to 2020-21. The overall trend, spanning both historic and forecast periods, is for an average annual reduction of 3.4% The data presented in Figure 2 and Table 3 include actual and forecast operating expenditure for DPI Water's monopoly services, excluding water consents transactions, water take measurement services and contributions to MDBA and DBBRC.

Staff levels (in terms of full time equivalents – or FTEs) over the historical and forecast period are also shown in Figure 2 and Table 4.

DPI Water is forecasting a total operating cost base of $53.5 million in 2015-16, down from an actual expenditure of $68.2 million (in $2015-16) at the start of the determination period in 2011-12. Over the forecast period, operating expenditure for monopoly services is forecast to decrease in real terms from the 2015-16 budget estimate of $53.5 million to $52.2 million in 2016-17, and then to $49.7 million by 2020-21.

DPI Water exceeded IPART allowable operating expenditure in 2011-12 by $12.7 million. The cost difference narrowed in 2012-13 to just $2.5 million. By 2013-14, actual expenditure was $1.3 million below the IPART allowance.

Figure 2 Total operating expenditure ($2015-16 millions) and FTEs, current and forecast



Note: Excludes expenditure on consent transactions, metering services and contributions to MDBA and DBBRC. Graph shows total operating expenditure (as opposed to user share)

Data source: DPI Water's submission and supplementary information provided by DPI Water

Table 4 Operating expenditure and FTE numbers

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Operating expenditure ($2015-16 millions)	68.2	60.3	58.1	61.7	53.5	52.2	52.0	51.1	49.4	49.7
IPART allowable revenue ($2015-16 millions)	55.5	57.8	59.4	-	-	-	-	-	-	-
FTEs	-	301	286	300	285	287	291	293	290	292

Note: Excludes expenditure on consent transactions, metering services and contributions to MDBA and DBBRC. Graph shows total operating expenditure (as opposed to user share)

Data source: DPI Water's submission and supplementary information provided by DPI Water

4.2 Staffing

Staff levels are reported to have declined over the current determination period from 301 FTEs in 2012-13 to 285 in 2015-16 (budgeted). DPI Water has no record of the number of FTEs for 2011-12.

DPI Water undertook a review of its operation in 2012 and entered into a change management plan which took effect in the first quarter of (calendar) 2013. This change management plan resulted in a loss of approximately 50 staff across the business. The

impact of this change management was seen in the 2013-14 outcomes, where the level of resources applied to water management services was reduced.

In 2014-15 DPI Water decided to assign additional staff resources to targeted areas out of concern that the 2013-14 cuts were resulting in reduced service levels to customers.

The forecast for 2015-16 and subsequent years reflects DPI Water's expected outcomes from change management currently being undertaken by DPI Water. 287 FTEs are forecast for 2016-17. By 2021, FTEs are forecast to increase to 292, or an equivalent of an additional five FTEs compared to 2015-16.

4.3 Composition of costs

DPI Water identifies three cost components, comprising employee expenses, overheads and other costs. The cost components are defined in Table 5.

Table 5 Definition of cost components

Cost component	Includes
Employee expenses	Salaries and on-costs (annual leave, long-service leave, superannuation and workers compensation).
Overheads	Governance, legal, economics, human resources, finance and knowledge management, corporate strategy and communications, business and technology services, corporate operations, policy coordination and building and equipment leases.[a]
Other costs	Non-remuneration costs such as travel and motor vehicle expenses, contractors and consumables.

a Excludes costs associated with supporting Ministerial or Parliamentary services and high-level policy development in accordance with National Water Initiative principles.

Source: DPI Water submission and supplementary data

An annualised breakdown of operating expenditure, by component, is presented in Table 6 for the years 2014-15 to 2020-21.[17] DPI Water is forecasting stable shares of salaries, overheads and other costs over this period. The largest component of DPI Water's water management costs is salaries, comprising 61% of costs in 2014-15. The remaining expenditure is made up of overheads (21%) and 'other' costs (17%). The 'other' category includes payment for items and activities that are specific to projects, such as costs of travel or use of external service providers.

When water consent transactions and water take measurement are included, salaries comprise 60% of costs in 2014-15, with overheads accounting for 20% and other costs 20%.

[17] DPI Water was unable to provide information on the composition of their costs over the full current determination period

Table 6 Composition of total operating expenses for water management services

	Salaries $2015-16 millions	Overheads $2015-16 millions	Other costs $2015-16 millions	Total $2015-16 millions	Salaries %	Overheads %	Other cost %
2014-15	37.9	13.1	10.8	61.7	61	21	17
2015-16	32.5	11.3	9.7	53.5	61	21	18
2016-17	32.0	11.1	9.1	52.2	61	21	17
2017-18	31.8	11.0	9.2	52.0	61	21	18
2018-19	31.3	10.9	8.9	51.1	61	21	17
2019-20	30.4	10.6	8.4	49.4	62	21	17
2020-21	30.6	10.7	8.5	49.7	62	21	17

Note: DPI Water did not provide cost composition information for the years 2011-12 to 2013-14. There were immaterial differences in cost figures provided by DPI Water in their information return and supplementary data source. Where such differences exist data has been weighted back to the information return. Table shows total operating expenditure (as opposed to user share)

Source: Supplementary information provided by DPI Water and DPI Water information returns.

4.4 Factors responsible for declining operating costs

While DPI Water's expenditures are forecast to trend downwards in real terms, part of this reduction comes off an expenditure level in 2011-12 that was $12.7 million above what IPART determined at the time to be efficient. It is not until 2013-14 that expenditure is reduced to a level that is within the efficient level determined by IPART.

DPI Water is forecasting a real reduction in expenditure of 7.1% over the five year forecast period.[18] This is primarily due to a budgeted 1.5% annual 'efficiency gain', which is proposed to take effect from 2017-18. The annual cost reduction is in response to a NSW Treasury directive that requires agencies to achieve annual efficiency dividends of this magnitude. We note though that an annual cost reduction is not necessarily synonymous with an efficiency gain (in the economic sense). It is inefficient if reductions in costs result in inadequate levels or standard of service.

Further, DPI Water is proposing an efficiency adjustment to 2016-17 cost forecasts, which is introduced by not escalating the 2015-16 costs by inflation.

Synergies has reviewed the potential factors contributing to the decline in actual and forecast expenditure since 2011-12. Our findings are summarised below.

4.4.1 Staffing

The projected increase in FTEs is at odds with the decline in forecast expenditure. Given that most of DPI Water's costs are predominantly salaries, we conclude that DPI Water has applied the 1.5% reduction to its forecast expenditure (to meet the imposed

[18] Calculated as the percentage difference between expenditure in 2015-16 and 2020-21

'efficiency' directive) independently of assessing how this relates to required staff levels. The projected increase in FTEs assigned to water management services would imply that the proposed cost reduction would have to be achieved through means other than remuneration savings, or that they are not achievable.

4.4.2 Overheads

DPI Water is forecasting a real reduction in overhead costs. Over the four years up to 2015-16, an overhead rate of $30.00 per FTE hour was applied ($2009-10). This rate included motor vehicle costs, which are no longer proposed to be recovered through the overhead rate (this cost will instead be treated as a "non-remuneration cost" and thus accounted for separately).[19] DPI Water has advised Synergies that motor vehicle costs account for $2.97 of the hourly overhead rate ($2009-10). Thus, the adjusted rate is $27.03 per hour ($2009-10). This is equivalent to $30.28 per hour in 2015-16 dollars.[20]

For the forthcoming regulatory period DPI Water is proposing to apply a rate of $24.35 per hour. This represents a 20% reduction in the overhead rate. Changes to overheads are examined in more detail in section 4.5.

As DPI Water has not provided a cost composition breakdown for the years 2011-12 to 2013-14 it is not possible to determine the impact of reduced overheads on DPI Water's total costs. Comparison can be made between cost composition information from the 2011 Determination and DPI Water's proposed costs for the forecast period, but it is not possible to determine how much of the change in costs between these periods is due to changes in overhead allocation or other factors.

4.4.3 Efficiency improvements over the current determination period

There is some evidence to indicate that DPI Water has been able to implement efficiency improvements over the current determination period. Examples identified by Synergies in its review of the submission are as follows:

- *Rationalisation of the hydrometrics network*. DPI Water has reviewed the network and removed 75 gauging stations from the fleet of stations that were previously charged to water users. It determined that data from these stations was not essential for water management services (the data are supplied to the Bureau of Meteorology).[21]

[19] DPI Water submission, page 178

[20] Note that DPI Water's submission cites $31.80 per hour as the comparable, inflated adjusted rate. DPI Water has subsequently revised this figure to $30.28 per hour.

[21] DPI Water submission, page 125

The network review was undertaken during the current determination period and the cost savings to water users are built into the expenditure forecasts for this activity. This is not strictly an efficiency gain because it is a reallocation of the cost of the 75 stations from users to government.

- *Water Sharing Plan (WSP) development.* DPI Water is amalgamating small WSPs into larger WSPs to achieve cost savings in the plan development process.[22] While this should result in future cost savings when it comes time to review the plans, our analysis of this activity in section 5 finds insufficient evidence of these savings being factored into forecast revenue requirement.

- *Improvements to corporate information systems*. DPI Water reports efficiencies from improvements to corporate information systems that are maintained for the purpose of water management operations (e.g. announcing annual water determinations, assessing third party impacts of proposed trades and implementing water sharing rules). DPI Water advises that over the current determination period investments have been made in IT, which has allowed greater automation of systems for managing process, maintaining data and improving accessibility and sharing of data between business units within DPI Water. Improvements are also reported to have been made to the interoperability of DPI Water systems with those of WaterNSW.[23]
  - Notwithstanding the above achievements, it is evident from DPI Water's submission that system improvement remains a 'work in progress'. For example, a customer relationship management system is in the scoping phase. DPI Water claims that this system will enhance 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.[24]
  - Further, the reported efficiency gains in this area to date have not been quantified by DPI Water or factored explicitly into forecast revenue requirement for 'systems operation and water availability management' (see section 5 for details).

- *Unit labour savings for processing water consent transactions.* These have been achieved through increased use of staff at lower pay levels. The savings are incorporated into

[22] DPI Water submission, page 147

[23] DPI Water pers. comm., 12 October 2015

[24] DPI Water submission, page 161

DPI Water's forecast expenditure.[25] DPI Water has also advised that cost savings have been made through the uptake of on-line applications for several types of water products (licence extension approvals, basic landholder rights and consents for temporary trades). Overall, of the transactions that can be done on-line, DPI Water reports that there is currently a 30% uptake by customers.[26]

- *Staff training to enable a more flexible workforce*. DPI Water has invested in training so that staff can more readily shift between processing water consents, and working on compliance related activities. This training began in the current determination period and will continue to be implemented in the forward determination period.[27] From an efficiency standpoint, this should assist to optimise the available staff resources and reduce the need for DPI Water to carry surplus staff in times of low demand for services. However, DPI Water were unable to provide an estimate of the quantum of FTE savings.

- *Proactive engagement with customers*. It is evident that DPI Water has become more pro active in engaging with customers. It has conducted two customer satisfaction surveys to seek feedback on service delivery. A social research project has also commenced, with the aim of better understanding customers' knowledge of legislation, views on complying with legislation, experiences with DPI Water services and preferences for receiving information.[28] These are positive steps and, if done correctly, better information about customer preferences should improve efficiency of services delivered (in terms of aligning services to areas the yield the greatest value for customers). However, it is not clear to what extent the findings of these surveys have influenced management changes or refinements in service delivery. Furthermore, DPI Water acknowledges that further work needs to be done in this area.[29] It has foreshadowed that additional work is required to "investigate options and ideas on how it can gather information and report on customer satisfaction." DPI Water plans to develop a discussion paper on good practices on feedback gathering and use this to deliver targeted feedback mechanisms. A system of continuous review of feedback is to be established as a means of improving service delivery.

[25] DPI Water consent transactions cost model, supplied to Synergies

[26] DPI Water submission, Appendix C

[27] DPI Water submission, page 159

[28] DPI Water submission, page 81

[29] DPI Water submission, page 161

- *A customer service charter.* This has been developed over the current determination period and was published on DPI Water's website in April 2014. The charter sets out the standard of service customers can expect from DPI Water, including service goals, standards and feedback mechanisms. It is being publicly reported on twice a year. This should improve transparency and accountability of DPI Water's service delivery, and may drive further efficiencies.

While the above initiatives should contribute to cost savings, or putting downward pressure on operating costs that would otherwise have been higher in the absence of the initiatives, in most cases DPI Water were not able to quantify the dollar savings. We assess the scale and scope of efficiency savings in more detail in subsequent sections.

4.4.4 Reduced expenditure on some activities

Annual expenditure on Water Regulation Management (W08) is forecast to decline significantly over the forecast period, relative to expenditure levels over the current period. DPI Water has advised that this is principally due to a reduced level of effort required on licence conversion and entitlement specification, which forms one of the activities within the Water Regulation Management activity group (W08-02). Water licences issued under the *Water Act 1912* require conversion to water access licences and approvals under the WMA. The trigger for conversion is the completion of a WSP. As most WSPs are now complete (70 out of 82 have been implemented), the future conversion task will be considerably less than in previous years.

4.4.5 Use of external revenue to offset costs

Another potential reason for declining revenue requirement in the forecast period, relative to the current determination period, is that external revenue from Commonwealth government grants is being used to offset the cost of water management services that would otherwise be funded through water user charges. In section 3 we noted that DPI Water is expecting $53.45 million in Commonwealth funding over the next four year (to 2019-21) to fund Basin Plan activities, floodplain management plan development and the Aboriginal Water Initiative.

Over the current determination period, DPI Water has reported receiving $41.3 million in Commonwealth Government funding. While this funding should have been netted off its forecast revenue requirement at the time of making the 2011 Determination, Synergies is concerned that this may not have been done in all cases. For example, DPI Water has advised that for some activities, such as compliance (where DPI has received $10 million in Commonwealth funding), costs in the *current* determination period have

been lower than IPART allowed because external funding has been used to offset the cost of service delivery.[30] This is investigated in further detail in section 6.

The information provided in DPI Water's submission often fails to distinguish between cost trends that are driven by monopoly user services, and recovered from water users, and those that are externally funded. In order to verify how budgets and resources were established for each activity code, Synergies requested information on the value of externally funded expenditure attributable to each activity.

We were advised that DPI Water does not routinely map external funding to each of its monopoly service activities. However, DPI Water was able to provide Synergies with a breakdown of Basin Plan funding and how this will be allocated to individual activities. We are satisfied that the cost of monopoly service activities funded through Basin Plan funding has been excluded from DPI Water's proposed costs.

But more generally, Synergies has been unable to verify that operating expenditure forecasts have been rigorous in excluding staff and other resources that will be used to deliver Commonwealth-funded projects. As a result, conclusions about past cost savings and comparisons to the future costs are difficult to draw.

4.5 Overheads

This section reviews the methods used by DPI Water to calculate overheads and allocate shares of overhead costs to water management activities. The reasonableness of the quantum of overhead costs is assessed in section 6.

4.5.1 Method used to allocate overheads to DPI Water services

The calculation of overheads has changed since the 2011 Determination. For the 2011 Determination DPI Water was a stand-alone entity (NOW) and was responsible for its own overheads. Since that time DPI Water has been merged into the Department of Primary Industries, which is itself an entity within the NSW Department of Industry. Following the merger, DPI Water's overhead costs are now allocated from either the Department of Primary Industries or the broader Department of Industry.

DPI Water outlines the process for allocating overheads from the Department of Industry[31] as follows:

[30] DPI Water submission, page 74.

[31] DPI Water submission, page 178

"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; and
- the proportion of DPI Water's FTEs to the total for the Department of Industry."

DPI Water has provided a supplementary breakdown of total overheads by type of overhead, including the number of FTEs involved in overhead activities. This is summarised in Table 7.

Table 7 DPI Water overheads by allocation method, 2013-14

	Number of FTEs		$2015-16 millions	
	FTE share	Assessed FTEs	Costs by FTE share	Assessed costs
Deputy director general's office	0.1		0.1	
Legal		9.7		1.8
Economics		5.6		1.1
People, learning & culture		6.2		1.1
Finance and knowledge mgmt		8.0		2.0
Corporate strategy	2.9		0.5	
Business & technology services	9.5	5	2.3	1.2
Corporate operations	23.6	3.9	3.2	0.9
Policy coordination		1.4		0.2
Media & communications		2.1		0.3
Director general DPI	0.2		1.1	
Depreciation			1.5	
Total	**36.3**	**41.9**	**$8.6**	**$8.6**

Note: This table represents Synergies interpretation of overheads data provided by DPI Water, rather than explicit DPI Water information. While the overheads presented are for 2013-14, these 2013-14 overheads are used by DPI Water to determine the overhead unit rate for the period 2014-15 to 2020-21. Table shows total overhead cost (as opposed to user share).

Source: Supplementary data provided by DPI Water and Synergies estimates.

Table 7 shows the proportion of Department of Industry FTEs and overhead costs allocated to DPI Water according to either DPI Water's share of Department FTEs (dot point 3, above) or an assessment of resources spent on DPI Water tasks (dot point one and two, above). We find that around half of DPI Water's overheads (on a cost or FTE basis) have been derived through a pro rata allocation of Department of Industry overheads according to DPI Water's share of total department FTEs.

The methods used to allocate overheads appear reasonable, although some allocation decisions are opaque. For example, DPI Water's allocation of some corporate operations overheads based on DPI Water's share of accounts payable/receivable appears to be a reasonable. In contrast, DPI Water's assessed allocation of finance and management overheads is not underpinned by a sound rationale. These costs have been allocated on an FTE share basis, which is a relatively arbitrary cost driver.

Synergies has further identified several issues with the allocation of overheads to DPI Water. These are:

- For Business and Technology Services, 14.5 FTEs have been allocated as overheads, however only the employee expenses relating to five of these FTEs have been accounted for. Further, the other overhead costs accounted for under Business and Technology Services are not linked to the Business and Technology Services costs elsewhere identified by DPI Water. A total of $3.4 million of Business and Technology Service overheads are recorded, which is greater than the $3.2 million elsewhere identified.
- It is unclear how depreciation has been allocated to DPI Water. DPI Water is allocated $1.4 million of depreciation costs based on their FTE share of total identified Department of Industry and Department of Primary Industry depreciation. This appears reasonable, however DPI Water's share of corporate operations depreciation overheads have elsewhere been explicitly excluded. These overheads would have amounted to $3.7 million for DPI Water.
- DPI Water have not inflated occupancy and PC costs. However, this error has a small effect, reducing overheads by $16,300.

4.5.2 Method used to allocate overheads to water management activities

Once a total overhead share has been determined for DPI Water, overhead costs are allocated to individual activity codes based on a standard hourly rate, which is calculated by dividing total overhead costs by 1533 hours per FTE year. This approach is consistent across the current determination and forecast periods and is applied consistently between monopoly services and other DPI Water activities.

Synergies analysis finds that DPI Water has apportioned overhead costs consistently between user funded, externally funded and fee for service activities so these costs are not disproportionately allocated to water users.

4.6 Proposed activity structure

DPI Water's expenditure is accounted for by 11 high-level (C-code) activities over the current determination period and 10 W-code activities over the forecast period. At the individual activity level, DPI Water identify 33 activities under the forecast period, reduced from 36 activities under the current determination period. Costs are allocated to 26 pricing water sources. Table 8 summarises the changes in the way DPI Water have organised their activities, activity groups and water sources since the 2011 Determination.

Our assessment is that these changes represent a reorganisation of existing activities into different groupings as opposed to any substantive change in the type of activity. As observed in section 3, DPI Water is proposing only one new activity (ecological condition monitoring) and an expanded role in metropolitan water planning.

Table 8 Structural changes between current and forecast period

	Current determination	Forecast period
Activity groups	11	10
Activities	36	33
Pricing water sources	26	26

Source: DPI Water submission

While the changes do not reflect substantive changes to activity content, the proposed reorganisation does involve significant reordering and accounting of activities. The majority of individual W-code activities do not correspond directly to a C-code activity. Rather, most W-code activities have been formed by the amalgamation or segregation of C-code activities.

DPI Water justify the changes as a means of:

- improving alignment of activities to service obligations under the *Water Act 2007 (Commonwealth)* and WMA 2000; and
- improving capacity for staff to accurately allocate time against activities (as considerable difficulties have been experienced in recording time against the C codes).

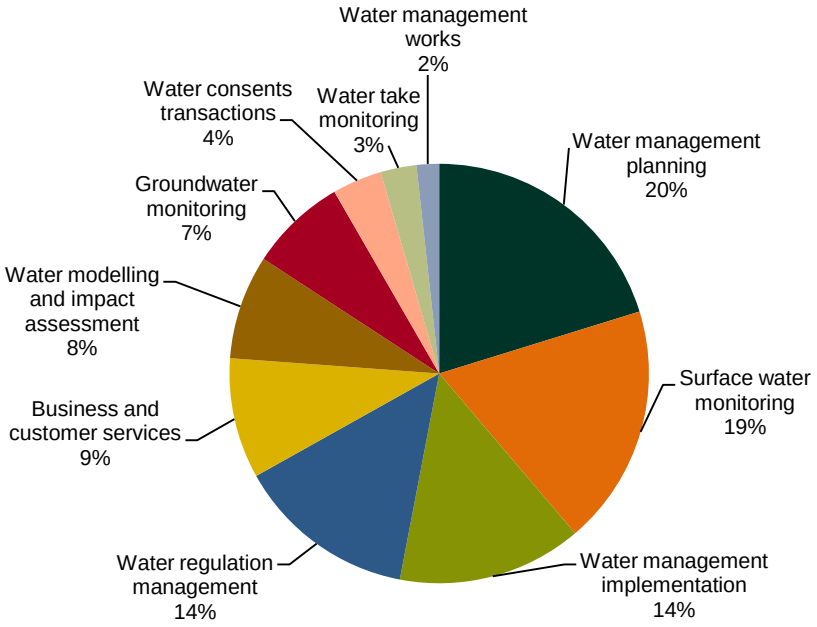
DPI Water has advised Synergies that its current organisational structure (in terms of operational business units) does not – in many cases – align to the activity structure used for preparing regulatory cost accounts. We understand that while the proposed W codes do assist in improving alignment, there will not be a one-to-one match up between organisational areas of responsibility and regulatory cost codes.

This being the case, staff resources will continue to be drawn from multiple business units to work on a particular activity. While this practice is not uncommon for regulated businesses, it does require a robust system of timesheeting, good protocols on time allocation against the correct code, and a strong culture of accurate reporting.

4.7 Breakdown of operating expenditure by activity group

Figure 3 presents a breakdown of DPI Water's operating expenses by activity group over the forecast period. The pie chart shows that over the forecast determination period a significant portion of DPI Water's expenditure is attributable to Water management planning, Surface water monitoring, Water management implementation and Water regulation management. These activities collectively account for two thirds (or 67%) of operating expenditure over the forecast period.

Figure 3 Forecast operating expenditure by activity group, 2016-17 to 2020-21 ($2015-16)



Note: Graph shows breakdown of total operating expenditure (as opposed to user share)
Data source: DPI Water AIR (W-codes)

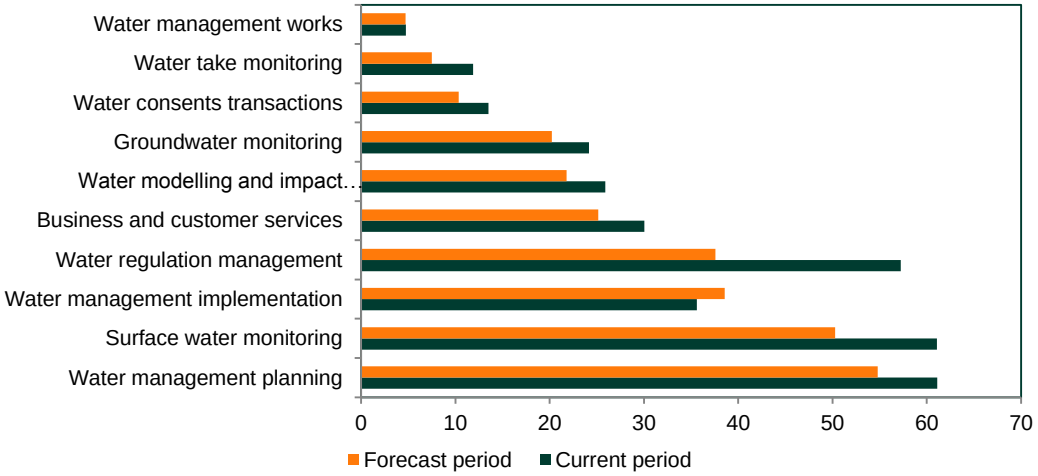
4.7.1 Changes in activity costs moving from current to forecast period

For most activity groups, expenditure is forecast to decline in real terms over the next five years (Figures 4 and 5). The greatest forecast decline in expenditure is for Water regulation management ($19.7 million lower) and Surface water monitoring ($10.8 million lower). As discussed in section 4.4.4, DPI Water is expecting a considerably lower work load associated with *Water Act 1912* licence conversion in the forthcoming

regulatory period, which is the principal reason why costs are forecast to be lower for Water regulation management.

Water management implementation is the only activity group for which expenditure is forecast to increase. DPI Water notes that this is due to a significant increase in required assessment and evaluation of WSPs over the forecast period and an increasing focus on the strategic development of environmental water strategies as the amount of licenced environmental water grows. While expenditure on this activity has increased, some of the reported increase is misleading because DPI Water has noted in its submission that staff time for water management implementation was under-reported in the first three years of the current determination (time was misallocated to other activity codes). Synergies has been unable to quantify the dollar value of this misallocation.

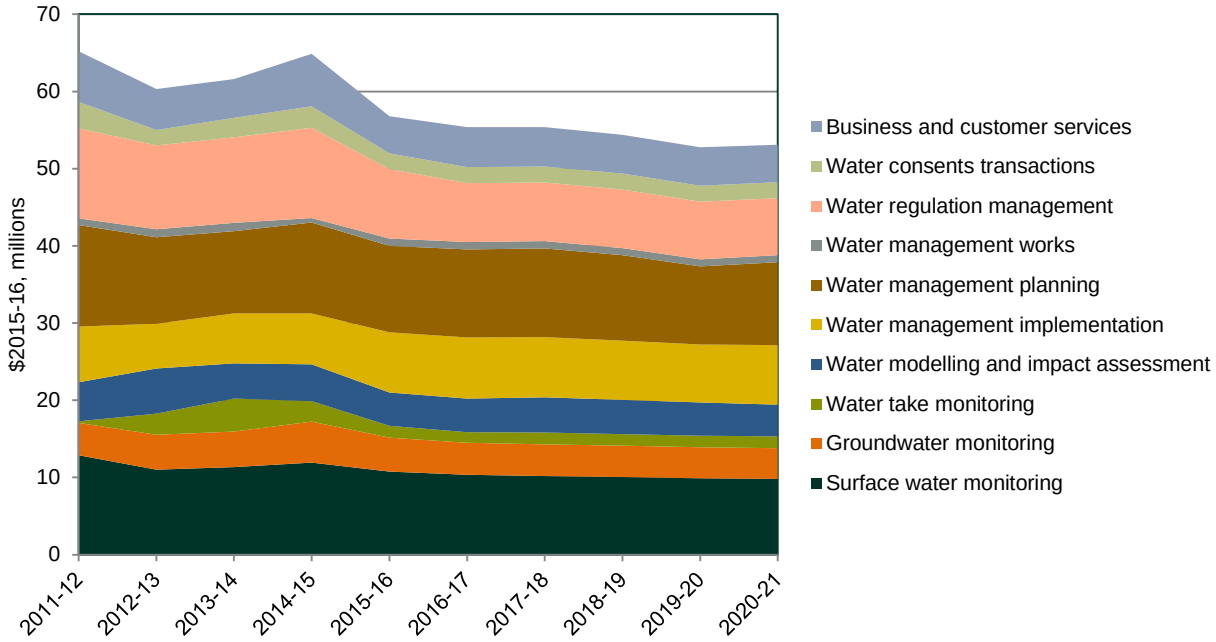
Figure 4 Total operating expenditure for the current and forecast determination period, by activity group, $2015-16 millions



Note: The current determination period extends from 1 July 2011 to 30 June 2016. The forecast period for the current review refers to the next five year period from 1 July 2016 through to 30 June 2021. Graph shows total operating expenditure (as opposed to user share)

Data source: DPI Water AIR

Figure 5 Annual total operating expenditure for the current and forecast determination period by activity group, $2015-16 millions



Note: The current determination period extends from 1 July 2011 to 30 June 2016. The forecast period for the current review refers to the next five year period from 1 July 2016 through to 30 June 2021. Graph shows total operating expenditure (as opposed to user share)
Data source: DPI Water AIR

4.8 Alignment of expenditures to strategic priorities and legislative functions

Synergies has examined whether the pattern of forecast expenditure across activities is commensurate with DPI Water's legislative functions and strategic priorities for water management in NSW over the next five years. In undertaking this task, Synergies considered:

- Information provided by DPI Water in its pricing submission relating to the monopoly services provided over the current determination period, the monopoly services that are proposed over the forecast period, the mapping between old and new services, and the justifications or drivers for these services. This information was used to assess the scope of monopoly services provided by DPI Water.
- DPI Water's legislative requirements and responsibilities, and any other drivers or determinants of its monopoly services – including the extent to which these drivers may change over time.

- The extent to which DPI Water's proposed services are mandatory (eg, a clear legislative requirement where there is only one option available to comply with this requirement in the timeframe proposed) versus discretionary
- The range of options available to achieve water management outcomes or legislative requirements, and the most efficient means of achieving these outcomes or complying with requirements.

4.8.1 Legislative functions

DPI Water's primary legislative function is to administer the WMA. The objective of the WMA is the sustainable and integrated management of the state's water for the benefit of both present and future generations.

The WMA establishes a system of rights to water and a system for the water approvals required for the construction and use of water supply works. Statutory water sharing plans specify how water is shared between the different kinds of rights and how licences and approvals are administered.

The development, operation and review of WSPs by DPI Water contributes to achieving the objectives of the WMA. Other operational management activities required to achieve those objectives include water consent transactions, compliance, operational water sharing and accounting and environmental water management.

The WMA currently covers most NSW water licences. The remainder are provided under the *Water Act 1912*, which is being phased out with the progressive commencement of WSPs.

In 2014 the Metropolitan Water Directorate was brought back in to DPI Water, following a separation in 2011. The Metropolitan Water Directorate leads water planning for the greater Sydney and lower Hunter regions.

4.8.2 Strategic priorities in water management

In addition to its legislative obligations under the WMA, DPI Water is required to perform a number of roles under federal legislation and intergovernmental agreements. These include;

- Obligations under the *Water Act 2007* to implement the Basin Plan, including by developing and operationalising WRPs – DPI Water is required to complete 22 MDBA accredited WRPs by 2019

- Statutory obligations under the *Water Act 2007* with regard to Bureau of Meteorology activities, including providing continuous electronic data for a national water information system and participating in the jurisdictional reference group on water information and the national water accounting committee
- Enabling the Commonwealth to use environmental water entitlements to direct water to specific environmental needs downstream, a process known as water shepherding, as agreed in a memorandum of understanding between the NSW and Commonwealth governments in July 2010
- Implementing the National Framework for Compliance and Enforcement Systems for Water Resource Management as part of the National Water Initiative. While funding and reporting requirements for this project will cease in June 2016, DPI Water is required to ensure that its compliance activities continue to be consistent with the national framework
- Implementing the National Framework for Non-urban Water Metering as part of the National Water Initiative. DPI Water has installed compliant meters in some NSW river valleys using a Commonwealth grant and is developing a water take strategy to ensure water take measurement is compliant with the framework while also being risk based and cost effective.
- Implementing the 2013 NSW Floodplain Harvesting Policy by developing five floodplain management plans and licencing water extractions from designated floodplains.

4.8.3 Expenditure alignment

At a high level, DPI Water's proportional allocation of operating expenditure across activity groups aligns with its legislative functions and the strategic priorities for water management in NSW.

Water management planning remains one of the highest cost activities, reflecting its core role in delivering DPI Water's legislative obligations. DPI Water's strategic priorities for planning are shifting from the development and implementation of WSPs, to a period of review, plan amalgamation, and refinement. From Synergies' perspective, seeking efficiencies in WSP reviews should be one of DPI Water's priorities.

Water management implementation is another activity that accounts for a significant and growing proportion of DPI Water's operating expenditure. This is consistent with the agency's increasing role in water plan implementation as opposed to WSP development.

Findings:

At a high level, Synergies is satisfied that DPI Water's forecast expenditure aligns to the service obligations and strategic priorities contained in the submission.

4.9 Appropriateness of cost drivers

Cost drivers are the means by which a share of monopoly service costs are allocated to each pricing water source.

DPI Water has made significant revisions to its cost drivers, with most costs proposed to be driven by a different cost driver than under the 2011 Determination. Table 8 provides a side-by-side comparison of cost drivers over the current determination period compared to those proposed for the forecast period. In each case (current versus proposed) the cost drivers are ranked according to the amount of operating expenses that are allocated through each driver. The left hand side column shows the proportion of expenditure over the current determination period that is allocated by each (former) driver. The right hand column shows the proportion of expenditure over the forecast period that will be allocated by each proposed driver.

Table 9 Cost drivers, ranked by proportion of expenditure allocated through each driver

Existing drivers		% of costs (2011-12 to 2015-16)	Proposed drivers		% of costs (2016-17 to 2020-21)
S18	Water planning, number of plans and complexity	17.2	S37	Total water take	13.0
S02	Number of water licences	13.4	S58	Relative cost of DPI Water funded hydrometric stations	9.5
S04	DWE funded water gauging stations	12.6	S59	Compliance risk profile number of licences	7.9
S10	Active monitoring bores	8.7	S10	Relative cost of pipes monitored	7.1
S20	Extraction related entitlement	7.0	S17	Water Operations (FTEs and complexity)	6.9
S03	Entitlement then numbers of access licences	6.3	S55	Planning inland (water take)	6.3
S88	Consent transactions	5.4	S61	Surface water modelling (models)	5.8
S08	Water modelling and impact assessment	5.1	S88	Consent transactions	5.1
S01	Billed entitlement	4.3	S02	Number of water licences	4.6
S14	Bills issued per annum	3.6	S27	Water quality tests	4.5
S17	Water Operations (FTEs and complexity)	3.6	S38	Regional planning/management strategies	4.2
S13	Meter readings	3.1	S18	Water planning, number of plans and complexity	3.7
S07	DWE funded water quality sampling events	2.6	S50	Number of customers	3.3
S22	Extraction related entitlement	2.0	S05	All water sites with data collected for data management	2.8
S12	Water quality tests	1.8	S14	Bills issued per annum	2.7
S91	Water management works ($s)	1.5	S31	Numbers of work approvals with meters	2.3
S16	Blue-green algae samples	0.8	S42	Environmental entitlements	1.8
S06	Ecology, biology and algal sampling events	0.8	S91	Water management works ($s)	1.7
S23	Entitlement	0.2	S57	National commitments weighted water take	1.7
			S44	Groundwater models	1.4
			S28	Water algal tests	1.3
			S41	Risk-rated blue-green algae alerts	0.9
			S35	River length	0.5
			S56	Two part water take	0.5
			S29	Number of quality tests	0.4
			S34	Drainage plans	0.1

Source: Supplementary data provided by DPI Water

The key changes to cost drivers proposed by DPI Water are:

- The total number of cost drivers has increased; 26 separate cost drivers are used to allocate costs for the 33 W-code activities, compared with 19 cost drivers to allocate costs from the 36 C-code activities under the 2011 Determination.
- Total water take, which was not a cost driver under the 2011 Determination is now proposed to be the primary driver, used to allocate 26.4% of costs, either directly or indirectly. The use of water take in cost drivers has been facilitated by the availability of a water take dataset that was not available for the 2011 Determination. Given the importance of this dataset, it has been reviewed by Synergies in section 4.10.
- There is considerably less use of Water planning, number of plans and complexity as a driver. This driver was the primary driver under the current determination but is proposed to be used to allocate just 4% of costs over the forecast period, down from 17% over the current determination period. It has been replaced by measures said to be more strongly relating to incidence of costs, including the Planning inland (water take), Drainage plans and Regional planning/management strategies cost drivers.
- Entitlement-related cost drivers (S01, S03, S20, S22, S23 and S38) are no longer significant drivers and are proposed to be used to allocate just 6% of costs, down from almost 20% under the current determination. Total water take has largely replaced this cost driver.

The changes proposed by DPI Water appear to be mostly sensible. Efforts have been made to replace those drivers that were relatively weak proxies for explaining the incidence of costs with a stronger proxy. However, we hold concerns for the significant shift to using water take as a primary cost driver for eight activities. Our concerns are set out below.

4.9.1 Reservations about water take as a cost driver

Total water take is defined by DPI Water as the sum of measured water take and estimated water take in a given pricing water source. Measured water take volumes are available for entitlement charge licences on a 2-part tariff and water take charge only licences. Estimates of water take have been made for entitlement charge licences on a 1-part tariff (i.e. mostly unregulated and groundwater sources).

The water take cost driver is based on average, forecast water take using between eight and 20 years of historical water take data (depending on water pricing source). However, for the Lowbidgee part of the regulated Murrumbidgee pricing water source, and all unregulated pricing water sources, just one to four years of data is used.

Allocating costs to water sources in proportion to total water take represents a significant shift from current practice, where entitlement volume is used as a principal cost driver, defined as the quantity of share component for *entitlement charge licences*.

As identified by DPI Water,[32] the shift to total water take reduces the cost allocation to pricing water sources where activation of share component is low,[33] 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.

DPI Water states in its submission that it has a preference for total water take as a cost driver over entitlement volume for eight of its 33 activities. But until recently, reliable water take data were only available for regulated water sources, meaning that entitlement volumes had to be used as a second-best cost driver for allocating costs to unregulated and groundwater pricing water sources. DPI Water is now confident that the water take estimates for unregulated and groundwater are sufficiently reliable such that total water take can be adopted and applied more broadly to all three water sources (regulated, unregulated and groundwater).

However, the expressed preference for total water take is at odds with other statements made by DPI Water about the role of water take in driving costs. DPI Water (formerly NOW) has previously argued in its 2009 pricing submission to IPART that its costs are mostly fixed and do not vary with the volume of water consumed. At the time, it was calling for a move to a 100% fixed pricing regime.[34] While DPI Water is no longer calling for a 100% fixed regime in its current submission (instead opting to continue implementing a 70:30 fixed/variable two part tariff), it has reiterated that its cost structure is largely fixed and is not directly related to water availability.[35] This being the case, DPI Water's decision to expand water take as a measure for allocating costs to different pricing water sources appears contradictory.

Any change from the current drivers needs to be demonstrably superior to justify the disruption to prices that result. Thus, DPI Water's proposal to shift to total water take needs to be underpinned by a compelling rationale – be that an improvement in efficiency, practicality or perceived fairness. Otherwise the change will simply represent a move from one set of subjective drivers to another set of subjective drivers, with no

[32] DPI Water submission, page 187

[33] The activation rate is the volume of water take as a percentage of the quantity of share component (where share component is equivalent to licensed entitlement volume)

[34] See NOW's 2009 pricing submission, page 58

[35] DPI Water submission page 213

added precision in cost allocation. Our counsel is to leave the existing drivers (from the 2011 Determination) intact unless there is a compelling case for change.

In assessing the case for change, the method for allocating costs should satisfy the following criteria:

- *Causation.* There should be some causal link between the cost and the preferred allocator. If the driver could change cost allocation across time, then the case for establishing causation is even more important. Causation is often difficult to determine empirically, and inevitably involves some judgement.
- *Practicality and reliability.* The allocation method must be practical to implement. In particular, the preferred driver must be able to be calculated from available data, which is reliable.
- *Limit the degree of cross subsidisation of costs to an acceptable range*. The cost allocation method should result in each pricing water source bearing a share of water management costs that lie at some point between the stand-alone cost of servicing a given source area and the incremental costs of the activities being allocated.
- *Price signals.* The allocation method should give sensible price signals to users about the costs they impose from their decisions. While this is usually the role for tariffs, signals still exist through the amount of cost allocated and therefore the level of prices.

Synergies has applied these criteria in our assessment of total water take and we conclude that there is not a strong case for adopting water take over entitlement as a cost allocator. Water take forecasts are likely to be significantly more variable from one regulatory period to the next, leading to different cost allocation outcomes. While this would be acceptable if costs are causally related to water take, we find that this is not the case for the majority of activities.

One option is to retain the existing set of cost drivers for the eight activities, where costs are allocated through entitlement volumes of unregulated and groundwater and through water take for regulated water sources. But if this is resulting in unacceptable levels of cross subsidisation between water pricing sources, an alternative option would be to allocate the costs for all eight activities using a reliability-weighted entitlement measure. This would be defined as the volume of share component for a water access licence weighted by the long term reliability of water availability in a pricing water source (for example, the percentage of time that the full entitlement volume for a share component is available in any given water year).

Entitlement reliability information is available through the Integrated Quantity and Quality Model (IQQM), which uses 100 plus years of observed climate data to simulate the allocation and use of water. A shorter, more recent run of years, could be used for the purpose of establishing the reliability weights if it is considered prudent to take account of climate change (but not too short so as to give rise to large fluctuations in the reliability weights from one regulatory period to the next).

Under this approach, costs would be allocated to a pricing water source, independently of total water taken. A higher share of costs would be allocated to those pricing water sources that have relatively high-reliability entitlement. While the reliability weighted entitlement volume should correlate with long term, total water take for a given water pricing source, the two measures are likely to diverge over the shorter term due to seasonal conditions, the business decisions of water users around the percentage of annual water allocation to take, and water allocation trade

4.9.2 Appropriateness of the other proposed cost drivers

Synergies has reviewed the proposed cost drivers for each activity. The review is limited to an 'in principle' assessment as opposed to a detailed assessment of the cost-driver dataset.

W01-01 Surface water quantity monitoring

DPI Water has changed the cost driver for this activity from *Number of DPI Water funded hydrometric stations* to *Relative cost of DPI Water funded hydrometric stations*. This is effectively a refinement of the current driver to account for the relative cost of stations rather than just the numbers of stations and is an improvement.

W01-02 Surface water data management and reporting

All water sites with data collected for data management is the cost driver used under both periods and is appropriate. DPI Water indicates that it has improved the dataset for the forecast period.

W01-03 Surface water quantity monitoring

The *Number of sampling events at key sites* cost driver has been replaced with *Water quality tests*. The new cost driver better accounts for the broader costs of the activity.

W01-04 Surface water algal monitoring

Number of ecology/biology/algal sampling events has been replaced by *Water algal tests*. The proposed cost driver more appropriately targets the costs of this activity.

W01-05 Surface water ecological condition monitoring

River length is an appropriate driver of this activity, which is dependent on the length of rivers monitored.

W02-01 Groundwater quantity monitoring and W02-03 Groundwater data management and reporting

The *Number of active monitoring bores* cost driver has been refined and is now labelled *Relative cost of pipes monitored*. DPI Water has sensibly refined the current driver to account for the relative cost of pipes rather than just the numbers of bores, noting a bore may relate to several pipes.

W02-02 Groundwater quality monitoring

Entitlement as a cost driver has been replaced with *Number of quality tests*. The change in cost drivers is sensible and is facilitated by the availability of a new dataset.

W03-01 Water take data collection

Costs are recovered on a fee for service basis so a cost driver is not relevant for this activity.

W03-02 Water take data management and reporting

Meter readings has been replaced by *Two-part water take*. This activity involves data management and reporting of water take for unregulated and groundwater sources including compilation, secure storage, management and publishing of data to authorised parties. The volume of water take would have a direct influence on the need for this activity in a pricing water source, and hence the scale of costs incurred. In areas that have low entitlement activation rates, it would be reasonable to expect that costs for this activity would be proportionately lower

W04-01 Surface water modelling

DPI Water state the proposed *Surface water modelling (models)* cost driver is similar to the current *Water modelling and impact assessment* cost driver, with both based on "the number and relative staff resource requirement of surface water modelling for each valley [i.e. pricing water source]… except that the second stage of the [proposed] cost driver uses forecast water take instead of licensed entitlement."

Synergies found no evidence that water take has factored into the proposed cost driver, rather it appears to be solely based on the assessment of "the number and relative staff resource requirement of surface water modelling for each valley [i.e. pricing water

source]." This assessment appears to be fairly simplistic but is more detailed than under the previous cost driver.

W04-02 Groundwater models

DPI Water proposed to replace the existing *Number of active monitoring bores* cost driver with a modelling-specific cost driver – *Groundwater models*, defined as the number and relative staff resource requirement for modelling groundwater in a pricing water source. This revised cost driver is appropriate as it more closely reflects the expected level of staff resources assigned to groundwater modelling in each of the inland and coastal areas. The revised cost driver also brings groundwater modelling into alignment with surface water modelling, which currently uses relative shares of staff resources for modelling as the cost driver.

W04-03 Water resource accounting

While DPI Water refer to this activity as 'new' it effectively had a water entitlement cost driver under the 2011 Determination. *Total water take* is the new cost driver proposed for this activity. Synergies' assessment is that the cost of water resource accounting is only weakly related to water take. There is a possible link if DPI Water prioritises its accounting effort to those areas where water take is highest. On balance, our assessment is that the cost of this activity is not strongly influenced by water take.

W05-01 Systems operation and water availability management

The same *Water operations (FTEs and complexity)* cost driver is used, though with an updated dataset.

W05-02 Blue-green algae management

The new *Risk-related blue-green algae alerts* cost driver better reflects the incidence of blue-green algae management costs than the previous *Blue-green algae standard sampling profile*. This is based on DPI Water advice that areas with a higher incidence of risk alerts incur higher blue-green algae management costs.

W05-03 Environmental water management

The new *Environmental entitlement* cost driver is better targeted by focusing on environmental entitlement rather than entitlement as a whole, as under the *Entitlement* cost driver.

W05-04 Water plan performance assessment and evaluation

DPI Water has indicated there are problems with the *Water planning, number and complexity dataset*. As such, *Total water take* is proposed as the preferred cost driver. Synergies does not concur with this. The cost of this activity is not related to volume of water take.

W06-01 Water plan development (coastal)

DPI Water give inconsistent information regarding the cost driver for W06-01. While the submission indicates *Total water take* is proposed as the cost driver for this activity (due to issues with the *Water planning, number and complexity dataset*), the information return and supplementary data sources reveal W06-01 is still being driven by *Water planning, number and complexity*. This aside, the cost of a water plan is likely to be driven by a range of factors, including environmental needs, water storage asset configuration and features, number of water users, the scarcity of water for the consumptive pool, hydrologic complexity etc. Water take is a poor proxy for these factors.

W06-02 Water plan development (inland)

As for W06-01, total water take would appear to be a poor choice of driver for allocating water planning costs across areas.

W06-03 Floodplain management plan development

As with W06-01 DPI Water give inconsistent information regarding the cost driver for W06-03. While the submission indicates *Floodplain management plans* is proposed as the cost driver for this activity, the information return and supplementary data sources reveal W06-03 is being driven by *Water planning, number and complexity* over the forecast period.

W06-04 Drainage management plan development

The proposed *Drainage plans* cost driver for this activity appears appropriate as it directly relates to the incidence of costs by pricing water source.

W06-05 Regional planning and management strategies

DPI Water proposes to use water entitlement held by utilities and industry (including primary industry) as the cost driver for this activity, as activity costs are said to be mainly influenced by increased demand from utilities and industry. This appears reasonable. A two-stage process is applied. First, costs are only allocated to those pricing water sources that are expected to require a regional water strategy (or metropolitan plan review) over

the forthcoming regulatory period. Second, a pro rata share of these costs is allocated according to entitlement volumes held in each area.

W06-06 Development of water planning and regulatory framework

This activity involves the development of the operational and regulatory requirements and rules for water access. DPI Water has proposed changing the cost driver from *Entitlement* to *Total water take*. We consider that the cost of this activity bears little or no relationship to the volume of water take in a region. Instead, costs would be a function of the number (and possibly complexity) of regulatory instruments and policies developed or amended which relate to a given pricing water source.

W06-07 Cross border and national commitments

DPI Water proposes changing the cost driver for this activity from *Entitlement* to *Total water take*. This activity involves the development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments. A disproportionate amount of cost of this activity will be incurred in inland pricing water sources. DPI Water has accounted for this by weighting the allocation of cost more heavily for these areas (through a doubling of the water take weight). While this is sensible, it is not clear how the cost of this activity is related to water take volume. It represents a largely fixed cost.

W07-01 Water management works

The *Water management works* cost driver for this activity is unchanged and appropriate. Synergies notes DPI Water have made improvements to the dataset since the 2011 Determination (inclusion of salt interception schemes).

W08-01 Regulation systems management and W08-02 Consents management and licence conversion

DPI Water has not changed the cost driver for these activities since the 2011 Determination. The *Number of water licences* cost driver remains appropriate.

W08-03 Compliance management

DPI Water has refined the cost driver from *Entitlement and number of licences* to *Compliance risk profile number of licences* to better account for riskier pricing water sources. This is appropriate.

W08-99 Water consents overhead

DPI Water has not changed the *Consent transactions* cost driver for this activity since the 2011 Determination.

W09-01 Water consents transactions

Costs are recovered on a fee for service basis so a cost driver is not relevant for this activity.

W10-01 Customer management

Number of customers may be an appropriate cost driver for this activity, however Synergies consider DPI Water have not adequately justified this cost driver. For example, customer management costs may be more influenced by customer type that number.

W10-02 Business governance and support

DPI Water is proposing to change the cost driver from *Extraction related entitlement* to *Total water take.* This activity involves the operation of business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART. This is clearly a fixed cost that is unrelated to water take volume.

W10-03 Billing management

The same *Bills issued per annum* cost driver is used and the cost driver dataset has been improved.

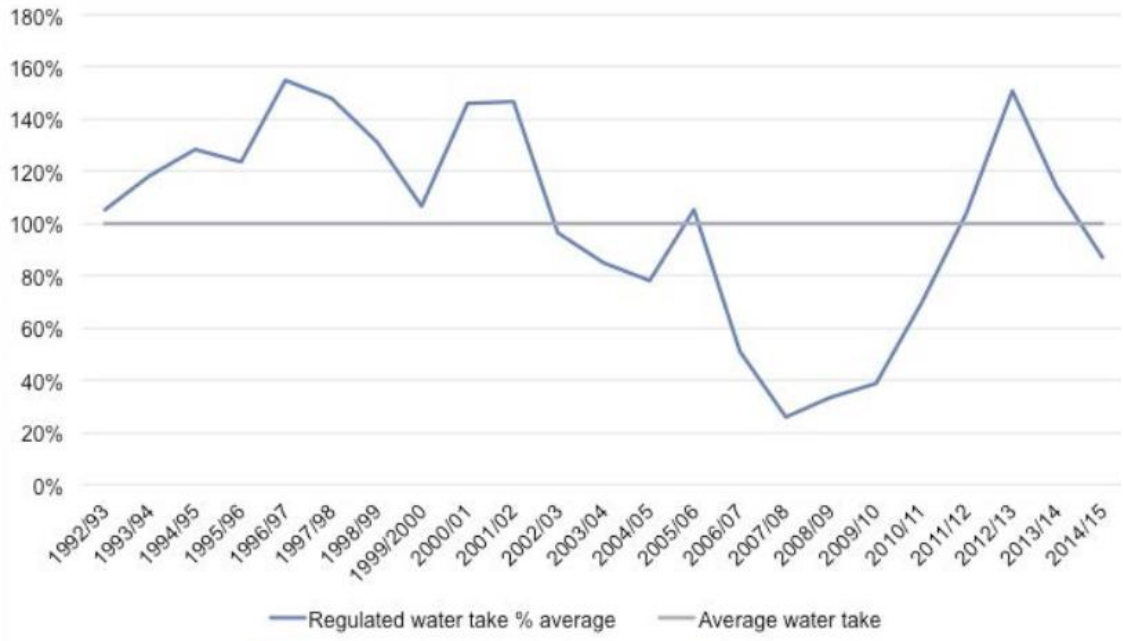
4.10 Assessment of water take forecasts

Water take cost drivers use a single water take forecast year to allocate costs for all years. DPI Water has produced a water take volume dataset, which is used as a cost driver or to inform cost drivers for a number of activities. The activities that rely on water take to allocate costs between pricing water sources account for more than a quarter of total expenses.

The water take dataset is based on historical averages of water take by pricing water source. For most regulated and groundwater pricing water sources this approach is sound, as between eight and 20 years of historical water take data is used to estimate average water take in these pricing water sources. However, for the Lowbidgee part of the regulated Murrumbidgee pricing water source, and all unregulated pricing water sources, just one to four years of data is used to estimate average water take.

The use of one to four years data in these water sources impairs the reliability of the dataset as it reduces confidence in the average water take estimates. Confidence in the accuracy of the average water take estimate is reduced because of the high variability in annual water take. Variability in annual water take is shown in Figure 6, which is taken from DPI Water's submission.

Figure 6 The variability of regulated river total water take compared to the average take



Data source: DPI Water submission, Figure 8.1, page 207

Figure 6 shows that total regulated river water take has varied by between 26 and 155 per cent of 20-year average water take since 1992-93. This variability is likely to be exacerbated for individual pricing water sources and for unregulated pricing water sources, which are more dependent on high flow events.

The weakness in the dataset has several implications:

- Average water take estimates based on one to four years data are unreliable for informing cost drivers for those pricing water sources
- This has flow-on effects to the reliability of costs allocated to other pricing water sources. The allocation of costs to one pricing water source impacts the costs remaining to be allocated to all other pricing water sources.

Notwithstanding our in principle concerns about the use of water take as a cost driver, if it is to be adopted more widely as a driver we recommend that the quality of the water take dataset be improved.

For those pricing water sources with less than eight years of historical data, an alternative is to synthetically estimate a 20-year average water take based on historical water take data from similar pricing water sources. For example, Lowbidgee water take might be expected to move broadly in line with water take from the Murrumbidgee. Using the synthetically created 20-year average is likely to give a more accurate estimate of average water take. This is particularly true if the small amount of data available includes outlier years such as 2012-13, in which regulated water take was around 150% of the long term average. For the Lowbidgee, this changes the average water take from 61,174 ML to 44,500 ML.

Findings:

The shift towards total water take as a driver for allocating costs to pricing water sources should be reconsidered. There is only a weak or non-existent relationship between total water take and cost of service. Furthermore, adopting water take will likely introduce greater variability in cost allocation (and hence prices) from one regulatory period to the next. We recommend against increased use of water take as a cost driver and instead retain entitlement volume, or potentially a reliability-weighted form of entitlement.

To the extent that water take continues to be used as a cost driver, Synergies recommends that the quality of the water take dataset be improved, including consideration of:

- *Synthetically estimating a 20-year average of Lowbidgee water take based on the available 3 year average of Lowbidgee water take and the 20 year average of Murrumbidgee water take.*
- *Synthetically estimating unregulated pricing water source water take based on equivalent regulated pricing water source water take and available historical unregulated pricing water source water take.*

5 Detailed analysis of selected activities

This section provides the key findings from a detailed efficiency review of four of DPI Water's activities:

- Surface water quantity monitoring;
- Systems operation and water availability management;
- Water plan development (comprising two individual activities, 'coastal' and 'inland' plan development);[36] and
- Compliance management.

The outcomes from this review are used to identify any specific savings that can be made in those four activities, and whether the findings can be extrapolated more broadly to other activities. The next section (section 6) then provides analysis and recommendations for efficiency across all activities.

5.1 Overview of the sample

Collectively, the four activities selected for detailed analysis account for 16% of water resource management activities by number (five W codes out of 31 activities)[37] and 36.5% of total operating costs over the forthcoming period.

Table 10 summarises key statistics for each activity. It highlights a number of key trends that are investigated in this section.

- Proposed expenditure on 'surface water quantity monitoring' is 28.3% lower in the forecast period, compared with the current determination period,
- Similarly, forecast expenditure on 'water plan development' is substantially lower (25.6% less),
- In contrast, forecast expenditure for 'systems operation and water availability management' and 'compliance management' are both higher (53.8% and 8.3% higher respectively).

[36] While in the current determination DPI Water's activity codes counted all water sharing plan development under one code (C07-01), this activity has now been split across a number of codes. Synergies has examined coastal and inland water sharing plan development (W05-01 and W05-02).

[37] The totals exclude water consent transactions (W09-01) and water take data collection (W03-01) as the cost of these activities is recovered on a fee for service basis.

Table 10 Summary statistics for activities assessed for detailed analysis

Activity	User share	Correspond-ing C-codes	% of forecast expenditure, five years to 2020-21	% change in forecast expenditure relative to current determination period	Number of direct FTEs in 2014-15	Forecast increase in FTEs relative to 2014-15
Surface water quantity monitoring (W01-01)	70%	C01-01 C01-06	10.1%	-28.3%	35.2	-20.6%
Systems operation and water availability management (W05-01)	100%	C06-01 C06-02	7.4%	53.8%	17.6	30.3%
Water plan development (W06-01 and W06-02)	70%	C07-01 C07-05	10.6%	-25.6%	38.3	11.0%
Compliance management (W08-03)	100%	C09-03	8.4%	8.3%	23.5	10.4%
Sample total			**36.5%**	**-10.8%**	**114.7**	**-3.2%**

Note: There is a significant discrepancy in reported operating expenditure for water plan development when using the C-code AIR, compared with the W-code AIR for 2015-16. This means comparisons between determination periods are not reliable.

The assessment is based on total operating expenditure (as opposed to user share)

Source: DPI Water

5.1.1 Staffing trends

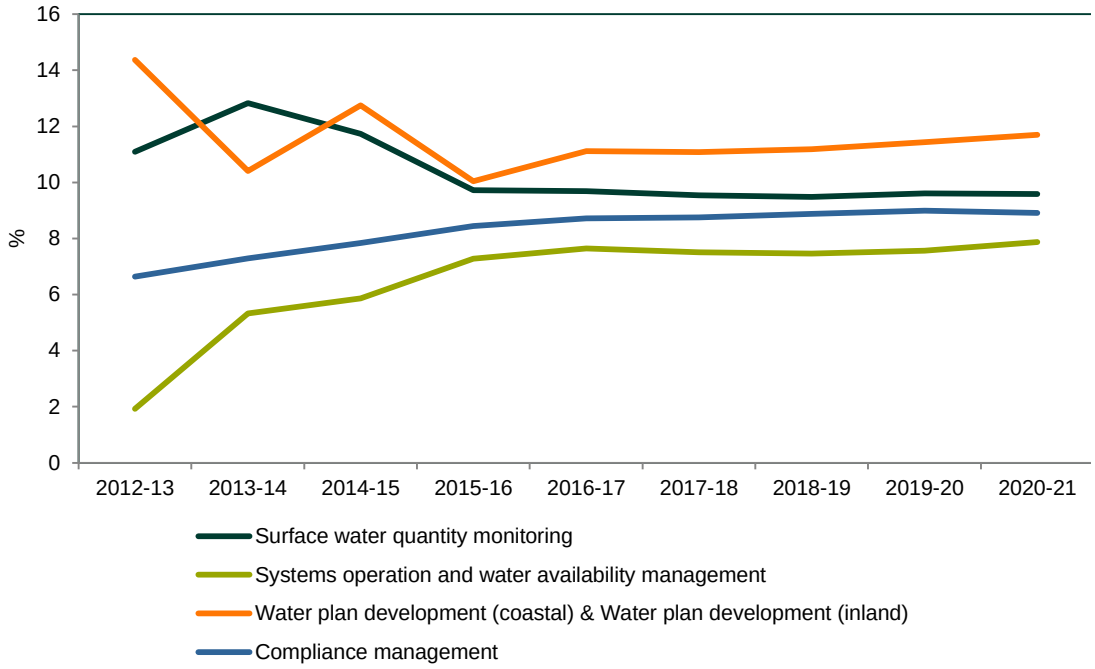
Figure 7 shows trends in the level of staff resources (FTEs) assigned to each activity over the current determination period and over the forecast period. Staffing levels are presented in relative terms – that is, the proportion of FTEs assigned to a particular activity as a percentage of total FTEs assigned to water management services (excluding water consent transactions and water take measurement).

The data show that over the current determination period, staffing levels for compliance management and systems operation and water availability management have risen in relative terms. The proportional allocation of FTEs then stabilise over the forecast period.

Water plan development is shown to have experienced declining staff levels over the current determination period through to 2015-16, but FTE input to this activity is proposed to rise again (in relative terms) over the forecast period – although not to the former level of 14% that was reported for 2012-13.

Surface water quantity monitoring also experienced a decline in relative staffing levels over the current determination period, but relative FTEs are proposed to stabilise at about 10% of total water management services FTEs over the forecast period.

Figure 7 FTE trends for selected activities
(Expressed as a % of total water management services FTEs)



Data source: DPI Water supplementary information

5.2 Surface water quantity monitoring

5.2.1 Activity description

Table 11 Activity code mapping – Surface water quantity monitoring

		C code activities		
W code	**User share**	**C codes**	**% of C code in W code**	**C code user share**
W01-01	70%	C01-01 Surface water quantity monitoring	100%	70%
		C01-06 Surface water monitoring assets management	100%	70%

Note: C01-01 and C01-06 are not mutually exclusive activities. Over the current determination period, DPI Water has advised that some of the costs for C01-06 were attributed to C01-01 (see page 56 of Submission)

Source: DPI Water submission

DPI Water has a legislative obligation to maintain reliable information on the quantity and distribution of surface water resources for the purposes of informing the operation of water sharing plans. This activity is core business for DPI Water and satisfies legislative requirements under the WMA and the *Water Act 2007*.

DPI Water owns a network of 900 hydrometric stations to monitor water levels and flow rates in regulated and unregulated rivers across the state. Only a portion (534) of these provide information for the operation of WSPs, monitoring licence compliance or water modelling.

Flow rate information is also used by a range of customer groups: Irrigators to assist with farm production decisions and maintaining compliance with licence conditions relating to water take; WaterNSW for operating the regulated river system; local councils for the purpose of flood warning; and the Bureau of Meteorology. This information is provided to third parties on a fee for service basis. It does not form part of the regulated monopoly service.

For future pricing and cost recovery purposes, DPI Water has based its forecast revenue requirement on a reduced number of hydrometric stations. It has identified 459 stations (of the 534) that are deemed to be 'mandatory' for its own operations and for servicing the needs of water users (with The other 75 have been classified as 'discretionary' stations that provide data primarily for the Bureau of Meteorology and are therefore not costed to the water management charge in the forecast period.

Of the 459 mandatory stations, 29 are for DBBRC, resulting in a 430 stations being assigned to the regulatory cost base. Synergies has examined DPI Water's cost allocation model and is satisfied that the cost of the 29 DBBRC stations is being recovered only once – that is, through the DBBRC water management charge.

During the previous and current determination periods (October 2008 to March 2012), DPI Water undertook the Hydrometric Network Expansion (HNE) project, a $6 million capital project funded by the Commonwealth, and a $3 million renewals program funded by the Bureau of Meteorology (BoM). Under the HNE project, 59 new hydrometric stations were constructed and existing hydrometric stations were upgraded to telemetry.[38] The new stations were required to provide information for implementing new WSPs. Telemetry allows data to be updated continuously, which is an improvement on the previous system, which usually received data only once per day.. The NSW Government committed to ongoing funding of approximately $1.9 million per year to cover operational and maintenance costs.[39]

[38] New South Wales Government Office of Water (2012). *Hydrometric Network Expansion Project: Project Completion Report*, March 2012. The number of new sites was reduced from an initial scope of 128 to better reflect requirements under water sharing plans.

[39] New South Wales Government, *Australian Government Water Fund Proposal: NSW Hydrometric Network Expansion*, provided to Synergies on 23 October, 2015

The addition of telemetry allows flow rate data to be accessed in near real-time through the internet and mobile app. There are currently 300 stations that have been upgraded to transmit data via telemetry. DPI Water has a policy of upgrading 5% of sites each year (this target was achieved in 2014-15) and is moving towards automated date collection from all stations.[40]

A key driver of expenditure on the hydrometric network has been operational changes aimed at increasing the frequency and accuracy of river flow measurement. DPI Water reports that the delivery of accurate and reliable streamflow data is required for implementing WSPs. Synergies was advised that this is particularly important when flow rates approach the 'cease to pump' trigger, so that water can be allocated according to agreed water sharing rules.[41]

DPI Water advises that upgrading a station to telemetry does not replace the need to visit a station or reduce the frequency of visits. The stations are visited for calibration and validation of collected data to ensure they are functioning correctly. Over the current determination period, the average number of site visits increased from 3.5 times per year to 4.8 times per year. This is below the target of 6 visits per year, which had been initially planned.[42] We understand that a condition of the BoM funding was that the DPI Water must continue to operate the sites to national standards, which calls for an average of six visits per year to each site.[43]

The increased visitation rate is reportedly driven by the need to ensure stations function at critical times, such as when levels are close to the 'cease to pump' trigger level contained in the relevant WSP. Complex and higher risk stations are visited more often than the average, with 45 stations each visited 7 to 14 times per year.

DPI Water also reports that it has improved the standard of information collected. It appears that these improvements have been achieved through a number of changes to service delivery, including increasing the number of hydrometric stations, adding telemetry, installing new acoustic-doppler meters and increasing the average number of site visits.[44] The first three elements relate to capital expenditure and Synergies understands this was partly externally funded with in kind contributions from DPI Water. The ongoing cost of increasing the number of site visits is recovered through the water management charge.

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40 DPI Water Final Appendix L report, page 1

41 DPI Water Final Appendix L report, page 2

42 DPI Water Final Appendix L report, page 1

43 PwC (2010) *Review of NSW Office of Water's water management expenditure*, Report to IPART, June 2010

44 DPI Water submission, pages 56, 126

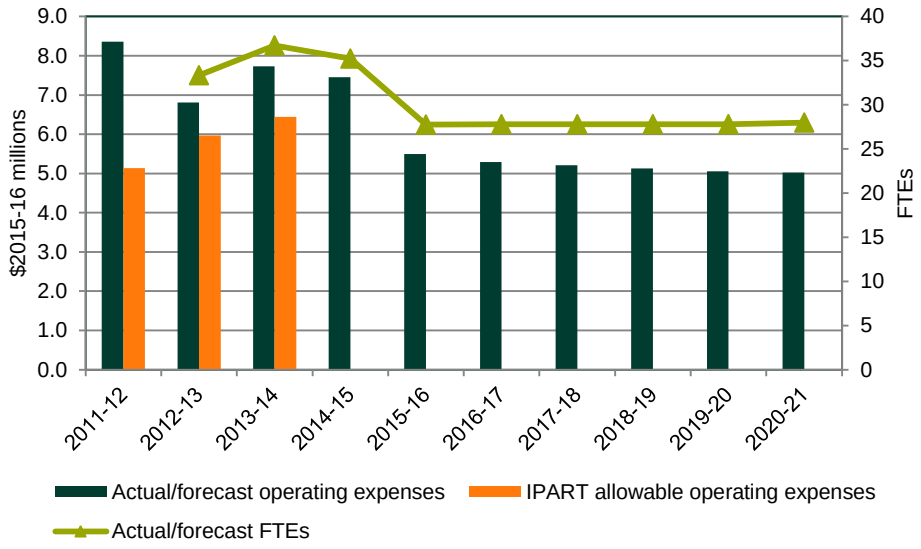
Repair and maintenance costs for the network are also recovered through water charges. During the current determination period the cost of repairs and maintenance was (in principle) allocated to activity code C01-06 (surface water quantity monitoring assets). However, in practice costs have been incorrectly allocated to C01-01 (surface water quantity monitoring). For the forthcoming regulatory period, DPI Water is proposing to combine these two activity codes into the new W01-01. It is not clear from the submission whether the upgraded stations (with IP telemetry) will impact on annual repair and maintenance costs. These costs are not accounted for separately in the forecasts..

5.2.2 Cost trends

Historical

The annual operating expenditure for this activity has varied significantly during the current determination period (Figure 8).

Figure 8 Current and forecast period operating expenditure and FTEs, Surface water quantity monitoring



Note: Graph shows total operating expenditure (as opposed to user share)
Data Source: DPI Water

Expenditure was highest in 2011-12, at $8.4 million, before declining by 19% to $6.8 million in 2012-13. In the following two years, expenditure increased, averaging $7.6 million per annum.

Expenditure over the three years from 2011-12 to 2013-14 was 31% (or $5.4 million) higher than IPART determined was efficient. DPI Water attributes this to:[45]

- the requirement for repairs and maintenance resulting from flood events,
- "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",
- some expenditure from C01-06, 'surface water monitoring assets management' was incorrectly allocated to C01-01, and
- provision of in-kind contributions to complement external grant funding (which had not been included in the cost forecasts for the 2011 Determination).

It is not clear from the submission what portion of costs were attributable each of these factors.

Synergies has been informed that DPI Water made in-kind contributions of around $2 million ($2015-16) in 2011-12, although contributions for the subsequent years could not be assessed with certainty. DPI Water has stated that these costs were not included in the cost forecasts for the last determination due to the uncertain nature of grant funding. Synergies questions this rationale because the BoM and HNE projects were identified in NOW's 2009 submission and the HNE project was already underway at the time the cost forecasts were being developed.

We also question the extent to which service improvements exceeded those that had been planned. NOW signalled its intention to increase visitation rates and to upgrade sites to telemetry in its 2009 submission to IPART, so this cost should have already been incorporated into its expenditure forecasts.

DPI Water's observation that unforseen flood events have increased its repairs and maintenance costs suggests that a prudent contingency for these events had not been built into the cost forecasts.

Forecast

In 2015-16, expenditure is expected to decline 26% on 2014-15 levels, to $5.5 million. The removal of 75 stations from the water management cost base contributes to this decline in operational expenditure, although other operational efficiencies will have to be found to achieve the forecast level of cost reduction.

[45] DPI Water submission, page 56

Over the forecast period, operational expenditure is forecast to gradually decline. By 2020-21, expenditure is forecast to be $5.0 million, a further 9% decline from 2015-16. However, the number of direct FTEs is forecast to remain constant at 28 over the period.

DPI Water does not provide a clear explanation for how these cost reductions will be achieved. The average annual number of visits is proposed to increase from 4.8 to 5 visits per station per year, which would imply increasing costs.

Possible reasons for a decline in costs include;

- reduced costs associated with implementing telemetry;
- reduced in kind contributions for external funding;
- expectation of lower expenses associated with flood events;
- improved labour productivity (reduced staff time per visit);
- a continued reduction in the number of hydrometric stations costed to the water management charge; or
- lower repairs and maintenance per station.

We examine several of these possibilities below and evaluate whether DPI Water's forecast costs for this activity are efficient.

5.2.3 Efficiency

Benchmarking

In the absence of a market price, Synergies has gathered information about the cost of hydrometric network management by other providers, in order to establish whether DPI Water's costs are efficient. DPI Water has provided Synergies with a briefing note that discusses the relative cost of delivering water data along the NSW/QLD border, in the area under the jurisdiction of the Border Rivers Commission. It is noted that DPI Water's 2014-15 budget bid was 1% lower than Queensland's.

DPI Water's current average annual cost per hydrometric station is calculated to be $12,777 ($5.49 million in 2015-16 divided by 430 stations). This is lower than what was charged to WaterNSW for provision of hydrometric monitoring services through a service level agreement. In their 2014 pricing submission to the ACCC, WaterNSW (then

State Water) stated that the cost charged by DPI Water was $19,100 in $2012-13[46] (equivalent to $20,454 in $2015-16). The ACCC noted that DPI Water is a monopoly provider of these services due to legacy issues so WaterNSW may be a price taker for this service.

Internal management processes

DPI Water has improved its management processes relating to the hydrometric network. DPI Water has reviewed the network to ensure only mandatory stations are costed to water management charges and it is understood that the total number of stations operated is under continual review. However, there are some additional areas for improvement to ensure DPI Water delivers a level of service that is valued by users.

It has been noted that DPI Water has undertaken a number of activities during the current determination period in order to improve the level of service provided to water users, including providing access to flow rates in real-time and improving the accuracy of data provided. While the logic for moving to real-time information appears sound, the submission does not refer to a cost-benefit analysis that justifies the increased level of service. Particular attention should be on those parts of the network that are not provided and maintained under a 'fee for service' arrangement and therefore have not been put to a market test.

This is not necessarily about reducing costs, as a cost-benefit analysis may find that there are net benefits from doing even more in the way of service level improvement.

Synergies understands that DPI Water was required to provide in kind contributions in order to secure external funding for service improvements over the current determination period. This reportedly contributed to actual costs exceeding forecast over the current determination. As far as possible, in future these contributions should be accounted for separately in the cost forecasts so as to improve transparency around what is driving expenditure. See section 8 for further discussion on recommended protocols for reporting external funding.

We recommend that future expenditure forecasts include a flood contingency that reflects the statistical likelihood and frequency of damaging flood events based on historical data. This contingency should be separate and transparent both in budget development and ex-post accounting for the cost of flood events.

[46] State Water, Pricing application to the Australian Competition and Consumer Commission for regulated charges from July 2014, published 31 July 2013.

DPI Water should also investigate whether outsourcing operation and maintenance of the hydrometric network to a contractor would result in efficiency savings. Outsourcing has occurred in other jurisdictions, such Victoria where the network is operated by Thiess. DPI Water has outsourced the construction of new infrastructure but no evidence has been provided of considerations for outsourcing operation of the network.

Findings:

- *Costs are forecast to decline over the forthcoming period, partly due to a reduction in stations costed to the water management charge. Synergies commends DPI Water's review of the hydrometric network and the positive steps taken to rationalise the number of stations that are included in the regulatory cost base*
- *While network rationalisation is responsible for some of the forecast cost savings, it is not clear how the balance of the proposed reduction in costs will be achieved. The average annual number of visits is proposed to increase from 4.8 to 5 visits per station per year, which would imply increasing costs – all else being equal.*
- *DPI Water has not explained in their submission which elements of service improvements over the current determination period have been externally funded as opposed to user funded (and the extent to which asset maintenance expenditure has been inadvertently added to the cost code for this activity). This makes it difficult to draw conclusions about the efficiency of historical expenditure*
- *DPI Water should prepare transparent, separable budgets for flood contingencies and, as far as possible, for in kind contributions to externally funded projects.*

5.3 Water plan development

5.3.1 Activity description

As part of the new activity code structure, 'water sharing plan development', the former C07-01, has been divided into five separate activities:[47]

- W06-01 water plan development (coastal),
- W06-02 water plan development (inland),
- W06-03 floodplain management plan development,
- W06-04 drainage management plan development, and

[47] DPI Water submission, page 120

- W06-05 regional planning and management strategies.

In this review we examine W06-01 and W06-02, which combine shares of the former C codes for water sharing plan development and water industry regulation (Table 12). Water plan development has been split into 'coastal' and 'inland' to reflect the additional requirements that apply to inland water sources under the *Water Act 2007*.

Table 12 Activity code mapping – water sharing plan development

Code	User share	C code activities		
		C code	% of C code in W code	C code user share
W06-01 Water plan development (coastal)	70%	C07-01 Water sharing plan development	25%	70%
		C07-05 Water industry regulation	18%	30%
W06-02 Water plan development (inland)	70%	C07-01 Water sharing plan development	60%	70%
		C07-05 Water industry regulation	42%	30%

Source: DPI Water Submission

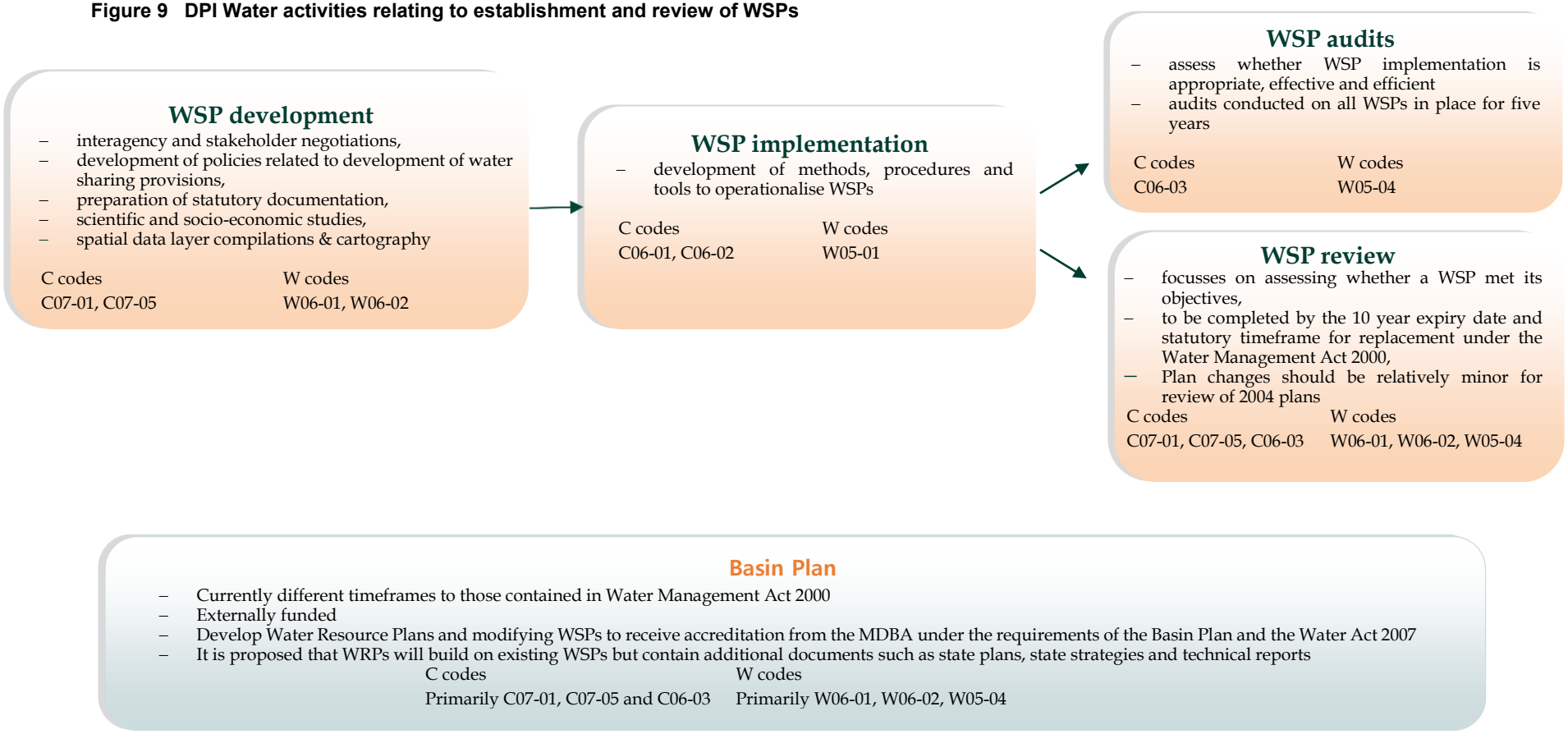
DPI Water advises that the inclusion of 'water industry regulation' is designed to capture activities for enabling the WMA to meet requirements of COAG's water reform agenda and activities that provide legal and regulatory support for water planning.

WSPs set out how water from a particular source is to be shared over time. They define strategies and rules for managing water access licences while also providing environmental water for the maintenance of important water dependent ecosystems and functions. As WSPs create benefits for the community as well as safeguarding sustainable resources for water users, DPI Water has assigned 70% of the cost of this activity to water users.

WSPs are a statutory requirement under the WMA. With the implementation of a WSP, the licence holders covered by the plan are brought under the new legislation from of the *Water Act 1912*, which is being phased out. As such, the development of WSPs has been core business for DPI Water since the WMA was introduced.

DPI Water undertakes a number of tasks relating to the establishment and review of WSPs. Figure 9 shows the various activities, gives an overview of DPI Water's planning functions, and shows how W06-01 and W06-12 fit within the broader array of activities.

Figure 9 DPI Water activities relating to establishment and review of WSPs



Data source: DPI Water Submission, Appendix L report, Review of 2004 Water Sharing Plans: NSW Office of Water report to the Minister for Primary Industries

5.3.2 Outputs

Table 13 summarises the cumulative number of WSPs in operation over different points in time.

Outputs over current determination period

By the end of 2015-16 DPI Water expects that there will be 58 WSPs in operation, a reduction from the 70 WSPs that existed at the start of the current determination as 24 have been reviewed and merged with other plans. Total expected output for the period is reported to be 63 WSPs, either developed or reviewed, as follows:

- 32 developed and completed (12 of which are costal plans that are scheduled for completion by 1 July 2016)
- 7 reviewed and extended or replaced; and
- 24 reviewed and merged

Table 13 Water sharing plan status

	Previous determination period		Current determination period		2016 Determination
	Prior to 2010-11	**2010-11**	**2011-12 to 2014-15**	**2015-16**	**2016-17 to 2019-20**
Completed and commenced	45	5 (4 coastal, 1 inland)	20 (3 coastal, 17 inland)	12 (coastal)	-
Reviewed and extended or replaced	-	-	-	7	13
Reviewed and merged	-	-	-	24	4
Reviewed only	-	-	-	-	9
Cumulative number of WSPs implemented and in operation	**45**	**50**	**70**	**58**	**54**

Source: DPI Water submission, pages 68, 147 and 148

Forecast outputs for forthcoming regulatory period

In its submission, DPI Water forecast that 26 WSPs would undergo statutory review over the next four years (13 coastal and 13 inland). As set out in Table 12, the nature of these reviews varies and includes a mix of "extended or replaced", "reviewed and merged" or just reviewed. A further 16 inland WSPs will undergo non-statutory review as part of the WRP development process. A total of 22 WRPs are to be developed.

The breakdown of outputs presented by DPI Water for coastal and inland water planning is as follows: [48]

Water plan development (coastal)

- 5 WSPs reviewed and replaced/extended
- 7 WSPs reviewed
- 1 WSP reviewed and merged into an existing WSP

Water plan development (inland)

- 8 WSPs reviewed and replaced/extended
- 2 WSPs reviewed
- 3 WSPs reviewed and merged
- 22 WRPs completed including a review of 16 inland WSPs, which are reviews that will be undertaken outside of the scheduled WMA statutory review cycle in order to satisfy Basin Plan requirements.

DPI Water is to receive $10.5 million in Commonwealth funding for WRP development. This will be used to fund 14 FTEs, who will be engaged on developing the 22 WRPs.[49] It is not entirely clear from DPI Water's submission whether the funding will also cover the cost of the 16 non-statutory reviews. The cost of these reviews should, in principle, be covered by Commonwealth funding for WRP development, as these reviews are primarily triggered by the need to ensure the WSPs are consistent with the WRP requirements.

Revised forecast of outputs

Over the course of Synergies' review, DPI Water provided a revised forecast of its outputs for the forthcoming regulatory period. The number of WSPs undergoing statutory review was revised upward to 42, comprising 13 coastal and 29 inland WSPs. Compared to the submission, revised forecast represents a more than double increase in the number of inland WSPs to undergo statutory review (from 13 to 29). Upon further analysis of these 29 WSP reviews, we find that:

[48] DPI Water submission, pages 147-148

[49] DPI Water provided Synergies with a spreadsheet containing a budget breakdown of Commonwealth funding for Basin Plan activities.

- 6 reviews should already have been completed during the current determination period (i.e. 5 were due to be finalised by 2013 and 1 has a completion date of 2016)
- 15 reviews are not due to be completed until 2022.
- 6 reviews are to be completed by 2021 or earlier
- 2 reviews are for plans that correspond to areas outside the regions covered by a WRP

Given that many of the reviews are not due for completion until 2022, it appears that DPI Water's revised forecast is for the full five-year period, not for the four-year period upon which the original forecast of 13 reviews was based. This would account for the higher number of reviews.

For purposes of our review, Synergies has adopted a total 5-year forecast of 36 WSP reviews, which consists of:

- 23 statutory reviews of inland WSPs (the 29 proposed by DPI Water less the 6 plans that should have already been completed and for which costs would already have been recovered in the current period); and
- 13 statutory reviews of coastal WSPs

5.3.3 Cost trends

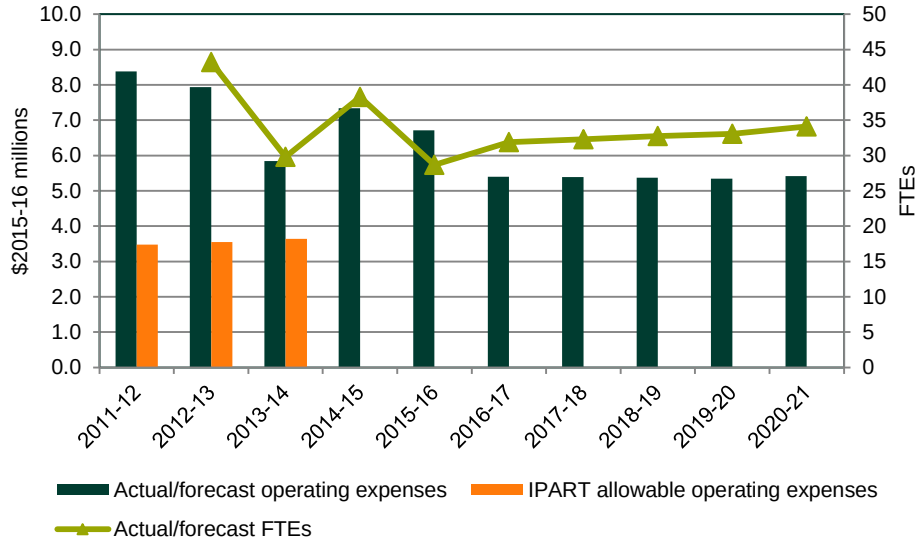
Historical

In the current determination period, the resources required for this activity were primarily driven by the development of new WSPs. In 2014-15, 38 FTEs were assigned to water plan development (W06-01 and W06-02), equivalent to 15.0% of FTEs assigned to water management services.

Towards the end of the current determination period, resources were also dedicated to the review and replacement, extension, or merging of WSPs that had reached the 10 year statutory period for review. In the forecast period, activity is proposed to be driven by the continuation of this statutory review process. Figure 10 summarises expenditure levels and staff resources over the current determination period and over the forecast period.

Operational expenditure has declined in real terms over the current determination period. Expenditure declined from $8.4 million in 2011-12 to $6.7 million in 2015-16, with one year substantially below the others at $5.8 million in 2013-14. The number of direct FTEs has followed a similar pattern to operating expenditure.

Figure 10 Current and forecast period operating expenditure and FTEs, Water plan development (coastal) and Water plan development (inland)



Note: Includes activities W06-01 and W06-02. There is a significant discrepancy in reported operating expenditure when using the C-code AIR, compared with the W-code AIR for 2015-16. Graph shows total operating expenditure (as opposed to user share)
Data source: DPI Water

Analysis of the resources used for this activity is confounded by a misallocation of most water management planning (C07) activity costs to WSP development (C07-01) during the current determination period. This makes it difficult for Synergies to assess cost trends and possible efficiency improvements over time. We have attempted to analyse these elements using the information available to us, but some reported changes in resourcing may be due to accounting anomalies.[50] Costs allocated to WSP development (C07-01) were $11.5 million (108%) higher than IPART allowable. However, when considered at the activity group level (C07), total costs were 4% below IPART allowable.

Forecast

Over the forecast period, operational expenditure is forecast to remain stable at around $5.4 million per annum. Despite operational expenditure remaining constant, the number of direct FTEs is forecast to increase by 7%, to 34 FTEs in 2020-21. DPI Water has advised Synergies that the increase in FTEs is partly due to the retention of three FTEs that will no longer be externally funded under the Aboriginal Water Initiative post 2016. It is said that these FTEs have been added to the forecast resource requirements out to 2020-21.

[50] In addition, for the activity code W06-02, there is a significant discrepancy in reported operating expenditure when using the C code AIR compared with the W code AIR for 2015-16. Using the C code AIR and concordance figures provided, expenditure is $1.8 million (38%) higher than the figure provided in the W code AIR.

5.3.4 Efficiency

Unit cost of service delivery

Due to the long development time and varying degrees of complexity in WSP development, it is difficult to assess whether DPI Water has achieved efficiencies in plan development from year to year. DPI Water has not provided us with details of the cost per plan developed in order to examine efficiency over time. Therefore, we have considered efficiency by examining the average cost per WSP developed or reviewed over the current determination period compared this unit cost with the forecast period.

Over the current determination period, there were 63 WSPs developed or reviewed, giving an average cost of $574,763 per unit ($36.21 million expenditure over five years divided by 63 plans). In the forthcoming determination period, DPI Water is proposing to review 36 WSPs, at an average cost of $747,976 per unit ($26.93 million forecast expenditure over five years divided by 36 plans). This is a substantial increase in cost per unit, considering that the workload associated with reviewing and extending a WSP should be lower than developing a new plan and no new plans are to be developed in the forecast period. Further, it is at odds with views expressed by DPI Water staff that the process has become more efficient.

While some increase in unit cost might be expected with a lower workload, due to fixed costs being spread over fewer outputs, the majority DPI Water's costs of developing and reviewing WSPs should be variable.

In its submission, DPI Water discusses measures taken to achieve cost savings in the overall WSP process by amalgamating small WSPs into larger WSPs.[51] These measures might be expected to lead to a small increase in the unit cost of WSP review but not of the magnitude shown.

The addition of three FTEs to DPI Water's cost base (due to cessation of funding from the Aboriginal Water Initiative) could in part explain the higher cost per plan, but not of the magnitude forecast.

DPI Water's submission indicates that it plans to allocate an average of 32.8 FTEs each year to water planning activities over the forthcoming regulatory period, not including the 14 FTEs which are earmarked for WRP development. This level of resourcing will produce an average of 7.2 WSP reviews each year. We consider this to be a high ratio of FTEs to outputs (over four FTEs per review) given that some of the reviews will be relatively low complexity and involve the amalgamation of plans.

[51] DPI Water submission, pages 147-148

Timely delivery of outputs

Another means of assessing efficiency of expenditure is to examine whether DPI Water has maintained the schedule of outputs that was proposed for the current determination period. At the time of the previous submission, DPI Water aimed to deliver 18 inland WSPs by 2011, 20 coastal WSPs by 2012 and 31 WSP reviews by 2014.[52] The current submission states that:[53]

> "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".

While Synergies accepts that the operating environment of DPI Water has changed during the current determination period, particularly with the development of the Basin Plan, and that some of the delays were outside of DPI Water's control, we are concerned by the additional costs caused by these timing delays. Prices were determined by IPART in the 2011 Determination on the basis that these plans would have been reviewed and amended by 2013-14. In the additional two years it has taken to review these plans, $14 million was spent on this activity. We estimate that over the five years to 2015-16, DPI Water will have spent more than three times the original amount earmarked for delivery of these outputs.

Furthermore, DPI Water has reported that some of the resources that were originally earmarked for reviewing the 31 plans were reallocated to WRP and FMP development. This is to be a contributing factor to the delay in completion of the reviews (i.e. competing demands for resources).[54] Synergies notes that both these activities are funded by the Commonwealth and therefore should not be funded through water charges.

Benchmarking

Publicly available data on the average cost of WSP development and review in other jurisdictions is rare. In 2014, a cost benefit analysis[55] of water reform options in Queensland contained information about the average cost of modifying water resource

[52] NSW Office of Water (2009). *Review of 2010 Bulk Water Prices: New South Wales Office of Water submission to IPART*, December 2009, p. 41

[53] DPI Water submission, page 68

[54] DPI Water Appendix L Report, page 62

[55] Marsden Jacobs Associates (2014) *Cost benefit analysis of water reform options (Project 1): Report prepared for the Department of Natural Resources and Mines*, May 2014

plans[56] in order to set aside sufficient unallocated water for a major project. The review process includes the release of a draft plan amendment for public consultation and receipt of submission. The cost estimates are reproduced in Table 14.

Table 14 Baseline cost for changes to Queensland Water Resource Plans, $2015-16

	No change to WRP	Minor change to WRP	Major change to WRP
Staff time	$0	$57,345	$382,811
Management time	$0	$10,087	$33,623
Consultant or other cost	$0	$50,000	$440,000
Total	**$0**	**$117,432**	**$856,434**

Source: Marsden Jacob analysis of Department of Natural Resources and Mines data

The cost of modifying an individual WSP may reasonably be expected to vary depending on the extent of the change required and the complexity of water management issues within the plan area. In addition, the cost of plan development and review may be influenced by the governing legislation, which is state based. Any comparison of costs between Queensland and New South Wales must consider these caveats. Given the information available, it appears that DPI Water's cost of plan revision was lower in the current determination period but is expected to be higher in the forecast period.

Bottom-up assessment

DPI Water has undertaken an internal review of planning processes to consider potential management improvements for this activity. The review concluded that the existing processes were generally sound although some refinements to processes were identified. From Synergies' perspective, there are several areas that require attention:

- Transparent reporting of external funding
- Accurate recording of staff time
- Project budgeting so that resources match the workload

Each of these areas is discussed further below.

DPI Water states in its submission that development of WRPs a major new activity for the forecast period. In response to Synergies' request for clarification, DPI Water has advised that the forecast costs for recovery from water users are net of WRP development costs. In order to verify that no cost of WRP development is being passed on to water users, it should be a requirement that DPI Water prepares explicit, separable

[56] Water resource plans in Queensland are similar to water sharing plans in New South Wales. They are different to the water resource plans that will be required under the Basin Plan.

budgets for WRP activities and the balance of water planning activities that are not funded by the Commonwealth.

Accurate recording of staff time and other resources to activity codes is critical for a number of reasons

- it allows DPI Water to internally manage resources,
- it ensures the cost of externally funded projects are not recovered from water users,
- it allows IPART to assess the efficiency of DPI Water's expenditure, and
- it may also impact the allocation of costs to different pricing water sources as different activity codes have different drivers for allocating costs.

Synergies encourages DPI Water to pursue accurate time recording through the new activity codes to ensure the above outcomes are achieved and costs are properly allocated.

DPI Water should improve its project management and budgeting for this activity. Synergies recognises the forward planning undertaken by DPI Water however, we recommend that resources should be assigned to a particular plan so that DPI Water knows ex-post how much each plan costs to develop and review.

Findings:

- *Operating expenditure is forecast to fall in the forecast period compared with the current determination period. However when reduced outputs are considered, it is apparent that efficiency is declining, not improving.*
- *While Synergies could only locate one study that provides an external benchmark cost for water plan development, the analysis indicates that DPI Water's cost of plan revision was lower in the current determination period but is expected to be higher than benchmark in the forecast period.*
- *We are also concerned about the two-year delay in delivery of 31 plan reviews, which were originally scheduled for completion by 2014 but are now scheduled to be completed by July 2016. Given that prices in the 2011 Determination were made on the basis that these plans would be completed by 2014, the delay has imposed additional costs on users.*
- *Synergies recommends reducing the forecast operating expenditure by $6.24 million, equivalent to a 23% reduction on DPI Water's forecast revenue requirement for this activity out to 2020-21. When annualised, this equate to a reduction of $1.25 million each year.*

- *Our recommended revenue requirement is calculated by assuming the average cost of producing or reviewing a WSP remains at $575,000 (compared to applying an average cost of $748,000) and DPI Water review 36 WSPs over the five years to 2020-21. The activity level and required revenue is assumed to remain constant in 2020-21.*

5.4 Compliance management

5.4.1 Activity description

Compliance is an important aspect of water management. If water users perceive that they can illegally take water without detection, the integrity of the water entitlements system is threatened, entitlements lose value and the environment may be harmed. DPI Water's compliance management activities form an important part of fulfilling their legislative obligations under the WMA and associated regulations. In 2014-15, at total of 42.6 FTEs were assigned to compliance, of which 19.0 FTE were externally-funded by a Commonwealth grant (see further details below).

Table 15 Activity code mapping – compliance management

W code	User share	C code activities		
		C Code	% of C code in W code	C code user share
W08-03	100%	C09-03 Compliance	100%	100%

Source: DPI Water submission

DPI Water uses a combination of education, monitoring and enforcement to promote compliance with water rights by licence holders and the public. DPI Water's Compliance Policy outlines the risk based approach to assessing and prioritising risk. Compliance strategies include;

- promoting voluntary compliance through education and community engagement,
- monitoring compliance through audits and surveillance,
- regulatory enforcement including stop work notices, penalty infringement notices and licence suspension, and
- criminal prosecution.

These activities aim to promote voluntary compliance and detect non-compliance. Effective compliance management benefits all water users, the environment and the broader community.

One of the activities undertaken as part of DPI Water's compliance strategy is audits of licence and works approval holders. These audits have a dual function of evaluating

compliance with licence conditions and educating licence holders about their responsibilities.[57] Follow-up action to address any non-compliance issues identified in the inspection depends on the level of non-compliance and may include preventative action, corrective action or further investigation.

Over the current determination period, DPI Water had aimed to increase the percentage of licences audited annually from 0.5% to 1%. But in 2014-15, with assistance from Commonwealth funding, DPI Water audited 4% of all licences and approvals (equivalent to 5277 audits).[58] In the forecast period, DPI Water aims to audit 2% of all licences annually.

Of the licences audited in 2014-15, 98% were found to be in compliance. DPI Water has indicated that the level of compliance has generally increased over the period of the Commonwealth funded monitoring program. In the forecast period, DPI Water has set a performance target of securing 90% compliance.

In 2014-15, DPI Water also conducted 527 audits under the Water Regulation Education and Audit Project (WREAP). The core function of these audits is to educate individual licence holders about the terms of their licence. DPI Water expects this will enhance compliance, as it is said that many acts of non-compliance result from licensees not having sufficient knowledge about their rights and obligations. The WREAP also has a secondary audit function. DPI Water advises that details of the WREAP audits have not yet been added to the Water Licencing database system and a proper analysis of the results has not occurred.

DPI Water also investigates alleged breaches of licence conditions (Table 16). These breach reports come from various sources including members of the public, WaterNSW, local councils and other government agencies. When DPI Water receives a breach report, they aim to conduct a risk assessment within 14 days, which informs the risk based approach to investigation.

Table 16 DPI Water assessment of reported breaches

	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

[57] DPI Water (2015) *Fact Sheet Series – Compliance with NSW Water Management Laws*, June 2015

[58] DPI Water, Appendix L report, page 81

	2010-11	2011-12	2012-13	2013-14	2014-15
Percentage assessed within 14 days	n/a	90%	77%	88%	91%

Source: DPI Water submission, Table 4.5, page 74

Further investigation may be conducted following the risk assessment. This could include a site inspection to gather evidence and establish whether an offence has occurred, identify the person(s) responsible, and assess any harm resulting from the offence. If it is determined that a breach has occurred, a wide range of measures is available under the WMA for DPI Water to respond. The action taken will depend on the circumstances and the significance of the breach.

In 2014-15, DPI Water received 761 breach reports, of which:

- 91% were assessed within 14 days and
- over the first seven months of the year 65% were finalised within six months (measurement ongoing at time of DPI reporting).

This compares with targets for 90% of breach reports risk assessed within 14 days and 70% of cases finalised within six months.

Over the current determination period, 20 cases were brought before the courts, of which two were withdrawn. These cases resulted in fines of $556,400 and costs payable of $319,310.[59]

In the forecast period, DPI Water aims to improve outcomes under this activity by;

- using onsite audits to help water users better understand their rights, conditions and obligations,
- expanding email communication and improving website usability,
- licence conditions have been improved to make them easier to understand.

DPI Water also proposes to develop their remote sensing capabilities. They are currently working to make use of the Landsat 8 data which would see data for the entire state downloaded every 16 days and analysed to detect potential unlawful water take. DPI Water anticipates this strategy will result in a more efficient way of comprehensively monitoring for large–scale unlawful take of water.

[59] DPI Water, *Prosecution Register*, 14 October 2014

Commonwealth funding

Since 2009, a key activity has been implementing the National Framework for Compliance and Enforcement Systems for Water Resource Management. The Commonwealth has provided $10 million in funding to NSW for this task. Funding is expected to conclude in October 2016. The grant was used to fund 19 FTEs which were deployed to develop improved strategies for compliance, expand the compliance education program and expand compliance monitoring activities. DPI Water conducted a survey of 4,000 licence holders to capture views on compliance motivations, experiences with compliance and enforcement and knowledge of water regulation.[60] It also undertook a project to make licence conditions easier to understand and expanded their compliance monitoring activities to audit 4% of licence holders in 2014-15 as described above.

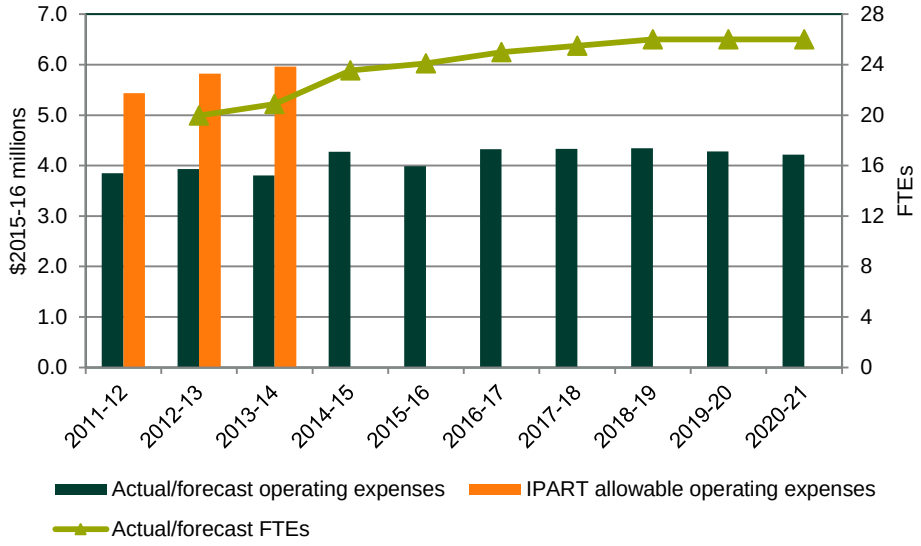
5.4.2 Cost trends

Historical

Operating expenditure has remained approximately stable over the current determination period. Expenditure averaged $3.9 million between 2011-12 and 2013-14, before increasing to $4.3 million in 2014-15 (Figure 11).

[60] Holley, Cameron & Sinclair, Darren (2015) *Water extraction in NSW: Stakeholder views and experience of compliance and enforcement*, National Centre for Groundwater Research and Training and Connected Waters Initiative Research Centre UNSW Australia and Australian National University, February 2015

Figure 11 Current and forecast period operating expenditure and FTEs, Compliance management



Note: Graph shows total operating expenditure (as opposed to user share)
Data source: DPI Water

Over the three year period 2011-12 to 2013-14, expenditure was 33% (or $5.6 million) lower than IPART allowed. DPI Water has stated that this was because Commonwealth funds were used to supplement this activity.[61] If this is correct, it is a cause for concern because it would imply that DPI Water has received funding from both water management charges and the Commonwealth for delivery of the same outputs – i.e. a doubling up of cost recovery. We elaborate on these concerns in section 6.

Forecast

Over the forecast period, proposed expenditure is relatively stable at around $4.3 million per annum, although FTEs are forecast to increase by 4% over the period. In total, forecast expenditure over the period is 8% higher than in the current determination period. The four main drivers of increased costs, as described in the submission, are;

- increasing and improving onsite audits with a focus on education to encourage voluntary compliance (the current 4% level of auditing was supplemented by Commonwealth funds, the 2% auditing level is an increase over the target of 1% which was set at the beginning of the current determination period),
- the anticipated introduction of floodplain harvesting licences, which will drive increased need for monitoring and enforcement activities to protect entitlements, and

[61] DPI Water submission, page 74

- development of staff training, systems and procedures to take advantage of the widespread installation of water meters that transmit real-time data.

DPI Water noted in the submission that it is investigating developing remote sensing capabilities, although Synergies has been advised that the cost of remote sensing has not been included in forecast operating expenditure.

Synergies notes that DPI Water is not forecasting compliance expenditure to reach the level that IPART allowed in the current determination, even after Commonwealth funding ceases. The submission does not explain why DPI Water is not seeking more funds for compliance or why a lower (than previously allowed) level of expenditure on compliance is optimal.

5.4.3 Efficiency

Benchmarking

There is no reliable information available about the cost of compliance activities in other jurisdictions in order to assess the efficiency of DPI water's costs for this activity.

Efficiencies arsing as a consequence of Commonwealth-funded work

Commonwealth funding has been used to undertake a number of activities. It is likely these activities will give rise to some efficiency for the compliance effort in the future. For example, given that the majority of non-compliance detected was minor, technical breaches, simplifying licence conditions and undertaking audits with a focus on one on one education should improve compliance in the future. That being said, DPI Water were unable to specifically point to how their investment strategy in compliance has been modified based on results of the Commonwealth-funded work.

DPI Water has demonstrated that it is taking on board findings from the licence holder survey. For example, the survey found that a driver of compliance is social repercussions from non-compliance. DPI Water is investigating making corrective actions more public as a result of this finding.[62] Synergies understands that a follow up survey is planned. This would be a good opportunity to explain how compliance activities have changed since early 2013, measure customers' views of the changes, and identify and measure any behavioural changes that have occurred since the previous survey.

DPI Water intends to make a number of adjustments to their compliance program to improve efficiency and address the cessation of Commonwealth funds in October 2016.

[62] DPI Water personal communication 30 September 2015

In order to better target compliance audits, DPI Water will now focus on an individual property level risk assessment as opposed to a water source level risk assessment used for the Commonwealth-funded audits. The previous monitoring program found very low levels of non-compliance in stock and domestic bores located in residential zoned areas, so no further on-ground inspections of these works will occur unless there is a pertinent reason for doing so.

Proposal to use remote sensing

DPI Water also plans to increasingly use remote sensing to improve the targeting of audits. The establishment of remote sensing abilities requires substantial upfront costs. A budget provided by DPI Water shows that around $216,000 will be required to establish the capabilities with ongoing costs of around $800,000 per annum to purchase data and employ analysts. This is a substantial cost, equivalent to 20% of DPI Water's forecast expenditure for compliance activities.

Despite remote sensing being identified in our interviews with DPI Water as being a new area of investigative work, we have been advised that it has not been included in DPI Water's forecast expenditure. In response to Synergies' request, DPI Water stated that any decision on allocation of funds over a five year period will depend on a changing operating environment. It was noted that allocating resources to remote monitoring may bring about savings, as it is likely to be more efficient then on ground monitoring. But DPI Water reserved judgement on the size of savings, noting that remote sensing may also give rise to new costs that will offset the savings – for example if the new technology results in higher detection rates, more resources would need to be put into the investigation of breaches. Synergies recommends that a cost benefit analysis is completed before significant investment is made.

Justification for proposed level of auditing

DPI Water has not provided sufficient justification for the proposed level of auditing and how this relates to the target level of compliance. For example, DPI Water has a goal to audit 2% of licence holders per annum but has not provided any analysis to demonstrate why 2% is optimal. The level of compliance auditing has not been published for other jurisdictions so comparisons cannot be made. It is noted that the Australian Tax Office conducts electronically matches on a wide range of transactions and audits 3.5% of tax returns based on information revealed from the matching exercise. In addition to the audit target, DPI Water has targeted a 90% level of compliance, which appears conservative given that 98% compliance level is already observable (based on the 2014-15 audit results).

Strategic plan to guide investment

DPI Water advised Synergies that it endeavours to get the right balance of preventative measures (education, monitoring, reporting and auditing) and punitive measures (application of penalties for breaches). It has developed a compliance policy, which is published on DPI Water's website, and document titled *Compliance Monitoring Strategy of the National Framework Water Compliance 2011-16.* While these documents go some way towards setting strategic guidance to compliance activities, we did not sight any documents that articulated succinctly how varying investment in any one or a combination of preventative and enforcement measures would be expected to change compliance outcomes. The trade offs from additional investment in one measure over another may have been considered by DPI Water in crafting its strategy, but we could not locate any explicit written documentation.

Workforce flexibility

DPI Water has stated that it is improving workforce flexibility between the compliance and consent transactions functions, given that demand for consents transactions is variable. While Synergies encourages workforce flexibility and acknowledges the common knowledge required for these two functions, we are concerned that these two work areas are likely to experience increased demand in tandem. That is, in dry years demand for consent transactions increases, due to water trading and works approvals, at the same time as water theft is likely to increase, requiring more compliance activity. The implication is that to have enough staff to undertake the required level of activity during a drought, DPI Water has surplus staff during non-drought years. It is not clear whether DPI Water has considered whether combining compliance activities with meter reading would result in savings by reducing replication of travel time.

Findings:

- *The 2% level of auditing has not been justified within a cost-benefit framework.*
- *Nor has DPI Water articulated how it proposes to allocate resources between education, compliance and enforcement activities or the relative payoffs achieved (in terms of compliance outcomes) by different levels of these activities. There may be inefficiencies in the current levels of effort between these three activities.*
- *Given that a high level of compliance currently observable, the proposal to adopt a 2% level of auditing (up from 1%) does not appear to be necessary or efficient. On that basis, we recommend that a 5% reduction on forecast costs is appropriate ($2015-16)*
- *A cost benefit analysis should be undertaken before investing in remote sensing capabilities.*

5.5 Systems operation and water availability management

5.5.1 Activity description

Table 17 Activity code mapping – system operation and water availability management

W code	User share	C code activities		
		C codes	% of C code in W code	C code user share
W05-01	100%	C06-01 Systems operation and water availability management	100%	100%
		C06-02 Trading and accounts management	100%	100%

Source: DPI Water submission, Appendix F

Once water sharing plans are developed, DPI Water is required to operationalise the plans and ensure the rules are put into effect. The methods, procedures and tools required for implementation are developed in conjunction with WaterNSW. This activity satisfies DPI Water's legislative responsibility for the implementation and operation of equitable and sustainable water sharing under the WMA and the *Water Act 2007*.

In order to ensure WSP rules are put into effect, DPI Water creates implementation plans. Over the current determination period, DPI Water has moved from a system where an implementation plan was developed for each WSP, to a more cost effective system where implementation plans are developed for each functional area of the department.

Available Water Determinations

Another important aspect of operationalising WSPs is the making and issuing of Available Water Determinations (AWDs). AWDs are made at the start of each water year on 1 July and specify how much of their water entitlement licence holders can extract over the course of that year. The amount of water that is allowed to be extracted in a particular year depends on a range of factors such as rainfall, inflows to dams and weirs and evaporation. Making AWDs forms a large part of this activity, particularly in drought conditions when competition for water becomes intense.

In the forecast period, DPI Water proposes to make available water allocation accounts for unregulated and regulated groundwater licences where water take is measured. This has been facilitated by the reading of existing meters being expanded in groundwater areas and new government meters being installed in some groundwater and unregulated river systems. This will provide licence holders with the ability to view their remaining water allocation via the internet, taking into account the latest meter readings and any carryover from previous years.

DPI Water aims to issue AWDs at least monthly for regulated water sources and annually for unregulated and groundwater sources. During 2014-15, a total of 93 AWDs were issued.

Water sharing during drought

WSPs provide for water sharing under 'normal' conditions. However, during drought conditions, WSP have historically been suspended, and revised sharing rules introduced. This is because every drought presents different challenges and DPI Water must be able to apply rules that are appropriate to the circumstances. Low inflow and critical water planning and management has become an increasingly important aspect of this activity since 2013-14. This has been prompted to manage the return of drought conditions in northern and western NSW.

Auditing WSP implementation

Another aspect of this activity is DPI Water's annual compliance review of WaterNSW work approval conditions. These approvals provide the rules to direct the operation of dams and weirs across NSW and the compliance review is a legislative requirement for DPI Water. Groundwater and surface water resource assessments are also undertaken to assess whether trade can occur without undue third party or environmental impacts. Water trading rules and water source constraints are administered though this activity to ensure compliance with the WSP.

During the first half of the current determination period, the 'systems operation and water availability management' activity included auditing the operational implementation of WSPs. Section 44 of the *Water Management Act* requires that audits are conducted regularly, at intervals of not more than five years. The section 44 audits focus on whether provisions of the WSPs have been implemented, rather than on their effectiveness, which is considered in the 10 year reviews. An audit is conducted by a panel selected by the Minister and relies on analysis conducted by DPI Water.

During the first half of the current determination period, DPI Water's role in the audits was performed under the 'systems operation and water availability management' activity (C06-01) with assistance from the 'plan performance monitoring and reporting' activity (C06-03). From 2014-15 onwards, full responsibility for this role will fall under activity C06-03 (now activity W05-04).[63]

A significant activity during the forecast period will be implementing the WRPs and modified WSPs that are created to receive accreditation from the MDBA under the Basin

[63] DPI Water, *Appendix L report*, page 54

Plan. DPI Water has given assurances that this activity will be funded using Basin Plan funding from the Commonwealth and therefore does not form part of its proposes revenue needs. Synergies was provided with a budget that indicates that $2.71 million has been allocated to W05-01 over the forecast period and will be used to fund 3.75 FTE.

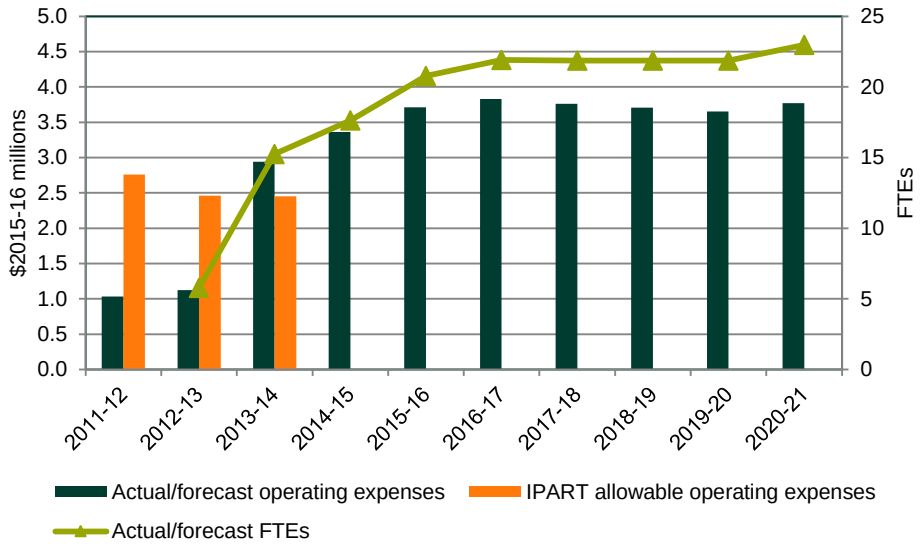
5.5.2 Cost trends

Historical

DPI Water reports that 18.5 FTEs were required to undertake this activity in 2014-15. This level of resourcing represents 6% of direct FTEs allocated to water resource management activities.

The apparent rapid increase in expenditure over the first three years of the current determination from a starting level that was well below IPART allowed (Figure 12) is reportedly due to actual expenditure for the 2011-12 to 2013-14 totals being underreported. These years were affected by a large number of legacy job codes being used and the transition to new business management software. A number of examples were given by DPI Water, however, it is difficult to quantify the extent of underreporting in these years. We note that some of the misallocation of time was discovered by DPI Water management and the problem rectified in 2013-14.

Figure 12 Current and forecast period operating expenditure and FTEs, system operation and water availability management



Note: Graph shows total operating expenditure (as opposed to user share)
Data source: DPI Water

DPI Water's submission and accompanying Appendix L Report discuss a number of other factors that may have contributed to increasing expenditure over the current determination period, including;

- implementation of contingency measures to manage the return of drought conditions in northern and western NSW since 2013-14, which increased costs in the second half of the current determination period,
- the increasing number of WSPs completed, which increased implementation costs, and
- facilitating the demands of government agencies holding substantial environmental water entitlements for increasingly complex environmental water activities, whilst ensuring other water users are appropriately protected (this activity is required under a MoU signed by the NSW and Commonwealth governments in July 2010).

However, it is unclear what impact each of these factors had on expenditure.

Forecast

Expenditure within the forecast period is proposed to remain relatively stable, varying between $3.7 million and $3.8 million per annum, around the level forecast for 2015-16. However, this is significantly higher (12%) than expenditure recorded to this activity in 2014-15 and much higher (35%) than IPART allowable levels in 2013-14, which was $2.5 million.

The reason for this increase has not been clearly set out in DPI Water's submission. Many of the activities undertaken in the current determination period will continue in the forecast period, including the annual compliance review of WaterNSW, issuing AWDs and implementing WSPs. However, WSP implementation should become more efficient over time. Implementation tasks relating to the Basin Plan will be funded by the Commonwealth and the responsibility for WSP audits no longer rests with this activity. All of these factors would suggest a reduction in expenditure should be observed.

5.5.3 Efficiency

Benchmarking

There is no information available about the cost of water plan implementation in other jurisdictions that could form a basis for comparison DPI Water's costs for this activity.

Bottom up assessment

When time and expenditure are not recorded accurately it is not possible assess accurately the efficiency of an activity over time. Misallocation of time is a serious problem, not only for IPART's efficiency review but because it indicates that DPI Water management are not exercising strict budgetary control over their functional areas. We acknowledge that some of the misallocation of time was discovered and rectified by management during in 2012-13, although other areas of misallocation persisted.

Synergies is concerned about the extent of increase in operating expenditure for this activity. The activity descriptions in the submission lack any clear articulation of a reason for increased costs.

DPI Water's submission does not indicate that a cost benefit analysis has been undertaken for the proposal to provide water allocation accounts for unregulated and groundwater. We recommend an analysis is undertaken before this project proceeds to ensure it is an efficient investment.

Findings:

- *DPI Water has had significant problems with misallocation of staff time for this activity, making it difficult to assess efficiency. Misallocation of staff time indicates that DPI Water management are not exercising strict budgetary control over their functional areas.*
- *Expenditure on this activity is forecast to increase to $3.8 million in the forecast period, compared with an IPART-determined efficient level of $2.5 million in 2013-14. There is no clear justification given for this increase.*
- *In the absence of reliable information about DPI Water's past costs or future increases in outputs for this activity, Synergies recommends that allowable operating expenditure over the forecast period should revert to the 2013-14 IPART allowable level of $2.5 million per annum.*

6 Efficiency of operating expenditures

This section draws on findings from the previous sections to provide an overall assessment of the efficiency of historical and proposed operating expenditure. Recommended levels of expenditure for water management activities are set out for the forthcoming regulatory period.

6.1 Historical operating expenditure

Section 4 presented a detailed analysis of DPI Water's historical costs. These historical costs enable trends to be established that can inform a high-level assessment of future, proposed costs. The key points from Section 4 are:

- costs have declined in real terms from 2011-12 to 2015-16, and
- DPI Water's total operating expenditure of $302.9 million from 2011-12 to 2015-16 was consistent with the aggregate IPART allowance (extrapolated from the 2013-14 year) of $302.6 million (excluding water consent transaction costs, meter reading services, and MDBA and DBBRC contributions)

However, we are cautious in drawing a conclusion that DPI Water's underlying costs for its water management activities (excluding MDBA and DBBRC) are reducing, without a detailed analysis of the forecast and actual external funding that offset these costs. External funding is mentioned at a summary level only, for water planning and management activity costs (Table 5.18 shows that $41.287 million of funds have been received for Basin Plan development and implementation of the Healthy Flood Plains policy). However, elsewhere DPI Water has reported the existence of other Commonwealth funding, including for compliance and for operation of the hydrometrics network.

Synergies could not locate a consolidated summary of all external operating funding received over the current determination period. Nor did we sight an account of how actual grant funding compared budgeted grant revenue in 2010 when the expenditure forecasts were prepared for the 2011 Determination. Consequently, the variation between expected external funding in the IPART allowance, and the actual funding is not known. Hence DPI Water's actual costs may very well be far higher, but this was masked by unforeseen external funding over the period.

6.1.1 Variance between actual and allowed expenditure at activity level

At an individual activity level there is significant variance between the IPART efficient allowance and actuals. This is summarised in tabular form (Table 18) and graphically

(Figure 13). For some activities, costs have been substantially higher, and in others substantially lower.

Figure 13 shows the dollar variance for each activity, based on a comparison of total expenditure over the first three years of the current determination period. Whilst the variation for some individual activities has been large, in aggregate over the three year period and across all 33 activities actual costs exceeded IPART's allowance by only 7% ($13.9 million).

Table 18 Actual and IPART allowed total operating expenditure over period 2011-12 to 2013-14 ($'000, 2015-16)

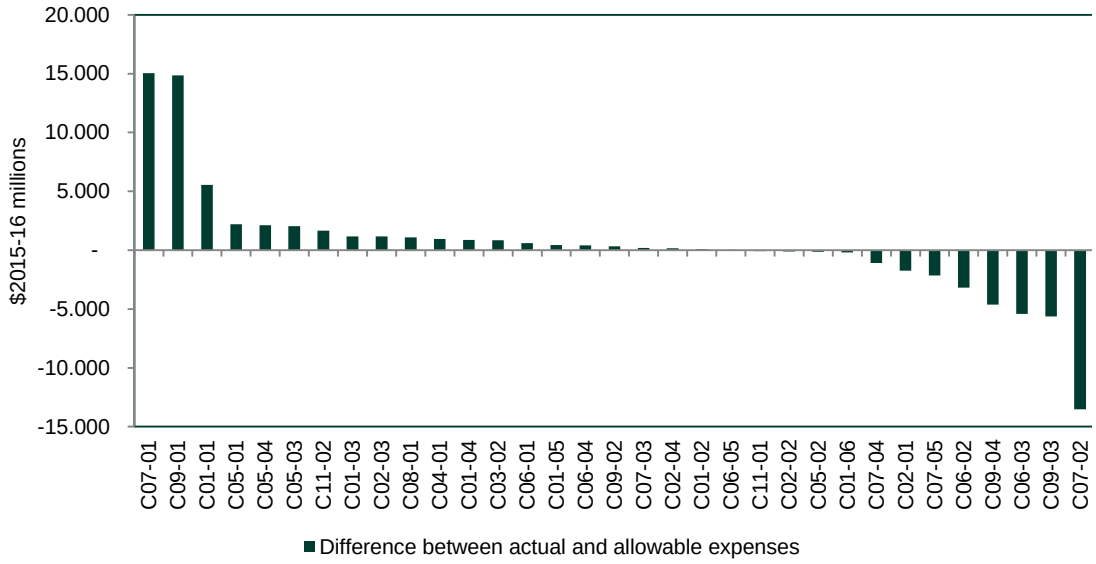
				Variation (actual relative to IPART)	
Code	**Activity**	**Actual**	**IPART**	**$'000**	**%**
C07-01	Water sharing plan development	25,778	10,731	15,047	140
C09-01	Licence administration	25,435	10,571	14,864	141
C01-01	Surface water quantity monitoring	22,300	16,746	5,554	33
C05-01	Water sharing/water management modelling	10,255	8,054	2,201	27
C05-04	Groundwater modelling	3,497	1,380	2,117	153
C05-03	Water balances and accounting	2,816	785	2,031	259
C11-02	Business development	3,970	2,307	1,663	72
C01-03	Surface water quality monitoring	4,980	3,808	1,172	31
C02-03	Groundwater database management	1,255	99	1,155	1,163
C08-01	River management works	3,179	2,085	1,094	52
C04-01	Water quality analysis	3,181	2,227	954	43
C01-04	Surface water ecology, biology and algal monitoring	1,658	789	869	110
C03-02	Metering data management	846	0	846	-
C06-01	Systems operation and water availability	4,706	4,099	608	15
C01-05	Surface water quality and biological database	1,320	897	423	47
C06-04	Blue-green algae management	1,627	1,234	393	32
C09-02	Licence conversion and entitlement specification	4,819	4,505	314	7
C07-03	Environmental water planning	3,256	3,079	177	6
C02-04	Groundwater monitoring assets management	1,023	861	162	19
C01-02	Surface water quantity data management	3,472	3,403	69	2
C06-05	Environmental water management	3,342	3,339	3	0
C11-01	Financial administration	6,633	6,722	-89	-1
C02-02	Groundwater quality monitoring	314	416	-101	-24
C05-02	Resource assessments	132	264	-132	-50
C01-06	Surface water monitoring assets management	602	802	-200	-25
C07-04	Cross-border and national commitments	3,551	4,639	-1,088	-23
C02-01	Groundwater quantity monitoring	11,448	13,184	-1,736	-13
C07-05	Water industry regulation	426	2,574	-2,148	-83

				Variation (actual relative to IPART)	
Code	**Activity**	**Actual**	**IPART**	**$'000**	**%**
C06-02	Trading and accounts management	392	3,570	-3,178	-89
C09-04	Water consents overhead	2,090	6,707	-4,617	-69
C06-03	Plan performance monitoring and reporting	8,587	13,996	-5,409	-39
C09-03	Compliance	11,586	17,220	-5,634	-33
C07-02	Operational planning	8,106	21,620	-13,514	-63
Total		**186,580**	**172,710**	**13,869**	**7%**

Note: Total operating expenditure is shown (as opposed to user share). Excludes Water Consent Transactions (C10-01) and meter reading services (C03-01 and C03-03)

Source: Actuals from Annual Information Return (C-code). IPART allowed expenditure from the cost model used in the 2011 review, which was obtained from IPART on 7 October 2015. We note that in Table 4.2 of DPI Water's submission, a different IPART allowance is used (i.e. $179m as opposed to the figure in the 2011 cost model of $172.7m),

Figure 13 Variation between actual and IPART allowed expenditure, 2011-12 to 2013-14



Note: Excludes Water Consent Transactions (C10-01) and meter reading services (C03-01 and C03-03)

Data source: Actuals from Annual Information Return and IPART allowed expenditure from the 2011 cost model

DPI Water reports that a number of factors are responsible for the expenditure variations. The activities with the greatest dollar variation are set out in Table 19 below, along with DPI Water's explanation.

Table 19 Comparison of Actual to IPART Allowed operating expenses, 2011-12 to 2013-14 ($2015-16 millions)

Activity	Actual	IPART	DPI Water Explanation
C09-01 Licence administration	25.4	10.6	Restructuring of the licensing and compliance branch into a single group, and delivery of enhanced online services. In addition, administrative costs from trading and account management (C06-02) and overhead costs for water consent transactions (C09-04) were incorrectly costed to this activity
C07-01 Water sharing plan development	25.8	10.7	Due to the integrated nature of planning activities, most of the cost for water management planning (C07) was erroneously recorded against water sharing plan development (C07-01). Hence recorded costs for operational planning (C07-02) and water industry regulation (C07-05) were significantly below budget.
C07-02 Operational planning	8.1	21.6	
C09-03 Compliance	11.6	17.2	Expenditure below forecast as Commonwealth funds were used to supplement this activity.
C06-03 Plan performance monitoring and reporting	8.6	14.0	Expenditure below forecast as resources were diverted to WSP development (C07-01) with a focus on assessing WSP rules.
C06-02 Trading and accounts management	0.4	3.6	Costs incurred against this activity were incorrectly allocated to other cost codes
C09-04 Water consents overhead	2.1	6.7	DPI Water noted that some water consents transaction overheads were inadvertently allocated to incremental cost of processing water consents (i.e.C09-01)..
C01-01 Surface water quantity monitoring	22.3	16.7	Expenditure above forecast due to work required to improve the standards of information collected and to sustain the required level of service, repairs and maintenance following flood events and misallocation of costs from Surface water quantity monitoring assets management (C01-06) to this activity.

Note: Table shows total operating expenditure (as opposed to user share)

Data source: Actual expenditure from Annual Information Return (C-code), IPART allowable expenditure from 2011 cost model

Misallocation of costs to activity codes

DPI Water refers to several instances where costs have been erroneously misallocated to the wrong activity code. This has been an issue for multiple activities: licence administration, water sharing plan development, operational planning, water industry regulation, systems operation and water availability management and trading and accounts management. It explains the very significant apparent overspend for C07-01 and underspend for C07-02.

DPI Water has advised Synergies that in the period 2011-12 and 2012-13, DPI Water (then NOW) was being integrated into DPI and was undergoing a significantly disruptive change management process. The team responsible for Water Management Implementation experienced a turn-over of senior staff allowing the historical misallocation of resources to continue unchecked until 2013-14.

DPI Water has also indicated that the integrated nature of water planning activities made it difficult for staff to delineate how time should be allocated to each of a number of related C codes. The new W code structure has sought to remove this ambiguity.

Availability of external funding

The explanation for the lower-than-forecast expenditure for activity C09-03 (compliance) relates to the receipt of Commonwealth funding to implement the National Enforcement Framework. DPI Water's submission states:[64]

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

However, in its 2011 decision, IPART obtained assurances from DPI Water (NOW) that its forecast compliance activity costs were net of any external funding. That is, the $17.2 million IPART allowance in Table 19 above already should have been net of Commonwealth funding.[65]

> We note that under the National Framework for Water Compliance and Enforcement, the Commonwealth has agreed to fund additional compliance activities in the States. As outlined above, additional compliance activity is one of the drivers behind NOW's forecast increase in operating expenditure. However, since the release of our Draft Report, NOW has provided us with assurance that its forecast compliance costs are over and above any forthcoming Commonwealth funding of further compliance activities in NSW, and that there is therefore no 'double count' between NOW's proposed and any future Commonwealth funded compliance costs.

Synergies sought an explanation from DPI Water about the apparent double recovery of costs. DPI Water provided the following response:[66]

> ….when setting its compliance budget for the last determination, (DPI Water) made the assumption that additional staff would be recruited to undertake the funded work, as was the traditional position. In the event, the Water Regulation team resourced the funded activities from its current resources thereby reducing the level of resources available to undertake activities funded through water management charges.

This explanation does not allay Synergies' concerns. If DPI Water has delivered the Commonwealth-funded work through using its existing workforce, as opposed to hiring additional resources, then this implies fewer resources available to work on 'business as usual' compliance activities that were factored into NOW's 2009 submission. Yet DPI

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64 DPI Water submission, page 74.

65 IPART, *Review of prices for the Water Administration Ministerial Corporation for the NSW Office of Water, from 1 July 2011*, Final Report, February 2011, page 61

66 DPI Water email, 13 November 2015

Water's prices were formulated on the basis of this 'business as usual' program of work, and hence it has been compensated for this work through water management charges.

This highlights the need for transparent, separable cost accounting and reporting of external revenue against each of the water management activities. While DPI Water has give assurances that its proposed revenue needs are net of any external funding, the optics of this could be improved. In section 8, Synergies sets out a recommended template for publicly reporting the use of external funding by activity.

Higher-than-forecast levels of service

For several activities DPI Water has stated that service level improvements have exceeded planned levels and that this is responsible (in part or whole) for the higher-than-forecast expenditure. For example, in the case of surface water quantity monitoring it is reported that the implementation of IP telemetry has aided the delivery of more accurate, real-time flow rate data. In the case of licence administration, costs are reported to have been higher than forecast due to implementation of enhanced on-line services. While service improvements are to be encouraged, any change in strategy mid-way through the regulatory period should be underpinned by a sound business case – particularly if the new level of service results in a higher cost platform going forward into the next regulatory period.

Changing priorities

It is reasonable to expect a degree of variation between planned and actual expenditure for particular activities as strategic adjustments are made to budget allocations in response to changing priorities. One such adjustment is reported by DPI Water for 'plan performance monitoring and reporting', where it is said that planned expenditure on this activity was diverted to WSP development (C07-01) with a focus on assessing WSP rules.

Findings:

DPI Water's total operating costs, net of external funding, have reduced over the current period. Without more detailed information about the IPART allowed and actual costs and offsets from external funding at an activity level, it is difficult to draw any conclusions about the underlying efficiency of past expenditure. Without this transparency, concerns will arise about double-counting of external funding, as demonstrated for compliance above.

We are also concerned about DPI Water's ongoing difficulties in forecasting, managing and reporting costs at an activity level, as demonstrated by the number of activities for which there has been a significant variance between forecast cost and IPART allowed cost. While DPI Water

has presented sound justification for some of these variances, the misallocation of costs across activity codes has been a systemic problem.

6.2 Efficiency of proposed operating expenditure

Table 20 below presents DPI Water's proposed total operating expenditure for water management services, compared to the 2015-16 budget. Costs funded from fee for service and Commonwealth Government grants are additional.

Table 20 DPI Water's proposed operating expenditure – water management ($,000, $2015-16)

	2015-16 Budget	2016-17	2017-18	2018-19	2019-20	2020-21	TOTAL Regulatory Period
Water management services	53,982	52,193	52,035	51,066	49,428	49,733	254,455

Note: Table contains total operating expenditure (as opposed to user share). Excludes costs for water consent transactions, meter reading services and contributions to MDBA and DBBRC

Source: DPI Water submission, Table 4.2 (2015-16 budget) and Table 7.1 (forecaster period).

In this section we examine the prudency and efficiency of DPI Water's proposed expenditure for water planning and management activities over the forthcoming regulatory period. We draw from key findings and observations in the previous chapter, and assess the extent to which these can be extrapolated across other activities.

6.2.1 Prudency

Expenditure is prudent if it arises from an activity required to meet a specified outcome. Prudency assessments typically examine:

- The scope of activity – does the activity align with the types of services provided or consequential compliance obligations related to the activity?
- The standard provided – does the standard at which the activity is performed meet (but not exceed) that required by customers or regulators?

The parameters for a prudency assessment are often set for the regulated business externally (e.g. through license conditions, service standards etc) or through customer engagement.

The scope of DPI Water's monopoly activities are well understood and align with its broad functions and obligations (refer section 4.8.).

DPI Water has proposed output measures and performance indicators for each activity. In some cases, these measures can be used to assess whether or not DPI Water has 'gold plated' its activities to exceed these standards. DPI Water proposes these standards as part of this pricing submission.

There is a strong onus upon DPI Water to justify the standards it proposes to adopt.

Our detailed review of activities found that DPI Water was not always able to justify the standards it adopted considering a range of options, their costs and benefits and the trade-offs between different (higher or lower) standards and costs, such as the composition of the surface water quantity monitoring network, and the need for real time data and accuracy levels (calibration), and compliance targets and the audit program.

In later sections we discuss DPI Water's work to develop a metering strategy which has involved some rigour and scrutiny about the standards to be applied for water take data. The lead-up work to this strategy, which is not complete, has enabled DPI Water to nearly halve the number of sites subject to a meter read, as well as reduce the frequency of those reads. The extent of the changes gives some indication of the benefits of such critical assessments of standards.

In closing, we would expect that further savings can be made through critical and thorough analysis of internal standards for each activity.

6.2.2 Efficiency

While prudency refers to costs or activities being focussed on what is required, efficiency in this context refers to the cost of performing that activity being as low as possible. An efficiency assessment can be informed by:

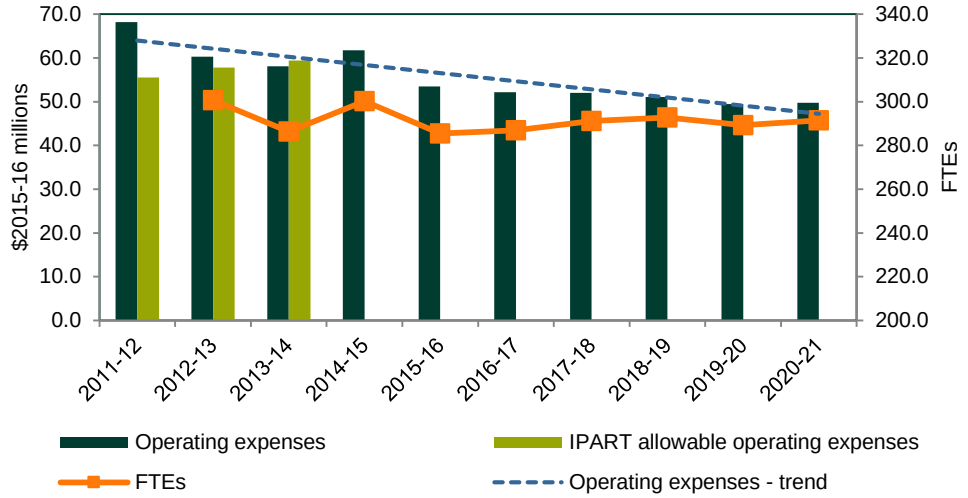
- High level cost benchmarking or trend analysis (top-down assessment);
- Analysis of business practices, resources, systems and processes to identify specific inefficiencies or improvement opportunities (bottom-up assessment).

Our assessment, using these two approaches, is set out below.

Top-down assessment

DPI Water's overall costs have trended down since 2011-12, and are forecast to decline further over the forthcoming period. Notwithstanding the lack of clarity about the impact of historical external funding, it generally appears that DPI Water has achieved ongoing savings which are forecast to continue into the future. Figure 14 (which is also presented in Section 4) provides a summary.

Figure 14 Total operating expenditure ($2015-16 millions) and FTEs, water management services



Note: Excludes expenditure on consent transactions, metering services and contributions to MDBA and DBBRC. Graph shows total operating expenditure (as opposed to user share).

Data source: DPI Water's submission and supplementary information provided by DPI Water

Total operating cost includes 20% for overhead. These overheads largely comprise corporate service costs charged by the Department of Industry, which coordinates overhead services centrally. These services include governance, legal, economics, HR, finance, corporate strategy and communications, ICT, corporate operations and policy coordination. The 20% also includes accommodation and computer leases, but DPI Water has not provided Synergies with an itemised breakdown showing what proportion these items make up of total overheads. Section 4 provides more detailed information about the composition of overhead and the allocation methods used.

It is very difficult to obtain reliable or useful information from benchmarking DPI Water against other water management agencies, given these agencies do not produce detailed information about specific activities and costs on a comparable basis. Benchmarking total expenditure between agencies would be misleading given that the size of the task will differ between jurisdictions, as will the precise scope of responsibilities and standards of requirements. As a result, it is not appropriate to use aggregated benchmarking to inform the assessment of DPI Water's efficiency, as is often done for other regulated utility services.

However, we are able to benchmark certain aspects of DPI Water's costs, particularly overheads. PwC recently published a report benchmarking Commonwealth and State Government corporate services.[67] In this study, corporate services comprised finance, HR, governance (including internal audit), legal, ICT, procurement, communications

[67] PwC (2015) *Benchmarking of Commonwealth and State Government corporate services*, 2014.

and property (excluding property leasing expenses). This is very similar, though perhaps slightly narrower, than the services that comprise DPI Water's overhead costs. For example, DPI Water's overhead costs include accommodation expenses.

Nonetheless, the PwC benchmarking is still useful to broadly assess DPI Water's overheads. PwC benchmarked small and medium sized departments (< $500M), with the median department having corporate service costs that were 14% of its total operating costs for 2013-14, down from 16% for 2012-13.

PwC also observed that corporate costs were a far lower proportion of total operating costs at 7% for large departments (>$500M), indicating there were economies of scale.

This benchmarking suggests that DPI Water's overhead costs are higher than their peer group. Indeed, given the Department of Industry provides services for a cluster of agencies, the relevant benchmark rate is more likely to be towards 7% than 14% with economies of scale. At approximately 20%, DPI Water's overheads are well above these levels. However, it must be noted that definitive findings about efficiency cannot be made, as the 20% overhead reported by DPI Water includes accommodation and computer leasing costs, and as such is not directly comparable to the benchmarks estimated by PwC.

Bottom up assessment

In Section 5 a number of savings were identified for the four activities examined in detail, namely:

- $1.25 million per annum (23%) reduction for water plan development; and
- $1.3 million per annum (34%) reduction for systems operation and water availability management.

It is necessary to consider how, and to what extent, these savings should be extrapolated to other activities, including the other two activities examined (compliance management and surface water quantity modelling) where there were concerns about efficiency. In doing so, we need to be satisfied that the types of savings identified are systemic across many activities, rather than peculiar to each activity.

The detailed analysis in Section 5 highlighted a number of shortcomings to DPI Water's cost control and reporting systems that could apply more broadly across the organisation. These include:

- *Forecasting and cost reporting has been a problem.* There is evidence of significant variation between forecast and actual expenditure over the previous period. Other variations are due to miscoding or re-classification of costs. This makes it difficult

for management to identify cost trends, and pursue opportunities for savings against the regulatory allowances.

- *Cost controls could be improved.* We have found that some activities could be managed on a project basis with discrete budgets (water plans being one example; another is the various components of compliance). This approach introduces greater transparency about project costs and enables greater accountability for budget managers. Similarly, costs at a more granular activity level allow management to compare the cost effectiveness of those activities against set outcomes.
- *Outsourcing*. DPI Water does not outsource many of its functions. The servicing of government-owned meters is one of the few tasks that is outsourced. WaterNSW is contracted to undertake meter reading and billing activities, but not on a competitive basis. Operations and maintenance of the hydrometrics network remains in-house. We did not find evidence that DPI Water made regular assessments about resourcing strategies across all activities.

Cost recording and management problems are likely to exist across all activities. This is evidenced by the significant variations in expenditure across nearly all activities (actual versus IPART allowed) as set out above.

However, the savings identified from water plan development and systems operation and water availability management cannot simply be extrapolated to other activities, given that at least some of these reductions were specific to the activity. In particular, DPI Water was not able to justify the increases from previous years either on a unit cost basis (e.g. water plans) or aggregate. For many other activities, DPI Water has reduced total and/or unit costs however we are unconvinced that further savings are not possible.

6.2.3 Extrapolation

The approach to this review requires a detailed examination of a sample of activities, followed by a judgement about how the findings for those activities can be extrapolated more broadly. A simple approach would be to apply the percentage reductions found for the four activities reviewed in detail across the entire operating expenditure. However as indicated above, the savings for two of the four activities are not entirely typical.

It is also important to recognise that DPI Water appears to have reduced its costs for the coming regulatory period.[68]

[68] Notwithstanding the lack of transparency in actual costs and external funding on an activity basis.

Any extrapolation from our findings for the four activities reviewed in detail is by nature subjective. It is the view of Synergies that there is evidence to suggest that further improvements can be achieved by DPI Water, in particular:

- there is scope to reduce costs through better defining the standard required for its activities and the management of its costs for performing those activities;
- there is scope to improve cost management practices, which in turn should generate efficiencies and cost savings; and
- DPI Water should periodically review and evaluate methods for service delivery, for example through assessing savings from outsourcing.

It is Synergies' view that DPI Water has not met the standard set for it by IPART in the last review.

First-time reviews of regulated businesses can often identify systemic problems and significant scope for cost savings. Over time, businesses tend to improve their practices, including cost management and reporting, often with the result of more modest (if any) adjustments to proposed operating costs. It is the view of Synergies that DPI Water is more appropriately categorised as a regulated business in the early phase of regulatory review, with significant scope for further cost savings.

For 'immature' regulated businesses, first time regulatory reviews often identify significant efficiency adjustments. For example:

- IPART's 2001 review of the Department of Land and Water Conservation, which determined a 9.35% reduction to operating costs;
- IPART's 1999 review of AGL Gas Networks, which found a cumulative saving of 10.43% in operating costs; and
- the 2012 Queensland Competition Authority's review of SunWater, which applied annual savings of between 5.22% and 8.03%.

Hence we can conclude that first-time regulated businesses are typically found to propose operating expenditure that is 5% to 10% above efficient costs, and more often at the high end of this scale.

In addition, benchmarking revealed that DPI Water's corporate costs appear high, though there is not sufficient information at a granular level to make conclusions about specific dollar savings that should be applied. It is difficult to recommend specific savings based only on high level benchmarking, particularly where benchmarks are not directly comparable. Moreover, DPI Water has limited scope to control these costs under

the current organisational arrangements although customers will pay for any excessive corporate costs.

Having regard to the above, we recommend applying a 5% efficiency saving to the balance of operating costs (net of those activities for which specific adjustments have been made).[69] This level of reduction has been chosen the following rationale:

- a simple extrapolation of the estimated savings from the four activities examined is not reasonable, given there are activity-specific factors driving a large part of the savings. We must therefore make a judgement about an appropriate percentage adjustment;
- DPI Water has reduced total costs in recent years, and proposes to continue to reduce costs over the forecast period;
- however, there is evidence to suggest that DPI Water's proposed costs need to be reduced given high level overhead benchmarking, and our findings about cost management and forecasting. Indeed DPI Water could be characterised as a business that still has some way to go to reach best practice;
- absent a detailed analysis of all DPI Water's activities, the level of adjustments typical for first-time regulated businesses is a reasonable proxy for extrapolation. The adjustment should be at the top end of this range.

Findings:

After taking into account the above factors, we recommend that DPI Water's operating costs for all activities, except for the two activities with specific adjustments, be reduced by 5% per annum to the proposed costs in $2015-16. This translates to a total reduction of $27.1 million over five years (or around 11% of proposed costs) when combined with the specific adjustments from Section 5.

Table 21 contains our recommended adjustments to DPI Water's proposed operating expenditure for water management services. A detailed breakdown of recommended expenditures by activity code is provided in Appendix A.

[69] The 5% efficiency saving is also applied to the 50% of Sydney Water Metropolitan Plan costs that remain in the cost base.

Table 21 Proposed and recommended operating expenditure – water management services $'000 ($2015-16)

	Current Budget 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total 2016-17 to 2020-21
Proposed opex	$53,982	$52,192	$52,035	$51,066	$49,428	$49,733	$254,455
Adjustments							
Less 50% Sydney Metro Plan costs	-	-$986	-$1,069	-$851	-$421	-$761	-$4,089
Less Water Planning adjustment	-	-$1,263	-$1,248	-$1,237	-$1,210	-$1,279	-$6,236
Less Systems Operation adjustment	-	-$1,324	-$1,300	-$1,281	-$1,263	-$1,302	-$6,471
Less 5% efficiency adjustment to balance of activities	-	-$2,099	-$2,091	-$2,057	-$2,000	-$1,989	-$10,236
Total adjustment	-	-$5,671	-$5,708	-$5,426	-$4,894	-$5,332	-$27,031
Recommended	**$53,982**	**$46,521**	**$46,327**	**$45,640**	**$44,534**	**$44,401**	**$227,424**

Note: Table shows total operating expenditure (as opposed to user share). Excludes costs for water consent transactions, meter reading services, and contributions to MDBA and DBBRC.

Source: DPI Water submission, Table 7.1 (proposed operating expenditure) and Table 4.2 (2015-16 budget)

6.3 Analysis of MDBA and DBBRC activities

Cardno has reviewed DPI Water's historical and forecast contributions to the MDBA and DBBRC. It has sought to assess the efficiency of these contributions and the appropriateness of the proposed user shares. In undertaking the review, Cardno examined:

- the governance and cost sharing arrangements for MDBA and DBBRC services as a means of setting out the context in which the contributions are made and the ability of DPI Water to influence and have oversight over the contributions it is determined to be responsible for collecting
- the approach that DPI Water takes to allocate contributions to users
- trends in historical and proposed contributions at an activity level
- relevant publically available information relating to the effectiveness and efficiency of the MDBA's activities.

Cardno has not performed a detailed, bottom up efficiency assessment of MDBA or DBBRC water management activities.

Cardno recommends that no adjustment be made to DPI Water's forecast revenue needs for MDBA and DBBRC contributions. Further, it is recommended that the proposed user shares for MDBA contributions (55%) and DBBRC contributions (68%) be accepted on

the basis that DPI Water has provided details in its submission on each of the MDBA/DBBRC activities being funded and individual user shares for each activity, which appear consistent with the impactor pays principle.

The recommended expenditure forecasts are shown in Table 22 below.

Table 22 Recommended expenditure – contributions to MDBA and DBBRC $'000 (2015-16)

	Current Budget 2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	Total 2016-17 to 2020-21
NSW contribution to MDBA							
Total expenditure	$10,091	9,623	9,388	9,159	8,935	8,760	45,865
User share (%)	18%	55%	55%	55%	55%	55%	55%
User share ($)	$1,825	5,337	5,206	5,079	4,955	4,818	25,226
NSW contribution to DBBRC							
Total expenditure	$407	396	364	358	349	340	1,807
User share (%)	68%	68%	68%	68%	68%	68%	68%
User share ($)	277	269	248	243	237	232	1,229

Source: Current user share of $1.825 million is obtained from DPI Water submission, page 165, and represents the 2011 Determination allowance of $1.69 million ($2009-10) converted to $2015-16.

7 Efficiency of capital expenditures

7.1 Overview

DPI Water has proposed historical capital expenditure from 2012-13 to 2015-16 totalling $7.32 million, and forecast capital expenditure out to 2020-21 totalling $20.91 million (both in $2015-15 and net of external funding). DPI Water has also proposed asset depreciation schedules for those investments.

This section examines this historical and future capital expenditure and proposed efficient expenditure for incorporation into the Regulated Asset Base. We also examine the proposed depreciation rates. This review is strongly influenced by DPI Water's asset management and capital planning processes, which are discussed below.

7.2 Asset management practices

In the previous review, IPART was concerned that DPI Water's asset management and capital planning framework did not meet best practice, and urged DPI Water to implement recommendations for improvement.

Cardno undertook a review of DPI Water's asset management and capital planning processes. Their detailed report is in Appendix C.

Cardno found that DPI Water had made a number of significant improvements, including:

- developing an asset policy and strategy;
- recruitment of an Asset Management Co-ordinator;
- applied assessment criteria framework for capital project prioritisation at a Department level;
- conducted a comprehensive groundwater monitoring review; and
- clarified cost drivers.

Cardno also noted there was scope for further improvement, which DPI Water had also acknowledged. However Cardno found that the existing processes were sufficient to support the capital program put forward by DPI Water, and that their processes for identifying and developing capital projects were sound, being underpinned by Departmental and Treasury processes.

7.3 Historical capital expenditure

In the 2011 Determination IPART allowed for capex related to DPI Water's proposed replacement and refurbishment of its hydrometric station assets. The amount was presented as an annual allowance for expected renewals. At the time of the review, there was no complete business case for the expenditure, and NOW undertook to prepare a more detailed analysis to support actual expenditure.[70]

DPI Water's net actual capital expenditure has been less than the amount allowed by IPART, after taking into account external funding. Expenditure on the hydrometric network was far less than allowed, but there was significant expenditure on new groundwater bores. The major items that were not externally funded included:

- IT/systems related capex, which are reported as Intangibles above[71], including:
  - Upgrades to systems to manage approvals ($1.3 million);
  - Land title event handling for updating information non holders or land titles ($0.286 million)
  - Online order application systems ($0.089 million)
- Acquisition / upgrade of groundwater sensors and water sampling and monitoring equipment ($0.763 million)
- Hydrometric network expenditure of $1.182 million.[72]

Based on the above, total capital expenditure incurred over the current determination period, net of external funding, was $7.32 million in $2015-16 (or $6.95 million in nominal terms)..

7.3.1 Efficient historical capex

Our review focussed on those projects that are not externally funded, and therefore included in the RAB and customer charges.

In broad terms, most of the expenditure appears efficient, on the basis that DPI Water has improved its capital planning and asset management practices since 2011, however there is still some scope for improvement (refer above). Cardno also reviewed the Hydrometric Network Expansion Project and were satisfied it was efficient (Appendix C). We therefore recommend historical capital expenditure be accepted into the RAB.

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70 PwC (2010), *Review of NSW Office of Water's water management expenditure*, Report to IPART, June 2010, page 167.

71 Along with some small, sundry items such as four Canopies and two Kubota ATVs.

72 In addition to this amount, DPI Water also stated that $1.867 million was expensed.

Findings:

Our proposed allowance for capital expenditure from 2011-12 to 2015-16 is set out in Table 23 below in $2015-16 terms. We recommend that $7.32 million be accepted into the RAB.

Table 23 Historical Capital Expenditure Allowance ($,000, $2015-16)

Category	2011-12		2012-13		2013-14		2014-15		2015-16	
	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed
Business and computing equipment	0	0	0	0	8	8	251	251	247	247
Infrastructure	0	0	1,484	1,484	426	426	123	123	10,741	10,741
Intangibles	0	0	1,652	1,652	631	631	583	583	3,481	3,481
Laboratory equipment	0	0	0	0	0	0	283	283	27	27
Plant and equipment	0	0	597	597	37	37	0	0	0	0
Specialised equipment	0	0	0	0	0	0	0	0	465	465
Vehicles	0	0	0	0	0	0	92	92	0	0
Subtotal	**0**	**0**	**3,733**	**3,733**	**1,102**	**1,102**	**1,333**	**1,333**	**14,961**	**14,961**
Less external funding	0	0	0	0	0	0	0	0	-13,809	-13,809
Total (net)	**0**	**0**	**3,733**	**3,733**	**1,102**	**1,102**	**1,333**	**1,333**	**1,152**	**1,152**

Note: Table shows total capital expenditure (as opposed to user share)

7.4 Future capital expenditure

DPI Water has proposed total capital expenditure over the forecast period to 2019-20 of $20.91 million, net of external funding. The majority of this expenditure is for the refurbishment of the groundwater monitoring network ($13.78 million). DPI Water also proposes capital investment to enhance the water access licence system ($1.225 million). Together these projects account for 97% of the proposed program.

Cardno has reviewed these projects (Appendix C), and found there was insufficient information to draw any firm conclusions about efficiency.

Groundwater monitoring network

The $13.78 million of planned expenditure for the groundwater project (over five years) has not been justified through a business case and we have not been provided with information that sets out how the cost estimate has been derived, nor the scope of works proposed. The business case is not scheduled to be completed until later in 2015-16. Further, we understand that the planned expenditure pre-dates a recent review of the network, which found that there is scope for rationalising the network by reducing the

number of monitoring pipes by nearly 10%. It is not clear what bearing this finding will have on the planned refurbishment program. But we note that the forecast $13.78 million for replacement and renewals represents just 5% of the network's replacement value of $256 million (or 1% investment per year over five years), which is a relatively small amount compared to the quantum of assets being managed.

It is recommended that DPI Water be required to justify the groundwater project ex-post at the next review before allowing expenditures to be accepted into the RAB.

Water access licence system

The total cost of this project ($1,225,000) is apportioned at $225,000 per year over the 5 years from 2016-17 to 2020-21. A DPI Capital Project Concept Proposal form for the project indicates that $540,000 is to be funded by DPI Water and a further $150,000 is to come from NSW Treasury. The source of funds for the balance is not indicated. It is not clear what the proposed expenditure is being spent on nor the basis for the cost estimate. There is no outline of the assets to be replaced, disposed of or upgraded.

Conclusion and recommendations

Cardno concluded that while DPI Water's asset management and capital planning framework provided a good process for decision making, there was insufficient information to conclude whether the proposed costs were efficient or not.

We note that this is similar to the position for the past review, when there was insufficient information to make conclusions about the proposed hydrometric station renewals program at the time.

Cardno recommend that the forecast capital expenditure for the program is included for the purpose of setting an estimate, but that a flatter expenditure profile is more appropriate on the basis that the project is unlikely to be delivered in the proposed timeframes. The proposed $100,000 budget for a business case has also been included, but for the 2016-17 year. Our recommended capital expenditure for the period is set out in Table 24 below. It totals $18.10 million, compared to DPI Water's proposed expenditure of $20.91 million. The difference is due to the timing adjustment for delivery of the groundwater monitoring network refurbishments.

Table 24 Forecast capital expenditure ($,000, $2015-16)

	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Capital program						
Proposed	3,776	5,428	5,215	5,529	5,482	25,430
Less external funding	0	0	0	0	0	0
Less third party	-135	-457	-425	-48	0	-1,065
Less grants	-2,450	-1,000	0	0	0	-3,450
Net capital expenditure						
Proposed	**1,191**	**3,971**	**4,790**	**5,481**	**5,482**	**20,915**
Recommended	**1,191**	**3,971**	**3,790**	**4,575**	**4,576**	**18,103**

Note: Table shows total capital expenditure (as opposed to user share)

Findings:

Detailed reviews were performed for the largest two projects which comprised 97% of expenditure. These projects have not yet reached a stage of development at which firm findings can be made about their prudence and efficiency. DPI Water will need to justify these projects ex-post at the next review. It appears unlikely that the groundwater project can be delivered in the proposed timeframes, so we recommend shifting the cost profile out by one year. This results in a 13% reduction to the capital expenditure allowance over the forthcoming determination period (out to 2020-21).

7.5 Depreciation

DPI Water proposes the following depreciation rates for assets, which are based on the asset lives used by the Department of Industry (Table 25).

Cardno advised that 60-80 years is more widely accepted as the useful life for buildings (rather than 40 years), and infrastructure should be categorised at a more granular level, for example to separate out civil aspects from mechanical and electrical.

We are hesitant to require a change to lives than those used for accounting purposes without a strong reason to do so, as this will complicate DPI Water's regulatory accounts. Capital costs are only a very small portion of charges. For infrastructure, asset values are likely to be dominated by non-civil or concrete items and hence a blended, shorter life would appear to be reasonable.

Table 25 DPI Water proposed asset lives

Category	Useful lives (years)
Buildings	40
Infrastructure	20
Business and computing equipment	4
Laboratory equipment	7
Specialised equipment	**7**
Intangibles	10
Furniture and fittings	10
Motor vehicles	7
Trailers and caravans	10
Marine vessels	7

Findings:

We are hesitant to require DPI Water to adopt specific regulatory lives, different to accounting lives, given the relatively small contribution of capital costs to user prices, and on the basis that DPI Water's useful lives for capital projects are broadly reasonable.

8 Review of output measures and performance

This section reviews DPI Water's adherence to the reporting framework established by IPART as part of the 2011 Determination. We examine whether the framework is providing a useful tool for preparation and evaluation of DPI Water's pricing proposal. The section also reviews DPI Water's proposed output measures and performance indicators. Recommendations for revisions to the proposed performance indicators and measures are made.

8.1 IPART Reporting Framework

In the 2011 Determination, IPART established a reporting framework for the former NOW to ensure that both IPART and stakeholders have adequate information about expenditures and activities over the determination period, and to enhance future reviews of pricing proposals in subsequent periods (in particular the 2016 Determination).

The reporting framework comprises annual reporting measures, an end of determination period report, and an Annual Information Return Excel spreadsheet that was developed by IPART for the former NOW to complete and return to IPART by the last working day of October of each year of the 2011 Determination period.

The requirements of each of these framework components is outlined below, together with an assessment of DPI Water's compliance with the each component.

8.1.1 Annual reporting measures

IPART required the following to be provided on an annual basis:[73]

- Financial reports, which are to include:
  - revenue collected from water charges by valley, or in the case of groundwater, by the inland/coastal division
  - operating expenses separately identified by activity codes
  - current year allowed expenditure and actual expenditures
  - explanation of the variation between allowed operating/capital expenditures and actual expenditure
  - FTE staff reports on the resources allocated to each activity code.

[73] IPART, *Review of Prices for the Water Administration Ministerial Corporation - Final Report*, February 2011; pages 217-218 (Synergies has paraphrased the information requirements)

- Reports of actual revenue received from the Commonwealth in relation to Murray Darling Basin water reforms
- Reports of progress against delivery of key Monopoly Service Outputs including
  - expanding the hydrometric network,
  - completing the Water Sharing planning process and its implementation,
  - publishing and implementing outstanding operational plans and policies,
  - ensuring that 90% of transactions and approvals are processed within 28 days,
  - ensuring that 60% of all other transactions and approvals are processed within 3 months; and
  - ensuring that 100% of licence breaches reported are actioned.
- 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.

Synergies' assessment of compliance with reporting measures

- DPI Water has mostly complied with the requirements set out for financial reporting. The exception is its reporting of FTE numbers, which were not provided in the financial report or the Annual Information Return.
- Synergies could not locate a summary table showing a breakdown of actual Commonwealth revenue received over the current determination period, by project, and how it contributed to funding C code activities.
- DPI Water provided IPART with an 'Appendix L Report 2014-15', which sets out performance outputs and outcomes against Schedule L (Schedule of Monopoly Service Order outputs to 2014), which is contained in IPART's final report accompanying the 2011 Determination.[74] Synergies has reviewed the Appendix L report and we are satisfied that it contains a comprehensive reporting of actual outputs (as of 2014-15) against planned measures.
- DPI Water has extracted some of the information from the Appendix L report for inclusion in section 4.2 of its submission, which contains a description of performance over the current determination period for each C code activity. Synergies notes that the information provided in the submission does not allow a side-by-side comparison of planned and actual outputs.

[74] IPART, *Review of Prices for the Water Administration Ministerial Corporation - Final Report*, February 2011; page 303

- Synergies recommends that for future reporting purposes, the submission should contain a table similar to Table 26 below, which sets out a succinct comparison of outputs that were planned for the current determination period, the actual outputs delivered at the end of the period, and an explanation for any variances between actual and planned. Synergies has populated this example table with information for several of DPI Water's Monopoly Service Outputs. We have indicated which measures have been reported in DPI Water's submission and which ones were reported in the Appendix L report.
- A 'traffic light' coding system would add further value to this analysis, with a green light denoting that planned outputs have been met, an orange light denoting (for example) that at least 75% (but less than 100%) of the output target has been delivered, and a red light denoting that less than 75% has been delivered.

Table 26 Actual performance against Monopoly Service Outputs

Activity code/title	Planned output measure as at 2011	Actual output as at 2015 (and explanation for variance)
C01-01 Surface water quantity monitoring (hydrometrics network)	NOW is expanding its hydrometric network by 128 stations, up from the current number of 385 It will visit each of its 513 stations (385+128 stations) 6 times a year (up from the current level of 3.5)	Water users contribute to the operation costs of 534 hydrometric stations (from submission). The average annual number of visits per station has increased from 3.5 to 4.8 (from submission). Actual number of stations as at 2014-15 reported to be 414 (Appendix L Report)
C07-01 Water Sharing plan development	NOW will gazette 83 WSPs by 2014 complete the remaining 18 inland WSPs by 2013 complete the 20 remaining coastal valley WSPs by 2013 revise all existing WSPs for Murray-Darling Basin River resources by 2014 to enable 'accreditation' of existing plans with the Basin Plan review and remake a total of 31 existing WSPs before 2014, prior to their 10 year expiry date	Increased the number of completed from 45 to 70 (this is behind planned timeline due to the development of amendments to existing WSPs taking priority and resources) 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 amending the 31 existing WSPs by 2014, the extension was necessary to respond appropriately to issues identified by water users.
C10-01 Water consent transactions	90% of transactions and approvals are processed within 28 days Ensuring that 60% of all other transactions and approvals are processed within 3 months	Over 93% of transactions for permanent trade of access licenses were completed within 28 days 87% of all other transactions and approvals were completed within 3 months
C09-03 Compliance	Action 100% of licence breach reports (up from the current level of 50%) 70% of licences audited are in compliance with licence requirements. Progress towards 100% of licences audited being in compliance with licence requirements (up from a current base of 70%). Increase the auditing level from 0.5% of total licences to 1%	100% of breach reports are actioned (Appendix L Report) 91% of breach reports are assessed within 14 days (Appendix L Report and submission) 4% of all licences were audited in 2014-15, of which 98% were compliant (Appendix L Report)

Source: DPI Water submission, section 4.2; DPI Water Appendix L Report 2014-15; and IPART, *Review of Prices for the Water Administration Ministerial Corporation - Final Report*, February 2011; page 303

8.1.2 End of Determination Period Report

Part B of DPI Water's submission contains the End of Determination Period Report. The purpose of this report is to set out how services have been delivered over the current determination period against each of the Schedule of Monopoly Service Outputs specified in the 2011 Determination (i.e. each of the C code activities).

Synergies' assessment of DPI Water's compliance with IPART's requirements for the end of determination period reporting are set out in the table below.

Table 27 DPI Water's compliance with end of determination period reporting requirements

Reporting requirement	Synergies' assessment
Report of progress against delivery of the Monopoly Service Offering listed in Appendix L	As discussed in section 8.1.1 above, DPI Water has not provided sufficient information in the end of determination report to enable a side-by-side comparison of planned and actual performance for each output measure.
Consultations with users about performance expenditures and revenue	DPI Water has provided what appears to be a comprehensive list of its consultation activities over the current determination period. The report could be strengthened if additional information was provided on the value obtained from the consultation processes for management strategy and decision-making. There seems to be a focus on "informing customers" about DPI Water services and customer rights and obligations. While this is an important objective of consultation, DPI Water should also set out its strategy for seeking customer preferences and feedback – and what processes will be put in place to harness this information for improved business management.
Billing systems and administration	DPI Water has addressed this
Financial systems, including the ring-fencing of expenditures related to the monopoly services	In various places in the submission, DPI Water refer to misallocation of staff time against C codes. However, this issue and how (or whether) it has been addressed is not discussed in this section of the End of Determination Report. This is a significant omission. There is only one paragraph that indicates that measures have been taken to rectify incorrect recording of time against codes: *"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."* Given the importance of this issue, Synergies recommends further explanation of what changes have been made to the cost accounting, time-reporting system, protocols and guidelines, and staff training to minimise the amount of misallocation of time. In addition, DPI Water has not adequately set out its accounting mechanisms for ring-fencing Commonwealth government grants from monopoly services to be charged to water users.
Asset management and capital planning frameworks	See Cardno's report in Appendix C
Timely, accurate and complete annual reports, as sought by IPART	DPI Water has addressed this

Source: DPI Water submission, Part B

8.1.3 Annual Information Return

DPI Water has complied with provision of information requirements set out by the Annual Information Return (AIR) template developed by IPART. This is a valuable element of the reporting framework and should be maintained for the 2016 determination period. Additional measures should be implemented by DPI Water to ensure that the AIR is consistent with information provided in the submission.

8.2 Reporting of external funding by activity

Synergies is concerned about the absence of transparent reporting on the use of external funding for offsetting the costs of DPI Water's water resource management activities. We consider that the standard of reporting does not provide adequate transparency or assurance that external funds are not being used to pay for activities whose costs are also included in expenditure forecasts for cost recover through water management charges.

Synergies has developed a reporting template that would provide the necessary transparency around use of external funding, by activity. We recommend that DPI Water be required to complete this template on an annual basis over the forthcoming determination.

8.2.1 Example template

The template below shows a worked example for activity W06-02 (water plan development - inland), based on DPI Water's budgeted allocation of Basin Plan funding to this activity and the FTEs that will be engaged using Commonwealth funds.[75] The information provided by DPI Water indicates that $17.3 million of Basin Plan funding will be allocated to W06-02 over the next five years. 61% of this will be used for WRP development. The remainder will be used for environmental water planning, water quality and salinity management plans, and review of sustainable diversion limits.

Data on proposed revenue needs has been sourced from Table F1 of DPI Water's submission. Synergies has calculated total resource inputs by adding the amount of Basin Plan funding to the net revenue needs put forward by DPI Water.

[75] Data provided to Synergies by email on 11 November 2015

Water plan development (inland) - W06-02						
	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Total resource inputs						
Total FTEs	40.2	43.4	43.7	41.0	20.7	
Total operating expenditure ($'000)	7,939	7,933	7,929	7,153	3,391	34,345
Less externally-funded inputs						
FTEs	23.3	23.3	23.3	20.3	0.0	
Funding ($'000)	4,499	4,498	4,498	3,764	0	17,259
Proposed revenue needs						
Net FTEs	16.9	20.1	20.4	20.7	20.7	
Net expenditure ($'000)	3,440	3,435	3,431	3,389	3,391	17,086

Description of activities externally-funded

Review of water sharing plans for inland areas, outside the normal, scheduled statutory review cycle, as a means of ensuring the plans are compliant with Water Resource Plan requirements (61% of the external fuding used for this purpose).
Balance of external funding used for:
- Environmental water planning
- Water quality and salinity management plans
- NSW position on MDBA Northern Basin Sustainable Diversion Limits (SDL) review
- SDL adjustment - feasibility reports and business cases

Outputs externally funded

22 Water Resource Plans
Environmental water plans (unspecified number)
Water quality and salinity management plans (unspecified number)

8.3 Review of output measures and performance indicators

An effective set of output measures and performance indicators should allow DPI Water to assess the extent of its progress toward, and achievement of, business objectives. Whether indicators are qualitative or quantitative, they must be capable of reliable measurement in order to be useful. In developing performance indicators, it is important that an organisation develops a concise basket of specific and well understood indicators that are cost effective to collect, readily measurable, and that provide a comprehensive and balanced coverage of outcomes and outputs.

The metrics would ideally enable comparisons with industry standards, for example by using the same or similar measures adopted by other water management agencies.

DPI Water's proposed outputs and indicators are considerably different to those used for the 2011 Determination. Current and forecast values for each of the output measures have been provided in Appendix C of DPI Water's submission.

8.3.1 Assessment criteria

Synergies has assessed the appropriateness of DPI Water's proposed output measures and key performance indicators (KPIs) against a number of criteria:

- *Measurable:* The outputs and KPIs must be able to be reliably measured using either a quantitative or qualitative metric. Dichotomous measures (i.e. yes or no to delivery of an output) should be used sparingly as a continuous measure provides a better means of tracking progress against objectives over time.
- *Specific:* The measures should be defined concisely, thus removing any scope for ambiguity or subjectivity in measurement and interpretation. For example, "number of robust water plans developed" is a poor measure because there is no accepted, standard measure of what does and does not constitute a robust plan.
- *Capable of being linked to inputs*: It is preferable to define output measures and KPIs that are directly related to the strategies, activities and inputs deployed by DPI Water. If an output is significantly affected by exogenous factors, such as seasonal water availability, then DPI Water may have only limited control over the outcome.
- *Unidirectional:* For output measures and KPIs to be useful for management, observed changes in the measure in a particular direction should be readily interpreted as being either a positive or negative outcome. Ambiguity arises if a unit increase in an output could imply both a beneficial and detrimental outcome.
- *Relevant:* Where possible, KPIs should measure progress against a strategic objective as opposed to simply completion of a targeted output. The use of performance indicators that reflect the completion of an activity inhibits meaningful comparisons of results with other data and other organisations, and makes the development of any trend in actual and relative performance difficult. Another aspect of relevance is whether the KPI measures economic efficiency. For example, reducing application processing times to a target level may indicate improvement in business processes, but if the cost of achieving this outcome is very high then the business may not be operating efficiently.

8.3.2 Findings

Our findings from this assessment are summarised in Table 28. The shaded cells denote those KPIs that could be candidates for benchmarking DPI Water's performance against other water management agencies or comparable industry benchmarks (noting that the other KPIs typically are defined as percentage completion of a target and therefore not useful for making inter-agency comparisons).

We make the following observations:

In most instances, the output measures and KPIs proposed by DPI Water are clear in communicating what is to be achieved. Numerous KPIs are defined in terms of cumulative percentage achievement of specified targets. This is appropriate for measuring performance at annual intervals during a regulatory period

None of the KPIs are capable of indicating direct and definitive improvements in economic efficiency. This is because unit cost ratios for outputs are not included in the KPI set. Consideration should be given to including unit cost ratios for a selection of key activities

Some output measures do not satisfy the unidirectional criterion. For example, an increase in the number of surface water quality tests per year could be interpreted as either good or bad. Good if DPI Water is moving (strategically) to a more rigorous monitoring regime to address identified deficiencies in managing water quality objectives, but bad if the additional testing is triggered by deteriorating water quality, which may be a consequence of poor environmental water management performance (activity code W05-03). For these measures it is recommended that DPI Water provide justification for the forecast change in output.

A small number of proposed KPIs use subjective measures and therefore do not satisfy the specificity criteria. In the case of regional strategies, the output measures do not specify the standard of quality (or detail) for the regional strategies. Another example is the output measure for cross border and national commitments. "Full participation" in interstate processes to manage water could mean different things to different people, and therefore not an objective measure.

Several of the proposed output measures are subject to exogenous influences such as seasonal water availability and thus partly outside of DPI Water's control. One example is the number of customer enquiries, which may be systematically higher during drought periods.

Most of the KPIs measure progress against planned output levels. There is much less focus on progress against strategic objectives and outcomes. For example, there are no KPIs that measure the level of customer use of real time water flow information, or the quality of environmental outcomes. Synergies accepts that defining KPIs for delivery of outcomes is often more difficult than measures that track progress against planned outputs. However, where possible DPI Water should give consideration to evaluating its impact on outcomes with reliable performance indicators.

We recommend more effort go into defining KPIs around customer satisfaction. The "number of enquiries" is a blunt output measure. Consideration should be given to

specifying this output measure at a greater level of granularity – for example, at minimum distinguishing between those enquiries that are complaints and those that are calls for further information. A customer satisfaction KPI, possibly defined as an index that is estimated annually through surveying customers' responses to a number of standard questions, would assist in tracking improvements in customer service through time.

Another area to explore is whether KPIs defined at the individual activity level can be aggregated to higher-order KPIs for the purpose of tracking performance at an activity group level. We are suggesting a nested hierarchy of KPIs. This would facilitate improved communication of performance against strategic objectives to customers and the DPI Water executive team, while KPIs for each of the 33 individual activities would support operational-level decision making and fulfil the requirements of IPART.

Table 28 Assessment of proposed output and performance measures

Code	Activity	Output measure	Performance indicator	Assessment
W01-01	Surface water quantity monitoring	• Number of stations for water management charge	• No of visits per annum per station	The proposed KPI could be a candidate for benchmarking DPI Water against other water management agencies KPI not an efficiency measure. Median cost per station should be considered, split by telemetered and non-telemetered sites The KPI is subject to external seasonal influences (e.g. if visits are increased during drought periods or during flooding) Another potential KPI would be the percentage of customers served with telemetry, and of this group, what percentage actually use real time flow data (possibly measured by website hits or phone app downloads)
W01-02	Surface water data management and reporting	• Number of surface water sites subject to data management meeting specific criteria	• Percentage telemetered sites with data available on internet 9am each day • Percentage of DPI Water funded sites telemetered	The proposed KPI (% of sites telemetered) could be a candidate for benchmarking DPI Water against other water management agencies Specific criteria referred to in the output measure are not defined
W01-03	Surface water quality monitoring	• Number of tests per year	• Tests meeting quality standards (percentage acceptable tests/total tests): • Speed of reporting of results (percentage of tests taken, processed, quality assurance approved and coded for publication within 90 days):	KPI is not an efficiency measure. Average cost per test should be considered KPI relies on quality standards that are published and widely accepted as best practice An increase in the output measure (number of tests per year) could be interpreted as either good or bad. Good if DPI Water is moving to a more rigorous monitoring regime to manage water quality objectives, but bad if the additional testing is required in response to deteriorating water quality, which may be a consequence of poor environmental water management performance (activity code W05-03).
W01-04	Surface water algal monitoring	• Number of sites monitored and tested for blue green algae:	• Percentage of samples collected and analysed according to current standards and within agreed timeframe	KPI is not an efficiency measure. Average cost per test should be considered KPI relies on quality standards that are published and widely accepted as best practice The output measure - number of sites monitored – could be interpreted as either good or bad (as above)
W01-05	Surface water ecological condition monitoring	• River condition index report updated annually	• Percentage of the state for which the River Condition Index (RCI) is completed in current year	KPI is not an efficiency measure. Average cost per RCI report update should be considered The KPI is a measure of progress against a targeted level of activity. Consideration should be given to a KPI that measures demand for this tool (the RCI) – e.g. a measure of how frequently it is used for decision making or informing policy

Code	Activity	Output measure	Performance indicator	Assessment
W02-01	Groundwater quantity monitoring	• The number of pipes from which data are collected (in the last 2 years)	• Percentage of pipes monitored according to their scheduled frequency	KPI is not an efficiency measure. Average annual monitoring cost per pipe should be considered
W02-02	Groundwater quality monitoring	• The number of pipes from which water quality data are collected (in the last 2 years)	• Percentage of pipes monitored according to their scheduled frequency	The output measure could be interpreted as either good or bad (as above) KPI is not an efficiency measure. Average annual monitoring cost per pipe should be considered. Alternatively, staff hours per pipe
W02-03	Groundwater data management and reporting	• Number of active pipes subject to data management	• Percentage of active sites subject to data management	The proposed KPI could be a candidate for benchmarking DPI Water against other water management agencies KPI is not an efficiency measure. Average annual data management cost per pipe monitored should be considered. Alternatively, staff hours per pipe.
W03-01	Water take data collection	• Number of government owned and maintained meters: • Number of sites with agency water take reading/assessments charged	• Percentage government owned meters operational	KPI is not an efficiency measure. Average cost per water take reading should be considered.
W03-02	Water take data management and reporting	• Issued entitlement metered	• Percentage of issued entitlement metered	The proposed KPI could be a candidate for benchmarking DPI Water against other water management agencies
W04-01	Surface water modelling	• Number of models/analyses annually	• The percentage of surface water share component in NSW covered by models subject to annual assessments	Terminology for this KPI should be defined or simplified if it is to be publicly reported (i.e. % of surface water share component) The level of quality or detail in the modelling is unspecified and could give rise to ambiguity about the output measure KPI is not an efficiency measure. Median cost per model analysis should be considered.
W04-02	Groundwater modelling	• Number of models/major aquifer analyses annually	• Percentage of volume of groundwater share component subject to modelling assessment annually	As above
W04-03	Water resource accounting	• Number of outputs for water accounting reports, reporting obligations and required ad hoc	• Percentage of entitlement by water type covered by the water accounting reports	The KPI measures progress against a target level of water accounting, by water type KPI is not an efficiency measure. Average cost of preparing a particular type of water account should be considered. Other potential KPIs to consider are a measure of the accuracy of water accounts and the level of customer use of accounts

Code	Activity	Output measure	Performance indicator	Assessment
W05-01	Systems operation and water availability management	• Annual compliance review on WaterNSW work approval conditions. • Available Water Determinations (AWD) issued	• Annual compliance review on WaterNSW submitted within 3 months of receiving input data from WaterNSW. • Timeliness of AWDs	The output measure (number of AWDs issued) may be seasonally affected The KPI (timeliness of AWDs) could be a candidate for benchmarking DPI Water against other water management agencies The KPI (timeliness of AWDs) is not a measure of economic efficiency. Should consider average cost per AWD issued
W05-02	Blue-green algae management	• Algal risk management plans for each region are implemented	• Percentage of reports meeting weekly timeframe to regional algal coordinating committees and state algal coordinator of alert levels based on algal data. • Actions implemented in accordance with algal risk management plan and guidelines	The output measure gives no indication of the quality of the plans being produced The proposed KPIs do not measure economic efficiency. Should consider average cost per plan developed and implemented
W05-03	Environmental water management	• Delivery of Snowy and Snowy Mountain River increased flows. • Conditions on major dam work approvals to implement environmental watering plans and to mitigate cold water pollution impacts on receiving waters. • Monitor and evaluate water resource plans to determine environmental outcomes.	• Percentage of occasions that Snowy and Snowy Mountain River daily flow target achieved	The proposed output measures and KPI are indicators of the level of DPI Water activity. Consideration should be given to defining a KPI that indicates the quality of environmental outcomes. Perhaps the River Condition Index could be used to generate this KPI
W05-04	Water plan performance assessment and evaluation	• Number of valleys being assessed under the performance and assessment strategy • Number of plan audits completed (5 yearly) • Number of plan evaluations completed	• Percentage of plans incorporated into ecological performance and assessment programs • Percentage of plans audited within statutory requirement • Percentage plans evaluated that have come to term	The proposed KPIs are not measures of economic efficiency. Should consider reporting median cost of assessment per plan. Should also consider specifying one or more KPIs that monitor the outcomes of the assessments – for example, are the water plans meeting required standards and performing to expectations?

Code	Activity	Output measure	Performance indicator	Assessment
W06-01	Water plan development (coastal)	• Number of WSPs reviewed, replaced, extended or merged	• Cumulative percentage of forecast WSPs reviewed, replaced/extended or merged	The proposed KPI is not measures of economic efficiency. Should consider reporting median cost reviewing a plan.
W06-02	Water plan development (inland)	• Number of WSPs reviewed, replaced, extended or merged. • Number of WRPs completed.	• Cumulative percentage of forecast WSPs reviewed, replaced/extended or merged • Cumulative percentage of forecast WRPs completed	As above
W06-03	Floodplain management plan development	• Number of FMPs completed or remade	• Cumulative percentage of forecast FMPs completed	As above
W06-04	Drainage management plan development	• Number of DMPs completed or remade	• N/A	As above
W06-05	Regional planning and management strategies	• Number of regional water strategies (metropolitan water plans) reviewed. • Number of new regional water strategies completed	• Cumulative percentage of forecast metropolitan water plans being reviewed • Cumulative percentage of forecast regional water strategies completed	The output measures do not specify the standard of quality (or detail) for the regional strategies The proposed KPIs are not measures of economic efficiency. Should consider reporting the median cost of preparing a new regional water strategy
W06-06	Development of water planning and regulatory framework	• Number of regulatory instruments and policies developed or amended according to an annual forecast	• Percentage of annual forecast frameworks and regulatory instruments delivered according to schedule	Are more regulatory instruments, policies and amendments a good or bad outcome?
W06-07	Cross border and national commitments	• Full participation in interstate processes to manage water	• Compliance with key interstate agreements	The output measure is subjective. What represents “full participation”?
W07-01	Water management works	• High priority areas of erosion identified and remediated • Maintain salinity (EC) credits for NSW	• Channel output capacity at Tumut maintained at 9,200ML/day	The “priority areas of erosion” output measure may be affected by seasonal factors (e.g. heavy rainfall events) How is the maintenance of salinity credits measured (yes/no indicator?) The KPI could be improved by defining the indicator as the percentage of time the 9,200 ML per day threshold is met, say within a +/- 5% range.

Code	Activity	Output measure	Performance indicator	Assessment
W08-01	Regulation systems management	• Number of applications received online	• Percentage of all applications received online	The output and KPI measures are composite measures – i.e. the number of applications received online is determined by the number of different application types that DPI Water has made available for online lodgement and the level of uptake of online lodgement, where this option exists. Consequently, DPI Water can increase the output measure and KPI by either increasing the availability of online lodgement (across a wider range of application types) or by promoting behaviour change among its customers so that uptake of online lodgement is increased (or both of these strategies can be pursued).
W08-02	Consents management and licence conversion	• Annual number of licences recorded on the public register plus number of access licence and approvals with updated conditions	• Percentage of access licences and changes to licence details recorded on the public register within two months of implementation or update of sharing plan	The proposed KPI could be a candidate for benchmarking DPI Water against other water management agencies
W08-03	Compliance management	• Number of breach reports received	• Percentage of non-basic landholder rights approvals audited each year • Percentage of properties audited that are in compliance with licence and approval conditions (excluding those audited as part of investigating an alleged breach) • Percentage of breach reports risk assessed within 14 days of receipt • Percentage of all cases finalised within 6 months	It is unclear whether an increase in the output measure (number of breach reports) is a good or bad outcome. It could be viewed as a good outcome if the public is becoming more knowledgeable about recognising what constitutes a breach of water licence conditions, and thus more confident to submit a breach report. Alternatively it could be a bad outcome if it were to indicate a real increase in the number of licence holders breaching their licence conditions. The output measure is therefore a reasonable measure of "workload" for the compliance unit, but because of the above ambiguity it is not necessarily a good measure of progress towards a desired outcome. The KPIs are not indicators of economic efficiency. Consideration should be given to reporting the average cost per licence audited. The proposed KPIs are all candidates for benchmarking DPI Water against other water management agencies
W08-99	Water consents overhead	• Overhead charge associated with consent transactions.	• N/A	Consideration should be given to a KPI that measures changing overhead costs over time, with the objective to progressively reduce costs.
W09-01	Water consents transactions	• Number of applications processed	• Percentage of applications for licence dealings assignment of shares (71Q) processed within 20 days: • Percentage of applications for new access licences processed within 40 days	The output measure – number of applications processed – is affected by water availability and therefore not within DPI Water's control. The proposed KPIs are all candidates for benchmarking DPI Water against other water management agencies The KPIs are not indicators of economic efficiency. Consideration should be given to reporting the average processing cost per transaction type.

Code	Activity	Output measure	Performance indicator	Assessment
			• Percentage of applications for water management work and use approvals processed within 60 days • Percentage of applications to extend a water management work approval processed within 20 days: • Percentage of applications for an approval for a bore for domestic and stock rights processed within 10 days • Percentage of legal searches completed within the preferred processing time frame	
W10-01	Customer management	• Number of enquiries	• Percentage of enquiries directly responded to at the time of the call/email	The "number of enquiries" is a blunt output measure. Consideration should be given to specifying this output measure at a greater level of granularity – for example, at minimum distinguishing between those enquiries that are complaints and those that are calls for further information. An increase in the "number of enquiries" could be interpreted as either a good or bad outcome. Good if it means that customers are becoming more willing to engage with DPI Water. But poor if it reflects a high number of complaints. Furthermore, Synergies expects that the number of enquiries would be somewhat affected by seasonal conditions (e.g enquiries increasing during drought), so not entirely within DPI Water's control. The proposed KPI is a candidate for benchmarking DPI Water against other water management agencies Consideration should be given to specifying a customer satisfaction KPI, possibly defined as an index that is estimated annually through surveying customers' responses to a number of standard questions
W10-02	Business governance and support	• Annual reporting to IPART and ACCC. • Annual performance reporting to customers	• Annual reporting within agreed timeline from end of financial year (reporting to IPART and ACCC: 4 months; and reporting to customers: 6 months).	The KPIs are not measures of economic efficiency. Should consider reporting cost of compliance with the reporting requirements.
W10-03	Billing management	• Number of bills issued:	• Percentage of billing revenue collected within 3 months of the bills being issued	The proposed KPI is a candidate for benchmarking DPI Water against other water management agencies

Source: DPI Water submission, Appendix C

9 Water consent transaction services

Water consent transaction services are fee for service activities that manage the issue, trade and amendment of water access licences, water allocations and water approvals. The following reviews the fees proposed by DPI Water to recover the cost of processing these applications.

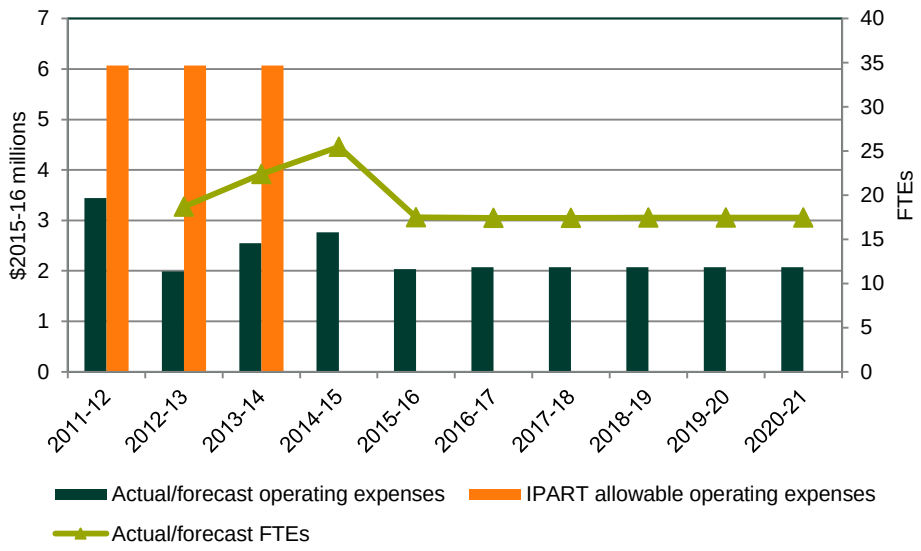
9.1 Overview

The total costs of performing water consent transactions over the coming determination period are forecast to be lower, on average, than the actual costs incurred in recent years. This reduction is due to:

- lower expected transaction numbers;
- lower unit cost per transaction resulting from:
  - increased productivity (lower hours/transaction)
  - lower cost per hour due to increased use of lower classified staff to perform the admin task.

Figure 15 gives a clear indication of the forecast reduction in the direct costs of processing consent transactions.

Figure 15 Actual and Forecast operating expenditure and direct Labour inputs (FTEs)



Note: Graph shows total operating expenditure (as opposed to user share)
Source: DPI Water

DPI Water's proposed fees are set out in the following table.

Table 29 Current and proposed fees for consent transaction services ($/transaction), $2015-16

Transaction Type	Current Fee	Proposed Fee	% change
New water access licences			
Any new water access licence	$282.59 – $604.77	$329.53	17% to -46%
Water access licence dealings			
Dealings – regulated rivers	$411.46	$329.53	-20%
Dealings – unregulated rivers and groundwater	$1,593.14	$1,067.73	-33%
Dealings – unregulated rivers and groundwater with low risk	$758.84	$515.10	-32%
Dealings – administrative	$758.84	$242.81	-68%
Water allocation assignments			
Unregulated rivers and groundwater	$254.64	$286.17	12%
Approvals			
New or amended works and/or use approval	$2,607.33a	$1,966.74	-25%
New or amended works and/or use approval– low risk	$1,286.63	$1,063.12	-17%
New basic rights bore approval	$254.33	$406.77	60%
Amended approval – administrative	$926.94	$242.81	-74%
Extension of approval	$169.56	$245.81	45%

a Based on a specific pump capacity and irrigation area

Source: DPI Submission, page 242. Note the $year for the current fees were not specified in DPI Water's submission, and we assume the values to be inn $2015-16..

In addition to the above proposed fees DPI Water have proposed a reduced fee for on-line lodgement of approximately $34 per application which is equivalent to half an hour of time spent on the approval.

As shown in Table 29, the majority of the proposed fees will decline. The largest increase is for basic rights bore approvals with a proposed increase of 60% (54% for on-line application). The frequency of this service is also expected to remain high at 1,388 per annum, compared with an average of around 1,000 transactions per annum over the previous period.

9.2 Proposal

DPI Water only proposes to recover the specific costs of performing these tasks. Cost forecasts therefore were determined on a unit basis so that forecast total revenues will vary according to the number of services provided.

9.2.1 Unit costs

In determining the unit cost of providing water consent transaction services, DPI Water gave consideration to the following:

- the time taken to complete and process each type of application. The time taken includes:
  - Administration
  - Rules based assessment
  - Impact assessment
  - Advertising
  - Supervision and determination
- the unit remuneration costs, that is, the $/hr wage rate of those involved in the approvals; and
- any other direct costs such as site inspections.

DPI Water have determined that based on projected demand for each approval type total staff time in FTEs will range from a low of 8.9 FTEs to a high of 29.0 FTEs. A median value of 17.5 FTEs would result in a total cost of $2.07 million per annum. Table 30 shows the unit labour input requirement for each assessment and the average number of assessments forecast for the regulatory period.

Table 30 Direct costs by consent transaction type, $2015-16

	Transaction numbers	FTE per Transaction	Total FTEs	Total Direct Cost
New water access licences				
Zero Share	102	0.0029	0.30	$33,722
Specific Purpose	16	0.0029	0.05	$5,432
Controlled allocation	10	0.0029	0.03	$3,295
Water access licence dealings				
Dealings - regulated rivers	489	0.0031	1.54	$173,980
Dealings - unregulated rivers and groundwater	28	0.0083	0.23	$29,666
Dealings - unregulated rivers and groundwater - low risk	111	0.0044	0.49	$55,898
Dealings - administrative	157	0.0021	0.34	$38,137
Water allocation assignments				
Unregulated rivers	2	0.0031	0.01	$711
Groundwater	273	0.0031	0.86	$97,064
Approvals				
New or amended works and/or use approval	43	0.0129	0.55	$84,198
New or amended works and/or use approval - low risk	171	0.0068	1.16	$182,051

	Transaction numbers	FTE per Transaction	Total FTEs	Total Direct Cost
New basic rights bore approval	1,388	0.0035	4.90	$564,602
Amended approval - administrative	54	0.0021	0.11	$12,994
Extension of approval	3,214	0.0021	6.90	$789,974
TOTALS	6,058		17.5	$2,071,722

Source: DPI Water

To determine the direct cost per transaction DPI Water applied a hourly rate which varied by activity. The rates used for each classification are shown in Table 31.

Table 31 Basis of hourly charges by function, $2015-16

	Clerical level	Labour Rate ($/hr)	Consumables etc	Total Hourly charge
Admin	A&C4/5	65.085	3.914	68.999
Advertising and other expense	A&C4/5	65.085	3.914	68.999
Rules Assessment	A&C4/5	65.085	3.914	68.999
Impact Assessment	A&C9/10	90.071	3.914	93.985
Determination and supervision	A&C12	109.331	3.914	113.245

Source: DPI Water

These rates are based on total hours per FTE of 1,533hrs for the labour component and 24.89% on-costs.

In the previous determination IPART rejected the DPI's use of A&C12 officers to perform all the assessment tasks. The use of A&C4/5, 9/10, 11 and 12 administrative staff to perform the various tasks would appear to be more appropriate.

These rates were applied to the assessed time requirements to perform each function. These are shown in Table 32.

Table 32 Hours assigned to each task by consent transaction type (hrs)

	Admin	Advertis-ing	Rules Assessment	Impact Assessment	Determination and supervision	Total
New water access licences						
Zero Share	2.9		1.1	0.0	0.48	4.47
Specific Purpose	2.9		1.1	0.0	0.48	4.47
Controlled allocation	2.9		1.1	0.0	0.48	4.47
Water access licence dealings						
Dealings - regulated rivers	2.9		1.4	0.0	0.52	4.82
Dealings - unregulated rivers and groundwater	2.9		3.2	5.3	1.36	12.70
Dealings - unregulated rivers and groundwater - low risk	2.9		3.2	0.0	0.73	6.82
Dealings - administrative	2.9		0.0	0.0	0.35	3.29

	Admin	Advertis-ing	Rules Assessment	Impact Assessment	Determination and supervision	Total
Water allocation assignments						
Unregulated rivers	2.9		1.4	0.0	0.52	4.82
Groundwater	2.9		1.4	0.0	0.52	4.82
Approvals						
New or amended works and/or use approval	2.9	1.1	5.3	8.4	2.12	19.76
New or amended works and/or use approval - low risk	2.9	1.1	5.3	0.0	1.11	10.35
New basic rights bore approval	3.2		1.4	0.3	0.58	5.41
Amended approval - administrative	2.9		0.0	0.0	0.35	3.29
Extension of approval	2.9		0.0	0.0	0.35	3.29

These hourly rates are generally lower than DPI Water's previous submission. For example, normal works and use approvals was set at 17.3 hours in the 2011 submission compared with 10.35 hours in the current submission.

9.2.2 Demand forecasts

Total transactions are expected to average 6,058 per annum over the next regulatory period compared with an average of 6,294 for actual transactions during 2012-13 and 2013-14. In particular, extension of approvals transactions which account for 38% of total transactions are expected to average 3,214 compared with 2,008 over the 2012-13 and 2013-14 period. This significant increase is, according to DPI Water, due to the above average expected number of expiring existing approvals over the coming regulatory period.

DPI Water's demand forecasts are shown below in Table 33. Demand growth across the various transactions has varied considerably. For example, the most frequently used service under water access licence transactions relates to licence dealings on regulated rivers and the frequency of transactions has not changed over the previous regulatory period (596 in 2010-11 to 578 in 2014-15). The demand for this service is expected to stabilise over the coming period with a median forecast of 612 transactions. Charges for these services are proposed to fall by 16% to 25% in the coming period.

On the other hand, ground water allocation assignment transactions have increased by around 300% (155 in 2010-11 to 629 in 2014-15) over the period. However DPI Water expect the demand for this service to fall considerably to a median level of 273 transactions. Charges are proposed to increase by 4% for on-line application and 18% for other types of applications.

The most frequently used services were basic rights bore approvals (average of 1,010 transactions) and approval extensions (average of 2,290 transactions). The demand for these two services are expected to continue to increase with median levels of 1,388 and 3,214 transactions respectively.

Table 33 Actual and forecast transaction volumes

	Actual			Forecast		
	2011-12[a]	2012-13	2013-14	Low	Average	High
New water access licences						
Zero Share	91	98	112	90	102	110
Specific Purpose	25	15	11	13	16	25
Controlled allocation	0	1	14	0	10	20
Water access licence dealings						
Dealings - regulated rivers	637	594	645	570	612	650
Dealings - unregulated rivers and groundwater	27	41	53	25	54	55
Dealings - unregulated rivers and groundwater - low risk	59	80	128	60	120	130
Dealings - administrative				131	157	167
Water allocation assignments						
Unregulated rivers	139	255	409	130	273	500
Groundwater	0	1	3	0	2	5
Approvals						
New or amended works and/or use approval	73	179	392	12	43	74
New or amended works and/or use approval - low risk				50	171	294
New basic rights bore approval	464	977	1,799	600	1,388	2,000
Amended approval - administrative				16	54	92
Extension of approval	465	2,765	4,016	1,600	3,214	6,500

a For the 2011-12 year, dealings covers assignment of share, subdivide, consolidate, change and exit holding transactions. It does not include assignments of allocation ('temporary transfers')

Source: DPI Water

Three transaction types account for nearly 75% of total forecast revenues, namely:

- Extension of approval – 38%
- New basic rights bore approval – 27%
- New or amended works and/or use approval (low risk) – 9%

The forecasts for these three activities are based on the following methodologies.

Extension of approvals

The 'Average' level of transactions is based on the average of forecasts for the period 2016-17 to 2019-20. In turn, these annual values are based on the expected number of expiring existing approvals and their expiry dates as well as an estimate of the expiry of new approvals in 2016-17 and 2017-18.

New basic rights bore approval

The forecast is based on the average of actual approvals in 2012-13 and 2013-14. The volume of these transactions is very volatile and has fallen considerably since a fee was introduced. Climatic factors largely determine the level of activity in this area.

New or amended works and/or use approval – low risk

The average of actual approvals in 2010-11 and 2012-13 was used as the basis of this forecast. The total number of approvals in this area (268) was allocated to the low risk (non-administrative) category by applying a low risk factor of 0.8 and a non-admin factor of 0.8.

Forecasts of transaction volumes in this area are very difficult as many of the activities are largely determined by weather conditions. As individual fee levels are determined using a bottom-up approach they are independent of forecast volumes. However, total revenues from these charges will vary with actual future volumes with DPI Water bearing all the volume risk. Nevertheless, we consider that the average number of forecast transactions of 6,058 seems reasonable with the range of 3,000 to over 10,000 indicative of the level of volatility in this area. Although an upper limit of 6,500 for Approval extensions (i.e. over 62% of the total) may be overly optimistic.

Findings:

Overall, we consider the average number of forecast transactions to be reasonable.

9.3 Efficiency

Synergies has conducted a detailed search of the regulatory literature and other potential benchmarking material. However, no independently reviewed, comparable data which could be used to validate DPI Water's proposed task inputs could be located. For example, we compared similar charges across different Australian agencies (see Table 34) but could not make any conclusions given those charges are not typically subject to independent oversight, and therefore cannot be reliable indicators of efficient costs. Moreover, the scope of activities covered by those charges can vary between jurisdictions, as can the legislative requirements for assessment and processing.

Table 34 Comparison of proposed fees with other jurisdictions, $2015-16

Transaction type	NSW[1]	WA[2]	SA[3]	VIC[4]	QLD[5]
New water access licences					
Any new water access licence	$329.53	$200	$223[b]	$184.60	$117.50
Water access licence dealings					
Dealings – regulated rivers	$329.53	$200[a]	$415	$153.40 /$184.60[c]	$117.50[d]
Dealings – unregulated rivers and groundwater	$1,067.73	na	$415	$1,060[h]	na
Dealings – unregulated rivers and groundwater with low risk	$515.10	na	na	$1,060[h]	na
Dealings – administrative	$242.81	$200	na	$118.50	na
Water allocation assignments					
Unregulated rivers and groundwater	$286.17	$200	$244	$82.10[e]	$345.30[f] $117.50[g]
Approvals					
New or amended works and/or use approval	$1,966.74			$1,500[h]	
New or amended works and/or use approval– low risk	$1,063.12			$1,500[h]	
New basic rights bore approval	$406.77			$390[h]	
Amended approval – administrative	$242.81				
Extension of approval	$245.81			$690[h]	

Notes: a No differentiation by water source or river type
b Prescribed wells area and prescribed water resource area
c Transfers - $184.60 and divide and consolidate licences $155.40
d Seasonal assignment of licence $156.80 and Permanent transfer to other land $345.30
e On-line application $43.60
f Interim Water allocation transfers
g Change water allocation
h DPI Water supplied with no primary source identified

Source: 1 NSW DPI Water
2 WA Dept of Water
3 SA Dept of Environment, Water and Natural Resources
4 Victoria Dept Environment Land and Water Planning
5 Queensland Dept of Natural Resources and Mines

As an alternative means of evaluating efficiency of costs, we have considered the inputs to the derivation of the unit costs for consent transactions.

In terms of *processing time* to process each transaction, DPI Water has achieved a reasonable improvement in productivity since the previous determination. In particular, the administration task has declined by around 35%. Given that the administration function accounts for in excess of 62% of total direct costs this amounts to a productivity improvement in the order of 20%. However, the transaction time for administration costs is the same (2.9 hours) across nearly all categories which indicates a broad-brush approach to estimation.

The *resources used* have also been based on a more rigorous assessment of the types of staff needed at various stages of each transaction, with lower level resources assigned the non-technical, administrative tasks.

Unit labour costs are based on the assignment of specific employee classifications to specific tasks. For example, the administration function will be performed by class 4/5 clerical staff at a unit cost of $68.99/hr, including on-costs of 24.89%. These rates are based on a productivity of 1,533 hours per FTE.

DPI Water have stated that on-costs include superannuation, payroll tax, long service leave and workers compensation, but exclude leave. This is consistent with our understanding of on-costs, and the rate applied is also consistent with on-cost rates elsewhere.

We are also satisfied that 1,533 hours per FTE is reasonable as it approximates our own calculation of a range of plausible hours (albeit at the low end) including provision for public holidays, annual leave and some sick leave.[76] We also note that DPI Water has consistently applied this assumption throughout its forecasts of other operating costs, and claim these are standard working hours.[77]

We have compared these rates to published fee schedules for transactions or registry-based work. For example:

- NSW Land and Property Information charge $220 per hour for certain registry transactions, however these transactions involve technical and legal input;[78]
- Goulburn-Murray Water charge $110 per hour to review or assess certain applications where additional information is required, implying some technical assessment is required;[79]
- Bank transaction fees, for example ANZ bank's Miscellaneous Service Fee of $70 per hour;[80] and
- a Regulatory Impact Statement (RIS) for the National Quality Framework for Early Childhood Education which assumed administration costs per hour of between around $20 and $30 per hour. However, these administration tasks do not involve

[76] We have also reviewed awards which contemplate a working week at 35 hours for some employees.

[77] Refer to DPI Water (2015). p177

[78] http://www.lpi.nsw.gov.au/__data/assets/pdf_file/0009/203121/2015_06_LPI_fee_changes_from_1_July_2015.pdf

[79] http://www.g-mwater.com.au/downloads/Water_Plans/Miscellaneous_price_list_1_.pdf

[80] https://www.anz.com.au/documents/au/ratefee/General-Service-Fees-Charges.pdf

legislative approvals or have significant financial/property right consequences, and hence may not require the same level of skill and diligence.

While we cannot be confident that the above hourly rates published by others for transactions are based on efficient costs, the sample does suggest that DPI Water's hourly rates for technical resources ($93 - $113/hour) are reasonable. Rates for administrative resources are similar to those charged by banks such as ANZ and while this comparison is by no means conclusive, it does provide some comfort that the administration rates lie within a reasonable range.

DPI Water has also increased the discount for online lodgement of applications, based on a saving of half an hour of time for an administrative officer. This discount appears reasonable.

DPI Water does not appear to have incorporated the efficiency savings into these fees. We see no reason why these savings should not be applied.

Findings:

DPI Water has demonstrated that its consent transaction costs have been developed with some rigour, and incorporate productivity improvements and better resource allocation. Accordingly most charges have decreased. The proposed charges appear efficient, though there should be continued opportunities to refine business process and resource utilisation to continue to reduce costs over time. Accordingly these fees should be subject to an ongoing saving at the same level as proposed for DPI Water's other operating costs.

We therefore recommend IPART accept DPI Water's proposed water consent transaction charges, but are subject to the 1.5% efficiency adjustment each year.

10 Water take measurement services

This section provides a review of DPI Water's proposed charges and costs for reading meters and servicing government-owned meters, amidst the context of its strategy review.

10.1 Overview

DPI Water has proposed costs for water take measurement services of $1.125 million in 2016-17, increasing to $1.245 million in 2019-20. These costs comprise two components, as set out in Table 35 below.

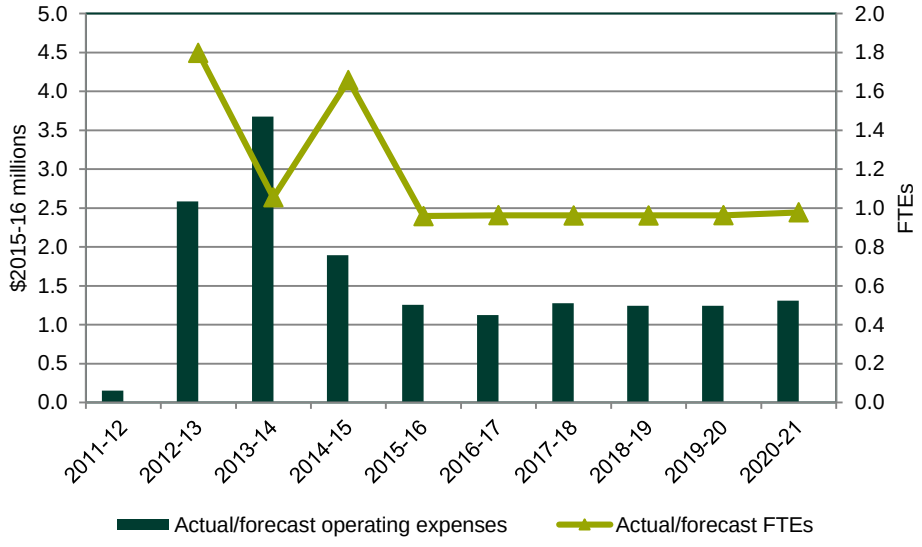
Table 35 DPI Water's proposed costs – water take measurement services ($'000, 2015-16)

Component	2016-17	2017-18	2018-19	2019-20	2020-21
Costs of meter servicing	587	587	587	587	*587(a)*
Meter reading costs	538	691	658	658	*721(a)*
TOTAL	1,125	1,278	1,245	1,245	1,308

a. DPI water did not provide a breakdown of the total price for 2020-21. Synergies has provided estimated figures based on costs of meter servicing remaining constant. Table shows total operating expenditure (as opposed to user share)

Data source: DPI Water

Figure 16 Operating expenditure and FTEs, Water take monitoring



Note: No IPART allowed expenditures were reported in DPI Water submission. Graph shows total operating expenditure (as opposed to user share)

Data source: DPI Water.

DPI Water is also preparing a water take measurement strategy, and has released a discussion paper in July 2015 setting out the imperative for change and possible

approaches. This strategy is expected to result in a reduction to the number of meters maintained and readings. This is reflected in the cost projections as set out in Figure 16.

At the same time, DPI Water is proposing increases to meter service charges, while meter reading charges will see a minor decrease.

The following sections describe in more detail DPI Water's proposed metering strategy and its meter service charges and water take or reading assessment.

10.2 Metering strategy

In the last review, IPART expected DPI Water to develop a clear framework about how it would make decisions about the type and location of meters, having regard to the future level of operating costs for the program.

10.2.1 Proposal

In July 2015 DPI Water released a discussion paper setting out new approaches for measuring water consumption in NSW.[81] The paper foreshadows the need to re-assess the costs and benefits of metering and measurement, and suggests a more targeted approach is needed. It also highlighted problems with the accuracy of meters, and the various policy and regulatory responses for implementing more accurate metering devices.

Currently the highest standard of measurement is applied to installations of 50mm and above, accounting for 99% of water take.

DPI Water developed principles for a new metering strategy that would maintain a higher standard of accuracy to locations with large water consumption, and a lesser standard to smaller water take locations. This relaxation of the metering requirement for lower-take locations would reduce metering costs, while still measuring a very high proportion of water diversions.

This principle is applied to five categories of location, from those requiring a high level of accuracy and telemetry to those where no measurement is required. The strategy would lead to some meters being upgraded, while other meters might not be maintained on the basis the installed standard is no longer required. The strategy also contemplates:

- users reading meters and providing data, rather than government agencies, to reduce the costs of metering;

[81] DPI Water (2015). Discussion Paper. *Water take measurement in NSW, a way forward*.

- different ownership and cost sharing arrangements for meters; and
- a phased implementation of the strategy.

Many of the ideas in this discussion paper have been considered for DPI Water's expenditure proposals for water take measurement. For example, DPI Water is forecasting that it will not maintain some government owned meters where it is not considered cost effective to do so. It has also reviewed the scope and frequency of meter readings and considerably reduced the number of reads taken (refer below).

The strategy is due to be finalised in July 2016.

In its submission to IPART, DPI Water also stated that it had conducted a considerable amount of work on a cost-benefit analysis, but this work will not be completed until there is more clarity on the features of the strategy, particularly the categories and thresholds.

10.2.2 Assessment

DPI Water's discussion paper for future water take measurement provides a critical review of the benefits and costs of metering. While the discussion paper sets out a potential decision making framework, it is still high level and has not yet translated to a detailed, implementable policy with business rules and implementation program. However, DPI Water has prepared forecasts and charges based on its estimated outcomes from the strategy, particularly the rationalisation of meters.

The metering strategy will provide a basis for future decisions about metering activities, standards, technologies and costs. DPI Water has already indicated its intention to undertake cost-benefit analysis to inform strategy decisions.

The discussion paper focuses on the completeness of information in a valley / aquifer (% of diversions measured), however other dimensions could be considered.

For example, we would expect the strategy would need to consider, among other things:

- The valuation of information gathered through measurement, and the differences in value relating to:
  - the completeness of information from a site (e.g. % availability of a meter, inspection schedules and allowances for failure and time to repair);
  - timeliness (how quickly the data is provided); and
  - time-step (at what intervals is water take data collected);

- the additional benefits from telemetry. DPI Water does not propose differential charges for meters with telemetry, and those read by agency staff. This implies that telemetry is not justifiable on cost grounds alone – indeed State Water (WaterNSW) provided information to the ACCC that suggested the savings from telemetry were less than the costs. DPI Water have indicated there are other benefits, such as notice of service interruptions, through telemetry;[82]
- the type of metering data required, for example a continuous time series (e.g. via a data logger) or a simple numerical meter;
- the frequency of collection of meter data, and whether different frequencies could apply for different 'categories' of location;
- the importance of the price signal for meter reading services to ensure customer decisions to read (or not read) their meter are based on accurate information (refer also below); and
- detailed consideration of the avoided costs from reducing the frequency of agency meter reads, given there is a fixed cost component to this activity as highlighted by DPI Water in its proposed meter reading charges (see below).

The strategy also considers ongoing ownership of metering equipment, including upgrades or additional meters, and identifies three options that include government investment and ownership, and recovery via an annual charge. The option chosen may impact on DPI Water's costs over the regulatory period – for example if it needs to invest in new meters itself. The interaction between these options, and the regulated charges set by IPART, would need to be considered.

Findings:

DPI Water has not completed a review of metering in time for this submission, as requested by IPART. However, it has incorporated some expected outcomes to its metering forecasts, which has influenced costs and charges. This is a reasonable approach, and appears to be based on the best information available at this time.

The strategy contemplates cost benefit analysis for various options. We have made recommendations about certain matters that should be considered as part of this analysis.

[82] ACCC (2013). Refer to Attachment 10, p142.

10.3 Meter Service Charges

Meter Service Charges apply to government-owned water meters, and are meant to recover the cost of operating and maintaining the meter on a fee for service basis. DPI Water's forecasts are based on 1200 government funded meters, for a total of $0.587 million per annum. This is based on an expectation that meter numbers will decline from the 1,534 meters currently installed.

Meter maintenance in the Murray Darling Basin is performed by a contracted service provider, managed by WaterNSW on behalf of DPI Water. Outside the Basin, meters maintenance is managed by DPI Water, and performed by a mix of agency staff and contractors.

10.3.1 Proposal

DPI Water based its forecast revenue requirement for meter servicing as follows:[83]

- servicing costs for WaterNSW-managed meters, based on the unit rates tendered via a competitively-procured contract.[84]. These unit costs vary slightly by meter size, from $320 for a 50mm meter to $386 for an 800mm meter;
- contract management costs of $24 per meter, payable to WaterNSW who manages meter servicing (and the abovementioned contract) on DPI Water's behalf;
- data collection and management costs of $145 per telemetered site, or a $40 data management cost for non-telemetered sites with user reporting.

The costs do not include any provision for future asset renewal or refurbishment.

The current meter service charges are differentiated by metering and telemetry technology, with the most common charge (2015-16) being $403.61 per meter for electromagnetic meters with data logger and mobile data modem.[85] Table 36 below sets out the existing charging schedule for all types.

[83] Email to Synergies 15 October, 2015.

[84] The contract was procured and is managed by WaterNSW, who provides meter servicing within the Murray Darling Basin on behalf of DPI Water.

[85] IPART (2011). Refer to Table 10.4, which sets out the estimated composition of meter stock at the time.

Table 36 2015-16 Meter Service Charges ($2015-16)

Installation type	Charge per annum	Estimated proportion (2011)
Mechanical Meter – with data logger	$236.18	7.5%
Electromagnetic Meter – with data logger	$309.36	7.5%
Electromagnetic Meter – with data logger and mobile data modem	$403.61	80%
Electromagnetic Meter – with data logger and satellite data modem	$752.89	5%
Other	$23.18	-

Source: http://www.water.nsw.gov.au/water-licensing/metering/metering-charges, and IPART (2011). Review of Water Prices for the NSW Water Administration Corporation – For the NSW Office of Water, from 1 July 2011. Refer p149, Table 10.

Note: Channel meters are additional .

DPI Water propose to move to a charging schedule based on meter size, using the tariff schedule published by the ACCC for WaterNSW as a starting point for 2016-17. However, DPI Water submitted that these prices would not achieve cost recovery, and instead needed to be increased by 13%. This increase would apply in 2017-18.

DPI Water's forecasts include an assumption that 57 meters out of the 1,200 would not be telemetered. For these 57 installations, customers can choose to read their own meter in which case they would pay a lower service charge (by $118.25) provided they make and supply their own readings twice a year, check the meter is working when pumping, and report meter failure immediately.

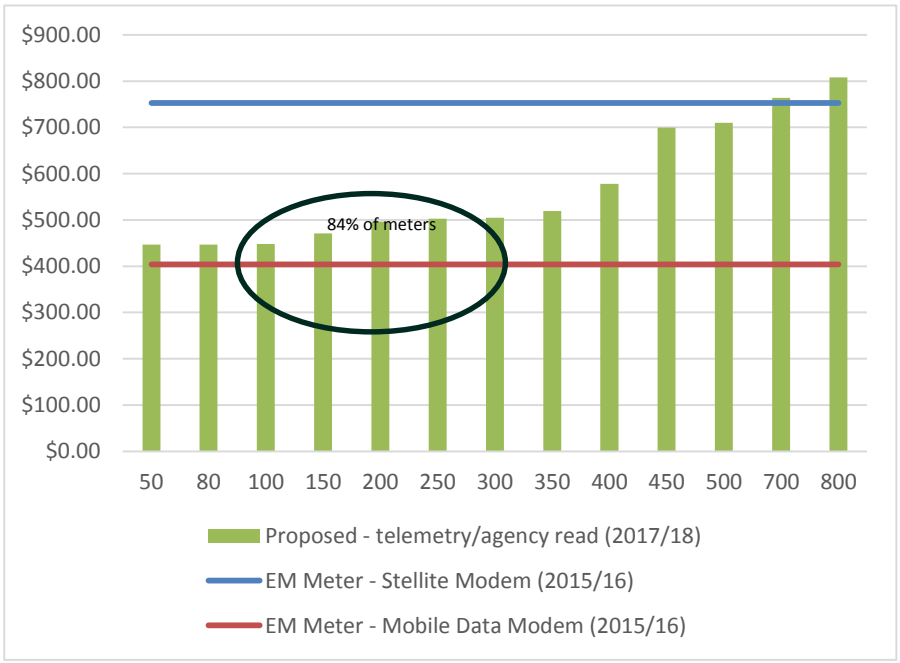
DPI Water's submission states the $118.25 per annum represents the savings associated with eliminating regular agency officer visits to the site to download data, and eliminating the processing of continuous data. If DPI Water is required to provide the meter reading service to a non-telemetered meter instead, the water take reading/measurement charge applies (refer below).

10.3.2 Assessment

Customer impacts

Figure 17 below shows the impact from changes to the current charging schedule. Note that around 84% of meters are between 100mm and 300mm.

Figure 17 Charge per installation – 2017-18 proposed and current meter service charges ($2015-16)



Source: DPI Water

84% relates to meters between 100mm and 300mm.

Only data to 800m meter sizes is provided, as DPI Water did not report any meters larger than this within its fleet.

Customers who have telemetry using satellite data modems will see a significant reduction to their meter service charges. However, DPI Water indicate that at least some of these sites will no longer be telemetered, which would mean these customers would need to provide their own meter reads or pay DPI Water for this service.[86]

All other customers would see an increase to their meter service charges from 2017-18, with most customers experiencing between an 11% and 25% increase per installation. The impact is far greater for customers with larger meters, with 800mm customers paying about double the current charge. However there are only 15 meter installations at 500mm or above, and only four 800mm installations.

Efficiency

DPI Water's charges require a 13% uplift from the ACCC published rates for WaterNSW. Table 37 below provides a comparison for a sample of meter sizes. Please note that some values are in $2013-14, and some in $2015-16. This table also shows that DPI Water's proposed charges are less than those proposed by State Water, but still greater than the charges approved by the ACCC.

[86] Refer to email from DPI Water, 15 October, 2015, which states "there is only a small proportion of the government meter fleet where telemetry is not to be present, and this is where the mobile phone coverage is inadequate…".

Table 37 Meter Service Charges – telemetered sites ($2015-16)

Agency	50mm	250mm	800mm
State Water Proposed – 2016-17	553.80	614.72	943.73
ACCC Decision – 2016-17	395.99	445.47	716.02
DPI Water Proposal – 2017-18	446.84	502.67	807.96

Source: ACCC (2013). Final decision on State Water pricing application 2014-15 to 2016-17, Attachment 10, Table 10-1, and DPI Water's submission to IPART, table 10.1. Amounts indexed to $2015-16.

The ACCC determined its charges based on actual, historic cost information provided by State Water's metering pilot program, with an additional allowance for replacement of meters via a renewals annuity. State Water submitted to the ACCC that these historic costs were inappropriate for establishing a baseline for anticipated costs, in part due to some maintenance costs being absorbed by the installing contractor under warranty. In response, ACCC calculated the charges based on a blend of historic costs for meters within the 2-year warranty period, and meters that are older and out of warranty. For these older meters, the ACCC accepted the cost build up provided by State Water. The ACCC noted:[87]

> Over time, more of the meter fleet will move out of the warranty period until ultimately, after the roll-out is completed, all will be past the warranty period. In future price reviews charges should reflect further experience of the actual costs to operate and maintain the meters.

This suggests that meter service costs would increase.

DPI Water has indicated that its own warranty period for government-owned meters has largely lapsed.[88] Accordingly, caution is needed when comparing DPI Water's proposed 2017-18 charges and those published by the ACCC in 2014. Indeed, we would expect that DPI Water's meter service charges would need to be at a premium to those published by the ACCC in 2014, as meters move out of their warranty period.

However, the ACCC's charges for WaterNSW also included provision for future replacement or renewal of the meters, via a renewals annuity. DPI Water's costs do not include any renewals annuity provision, which widens the gap between DPI Water's proposed 2017-18 charges, and the ACCC.[89] That is, the difference between the ACCC's published charges and those proposed by DPI Water are more than 13% on a like-for-like basis.

87 ACCC (2013). Attachment 10, p141.

88 Email provided 15 October, 2015.

89 We understand there is no provision for metering refurbishment or renewals costs in DPI Water's capital submission.

Most of DPI Water's costs for meter servicing were based on the rates from an outsourced contract, that was subject to a competitive tendering process. This should represent an efficient, incremental cost for meter services.[90] However, this tender information resulted in very different cost differentials by meter size than that implied by the ACCC's fee schedule.

The basis of the $145 data collection and management cost is unclear[91], though it appears to relate to the costs of managing the telemetry system. We assume that part of these costs (e.g. data transmission via the mobile network) have been procured competitively.

The basis of the $24 fee to WaterNSW for contract management has not been explained, though the total payment is relatively minor (around $30,000 per annum), equivalent to a part of one FTE.

DPI Water advised the cost of self-reporting was $40, compared to $145 for data collection and management. This suggests a $105 discount for self-reading better reflects incremental costs, yet DPI Water propose a discount of $118.45. DPI Water's $118.25 discount was calculated based on its assessed cost savings associated with eliminating regular agency officer visits to the site to download data and eliminating the processing of continuous data. These avoided activities appear very similar to the scope of a water take reading/assessment service.

Indeed, DPI Water proposed that if a customer without telemetry did not want to take and provide their own reading, DPI would provide this service and the water take reading/measurement charge would apply ($198). Hence there is a disconnect between the avoided costs calculated for the discount, and the assessed incremental costs that comprise the meter reading service.

We have been unable to reconcile these differences based on the information provided to us.

There should be parity between these two values for both to reflect the incremental cost of meter reading services, assuming equivalent scope of activity and reading frequency. It is also important that this charge provides good information to customers making decisions about whether to read their own meter or not. The proposed regime above could send mixed information. However, only less than 5% of meters do not have telemetry, and not all of these will be customer-read. Hence this impacts on a small number of customers at this time.

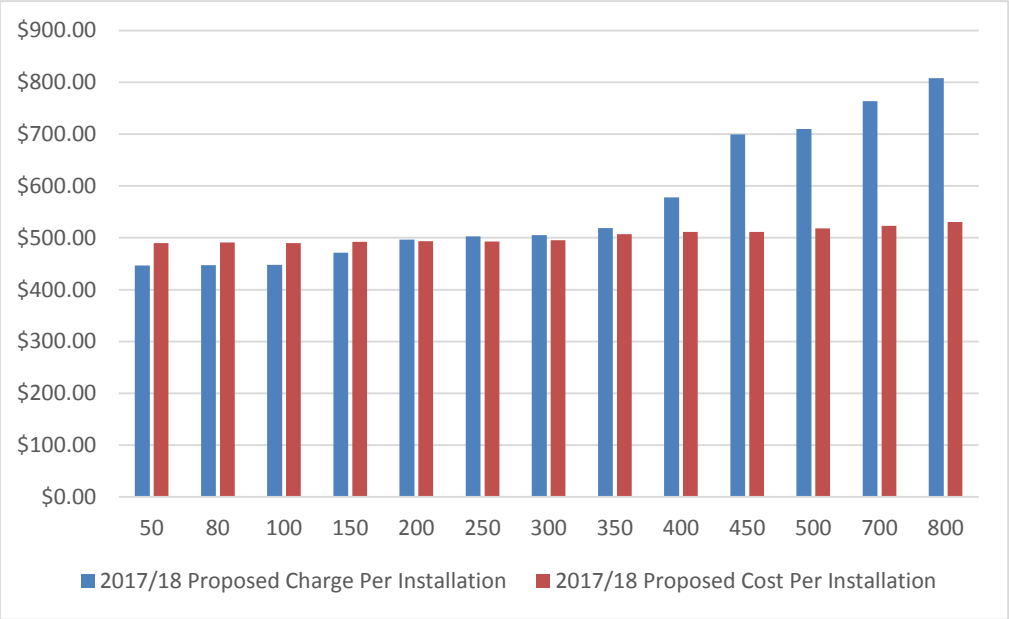
[90] On the basis that the warranty period has largely lapsed, as advised by DPI Water.

[91] A meter information system charge of $56 was included in the previous charge, as accepted by IPART.

Charging and tariffs

We understand that meter service charges are meant to reflect the incremental cost of service provision. However, DPI Water's proposed tariff schedule does not reflect its incremental costs (refer to Figure 18 below).

Figure 18 Charges Versus DPI Water incremental costs, non-user read meters ($2015-16)



The above suggests that the original ACCC tariff calculation, which was based on incomplete and preliminary information, is no longer a good reference point for tariff setting. Instead, the more recent information now available to DPI Water, based on the competitively procured contract for meter servicing, should be used. This information reflects not only a market assessment of cost, but also cost differences between meter sizes. In order for charges for each meter size to be cost reflective, they need to mirror the differences in cost to DPI Water as per this contract.

Findings:

We are satisfied that the meter service costs represent the efficient, incremental costs of this service. It is important to note that these costs do not include any provision for renewal or replacement. The tariffs should be aligned to the unit costs to DPI Water for different meter sizes, which are more contemporary than those estimated by the ACCC. The discount for user reading should also align with the difference in costs, which appear to be $105 per annum.

Tables 38 and 39 below presents our recommended charges. We also recommend DPI Water's annual 1.5% efficiency saving is applied when indexing these prices across the period.

Ideally, the discount for self-reading should also reconcile with the incremental cost (charge) of meter reading. While the difference may be sending confusing price signals as is, this discount is only likely to apply to a very small number of customers.

Table 38 Meter Service Charges ($2015-16) – Telemetered or agency read sites

Meter size	DPI Water Proposed		Synergies
	2016-17	2017-18	
50 mm	$396.77	$446.84	$ 489.49
80 mm	$396.90	$447.00	$ 491.22
100 mm	$397.66	$447.85	$ 489.67
150 mm	$418.28	$471.08	$ 491.99
200 mm	$440.69	$496.31	$ 493.21
250 mm	$446.34	$502.67	$ 493.03
300 mm	$448.33	$504.91	$ 495.01
350 mm	$460.85	$519.02	$ 507.01
400 mm	$512.97	$577.72	$ 511.61
450 mm	$621.04	$699.42	$ 511.57
500 mm	$630.41	$709.98	$ 518.28
600 mm	$664.43	$748.29	$ 522.90
700 mm	$678.05	$763.63	$ 530.71
750 mm	$679.72	$765.51	$ 555.51
800 mm	$717.41	$807.96	$ 555.51
900 mm	$771.45	$868.81	$ 555.51
1000 mm	$776.91	$874.96	$ 555.51

Table 39 Meter Service Charges ($2015-16) – non-telemetered sites with customer reading and reporting

Meter size	DPI Water Proposed		Synergies
	2016-17	2017-18	
50 mm	$ 286.34	$ 328.59	$ 384.49
80 mm	$ 286.48	$ 328.74	$ 386.22
100 mm	$ 287.24	$ 329.60	$ 384.67
150 mm	$ 307.86	$ 352.82	$ 386.99
200 mm	$ 330.27	$ 378.06	$ 388.21
250 mm	$ 335.92	$ 384.42	$ 388.03
300 mm	$ 337.91	$ 386.66	$ 390.01
350 mm	$ 350.43	$ 400.77	$ 402.01
400 mm	$ 402.55	$ 459.46	$ 406.61
450 mm	$ 510.62	$ 581.17	$ 406.57
500 mm	$ 519.99	$ 591.72	$ 413.28
600 mm	$ 554.01	$ 630.04	$ 417.90

Meter size	DPI Water Proposed		Synergies
	2016-17	2017-18	
700 mm	$ 567.63	$ 645.38	$ 425.71
750 mm	$ 569.30	$ 647.26	$ 450.51
800 mm	$ 606.99	$ 689.71	$ 450.51
900 mm	$ 661.03	$ 750.56	$ 450.51
1000 mm	$ 666.48	$ 756.71	$ 450.51

10.4 Water take reading/assessment charges

Water take reading/assessment charges apply to water users on unregulated river and groundwater sources where meters are read or otherwise determined by DPI Water. The charge can apply to both government and privately owned meters where the meter is not telemetered and the customer does not supply the reading. The charge is meant to recover the cost of measuring water take.[92]

This total cost is forecast to reduce from $13.4 million in 2013-14 to $0.538 million in 2016-17 and $0.658 million from 2017-18 to 2019-20 due to a reduction in the number of sites and the average number of readings per site. However, the savings from fewer readings are offset by a 20% increase to the cost per reading under DPI Water's current agreement with WaterNSW. DPI Water explained this increase was due to an increase in travel costs per reading within a meter reading run (i.e. travel costs are fixed per run, fewer readings increase unit costs).

DPI Water propose to pass on the WaterNSW costs through a water take reading/assessment charge of $198 per annum, which is a reduction of 7%. This charge would apply to a smaller number of meters and customers.

10.4.1 Proposal

Table 40 below provides a summary of the past and proposed charges and their composition. Notably, the meter information system cost component is no longer a discrete item, and seems to be incorporated into the cost per reading rate under the SLA with WaterNSW.

[92] DPI Water (2015). p22.

Table 40 DPI Water Assumptions – Meter take reading/assessment charges (nominal)

Parameter	2011 IPART	2014-15 actual	Proposed ($2015-16)
Number of sites being read		7,918	4197
Cost per reading	$75	$97	$119
Average reading frequency (readings per annum)	1.81	1.75	1.6
Meter information system cost (per annum)	$56	Not applicable	Not applicable
TOTAL	$192	$169	$198

Source: DPI Water.

10.4.2 Assessment

The meter reading services from WaterNSW have not been procured through a competitive process, and so it is difficult to assess whether the WaterNSW's prices represent an efficient incremental cost. DPI Water have indicated an intention to go to tender for these services in the future, but note that WaterNSW have several cost advantages including those arising from economies of scale and scope.[93]

Moreover, the costs per installation under the SLA have reduced significantly between the 2011 SLA, and 2014-15. This suggests DPI Water has had some success in obtaining price reductions from WaterNSW in the past.

However, DPI Water has proposed a flat increase in the cost per reading from 2014-15 of 20% (plus inflation), based on advice from WaterNSW that the unit cost of reading will increase with fewer meters and meter reads. We accept it is reasonable for this cost per reading to increase when there are fewer meter reads per meter round. Indeed, the number of sites to be read has nearly halved based on DPI Water's forecasts. While the 20% increase has not been explained and appears to be a broad estimate, it does not appear unreasonable given the significant reduction in scope.

The 20% premium is based on DPI Water implementing its meter rationalisation plans in accordance with its forecast. If this reduction does not occur as planned, then the WaterNSW fees per read are arguably higher than they should be for those customers who remain metered, giving a windfall to WaterNSW. However, DPI Water have indicated strongly that the reduction in scope will be implemented.[94]

In the future, DPI Water's justification for meter reading costs would be greatly enhanced through market testing of rates. Indeed DPI Water have indicated an intention

[93] Email provided by DPI Water 15 October, 2015.

[94] Email provided by DPI Water 15 October, 2015.

to go to market over the forthcoming period.[95] Given WaterNSW's apparent market advantages, it is difficult to conclude that rates would necessarily be lower than those currently negotiated. Hence, we are hesitant to recommend any adjustments to the proposed costs (and fees), but suggest that DPI Water undertake market testing over the forthcoming period.

Findings:

DPI Water's proposed meter take reading / assessment service charges reasonably reflect the efficient incremental costs of this service.

We there recommend IPART accept the proposed charges, subject to a 1.5% efficiency saving when indexing prices over the regulatory period.

[95] Email provided by DPI Water 15 October, 2015.

A Recommended operating expenditure by activity code

Table A.1 Proposed and recommended operating expenditure $'000 (2015-16)

Code	Activity	Current year 2015-16 (Budget)	2016-17	2017-18	2018-19	2019-20	2020-21	Total (2016-17 to 2020-21)
W01-01	**Surface water quantity monitoring**							
	Forecast Opex	$5,493.9	$5,290.8	$5,207.1	$5,130.0	$5,056.7	$5,021.7	$25,706.2
	Adjustment	$0.0	-$264.5	-$260.4	-$256.5	-$252.8	-$251.1	-$1,285.3
	Recommended	$5,493.9	$5,026.3	$4,946.7	$4,873.5	$4,803.9	$4,770.6	$24,420.9
W01-02	**Surface water data management and reporting**							
	Forecast Opex	$1,585.6	$1,561.5	$1,537.1	$1,514.3	$1,492.4	$1,479.2	$7,584.6
	Adjustment	$0.0	-$78.1	-$76.9	-$75.7	-$74.6	-$74.0	-$379.2
	Recommended	$1,585.6	$1,483.5	$1,460.3	$1,438.6	$1,417.8	$1,405.3	$7,205.3
W01-03	**Surface water quality monitoring**							
	Forecast Opex	$2,548.9	$2,510.6	$2,473.0	$2,435.9	$2,399.3	$2,363.3	$12,182.1
	Adjustment	$0.0	-$125.5	-$123.6	-$121.8	-$120.0	-$118.2	-$609.1
	Recommended	$2,548.9	$2,385.1	$2,349.3	$2,314.1	$2,279.4	$2,245.2	$11,573.0
W01-04	**Surface water algal monitoring**							
	Forecast Opex	$715.4	$704.7	$694.1	$683.7	$673.4	$663.3	$3,419.2
	Adjustment	$0.0	-$35.2	-$34.7	-$34.2	-$33.7	-$33.2	-$171.0
	Recommended	$715.4	$669.4	$659.4	$649.5	$639.8	$630.2	$3,248.2
W01-05	**Surface water ecological condition monitoring**							
	Forecast Opex	$291.3	$287.0	$282.7	$278.4	$274.3	$270.1	$1,392.5
	Adjustment	$0.0	-$14.3	-$14.1	-$13.9	-$13.7	-$13.5	-$69.6
	Recommended	$291.3	$272.6	$268.5	$264.5	$260.5	$256.6	$1,322.9
W02-01	**Groundwater quantity monitoring**							
	Forecast Opex	$3,537.8	$3,257.0	$3,233.3	$3,221.7	$3,175.5	$3,152.6	$16,040.0
	Adjustment	$0.0	-$162.9	-$161.7	-$161.1	-$158.8	-$157.6	-$802.0
	Recommended	$3,537.8	$3,094.2	$3,071.6	$3,060.6	$3,016.7	$2,994.9	$15,238.0
W02-02	**Groundwater quality monitoring**							
	Forecast Opex	$227.4	$224.4	$220.8	$217.4	$214.4	$212.3	$1,089.3
	Adjustment	$0.0	-$11.2	-$11.0	-$10.9	-$10.7	-$10.6	-$54.5

Code	Activity	Current year 2015-16 (Budget)	2016-17	2017-18	2018-19	2019-20	2020-21	Total (2016-17 to 2020-21)
	Recommended	$227.4	$213.1	$209.7	$206.6	$203.7	$201.7	$1,034.8
W02-03	**Groundwater data management and reporting**							
	Forecast Opex	$649.0	$641.1	$630.8	$621.5	$612.7	$608.9	$3,115.0
	Adjustment	$0.0	-$32.1	-$31.5	-$31.1	-$30.6	-$30.4	-$155.7
	Recommended	$649.0	$609.0	$599.3	$590.4	$582.1	$578.5	$2,959.2
W03-02	**Water take data management and reporting**							
	Forecast Opex	$272.8	$269.3	$264.9	$261.0	$257.4	$255.5	$1,308.1
	Adjustment	$0.0	-$13.5	-$13.2	-$13.1	-$12.9	-$12.8	-$65.4
	Recommended	$272.8	$255.8	$251.7	$248.0	$244.5	$242.7	$1,242.7
W04-01	**Surface water modelling**							
	Forecast Opex	$3,052.4	$3,101.5	$3,338.0	$3,240.6	$3,119.7	$2,930.3	$15,730.2
	Adjustment	$0.0	-$155.1	-$166.9	-$162.0	-$156.0	-$146.5	-$786.5
	Recommended	$3,052.4	$2,946.4	$3,171.1	$3,078.6	$2,963.8	$2,783.8	$14,943.7
W04-02	**Groundwater modelling**							
	Forecast Opex	$803.4	$793.2	$780.7	$769.1	$758.2	$752.9	$3,854.1
	Adjustment	$0.0	-$39.7	-$39.0	-$38.5	-$37.9	-$37.6	-$192.7
	Recommended	$803.4	$753.5	$741.7	$730.7	$720.3	$715.3	$3,661.4
W04-03	**Water resource accounting**							
	Forecast Opex	$453.9	$451.0	$446.8	$440.2	$431.1	$428.6	$2,197.7
	Adjustment	$0.0	-$22.6	-$22.3	-$22.0	-$21.6	-$21.4	-$109.9
	Recommended	$453.9	$428.5	$424.4	$418.2	$409.5	$407.2	$2,087.8
W05-01	**Systems operation and water availability management**							
	Forecast Opex	$3,713.0	$3,831.3	$3,763.5	$3,707.7	$3,654.7	$3,769.1	$18,726.3
	Adjustment	$0.0	-$1,323.8	-$1,300.4	-$1,281.1	-$1,262.8	-$1,302.4	-$6,470.6
	Recommended	$3,713.0	$2,507.4	$2,463.1	$2,426.5	$2,391.9	$2,466.8	$12,255.7
W05-02	**Blue-green algae management**							
	Forecast Opex	$497.9	$490.4	$483.1	$475.8	$468.7	$461.7	$2,379.7
	Adjustment	$0.0	-$24.5	-$24.2	-$23.8	-$23.4	-$23.1	-$119.0
	Recommended	$497.9	$465.9	$458.9	$452.0	$445.3	$438.6	$2,260.7
W05-03	**Environmental water management**							
	Forecast Opex	$1,014.5	$1,016.0	$1,000.4	$985.5	$971.0	$960.3	$4,933.1

Code	Activity	Current year 2015-16 (Budget)	2016-17	2017-18	2018-19	2019-20	2020-21	Total (2016-17 to 2020-21)
	Adjustment	$0.0	-$50.8	-$50.0	-$49.3	-$48.5	-$48.0	-$246.7
	Recommended	$1,014.5	$965.2	$950.4	$936.2	$922.4	$912.3	$4,686.5
W05-04	**Water plan performance assessment and evaluation**							
	Forecast Opex	$2,655.8	$2,587.0	$2,532.6	$2,478.1	$2,422.3	$2,517.8	$12,537.7
	Adjustment	$0.0	-$129.3	-$126.6	-$123.9	-$121.1	-$125.9	-$626.9
	Recommended	$2,655.8	$2,457.6	$2,406.0	$2,354.2	$2,301.2	$2,391.9	$11,910.8
W06-01	**Water plan development (coastal)**							
	Forecast Opex	$1,982.8	$1,961.5	$1,950.4	$1,944.2	$1,959.0	$2,025.7	$9,840.9
	Adjustment	$0.0	-467.1	-456.0	-449.8	-464.6	-531.3	-2368.9
	Recommended	$1,982.8	1494.4	1494.4	1494.4	1494.4	1494.4	7471.9
W06-02	**Water plan development (inland)**							
	Forecast Opex	$2,954.6	$3,439.6	$3,435.4	$3,430.8	$3,389.1	$3,391.4	$17,086.3
	Adjustment	$0.0	-795.7	-791.5	-786.9	-745.2	-747.5	-3866.8
	Recommended	$2,954.6	2643.9	2643.9	2643.9	2643.9	2643.9	13219.5
W06-03	**Floodplain management plan development**							
	Forecast Opex	$85.0	$80.8	$32.5	$32.0	$31.5	$31.1	$207.8
	Adjustment	$0.0	-$4.0	-$1.6	-$1.6	-$1.6	-$1.6	-$10.4
	Recommended	$85.0	$76.7	$30.9	$30.4	$29.9	$29.5	$197.5
W06-04	**Drainage management plan development**							
	Forecast Opex	$35.4	$31.9	$31.4	$31.0	$30.5	$30.0	$154.8
	Adjustment	$0.0	-$1.6	-$1.6	-$1.5	-$1.5	-$1.5	-$7.7
	Recommended	$35.4	$30.3	$29.9	$29.4	$29.0	$28.5	$147.1
W06-05	**Regional planning and management strategies**							
	Forecast Opex	$2,857.1	$2,693.8	$2,869.7	$2,506.6	$1,417.9	$2,013.3	$11,501.2
	Adjustment	$0.0	-$1,071.0	-$1,159.5	-$934.0	-$471.3	-$823.6	-$4,459.5
	Recommended	$2,857.1	$1,622.8	$1,710.2	$1,572.6	$946.6	$1,189.7	$7,041.7
W06-06	**Development of water planning and regulatory framework**							
	Forecast Opex	$2,435.1	$2,339.3	$2,334.0	$2,298.9	$2,264.4	$2,230.7	$11,467.3
	Adjustment	$0.0	-$117.0	-$116.7	-$114.9	-$113.2	-$111.5	-$573.4

Code	Activity	Current year 2015-16 (Budget)	2016-17	2017-18	2018-19	2019-20	2020-21	Total (2016-17 to 2020-21)
	Recommended	$2,435.1	$2,222.3	$2,217.3	$2,184.0	$2,151.2	$2,119.1	$10,893.9
W06-07	**Cross border and national commitments**							
	Forecast Opex	$867.9	$856.3	$843.0	$830.5	$1,014.3	$1,003.7	$4,547.9
	Adjustment	$0.0	-$42.8	-$42.2	-$41.5	-$50.7	-$50.2	-$227.4
	Recommended	$867.9	$813.5	$800.9	$789.0	$963.6	$953.5	$4,320.5
W07-01	**Water management works**							
	Forecast Opex	$980.2	$967.7	$952.4	$938.4	$924.9	$917.9	$4,701.2
	Adjustment	$0.0	-$48.4	-$47.6	-$46.9	-$46.2	-$45.9	-$235.1
	Recommended	$980.2	$919.3	$904.8	$891.4	$878.7	$872.0	$4,466.2
W08-01	**Regulation systems management**							
	Forecast Opex	$1,653.1	$1,360.6	$1,340.2	$1,320.1	$1,300.3	$1,280.8	$6,602.0
	Adjustment	$0.0	-$68.0	-$67.0	-$66.0	-$65.0	-$64.0	-$330.1
	Recommended	$1,653.1	$1,292.6	$1,273.2	$1,254.1	$1,235.3	$1,216.8	$6,271.9
W08-02	**Consents management and licence conversion**							
	Forecast Opex	$1,737.9	$1,216.9	$1,198.7	$1,180.7	$1,163.0	$1,145.5	$5,904.8
	Adjustment	$0.0	-$60.8	-$59.9	-$59.0	-$58.1	-$57.3	-$295.2
	Recommended	$1,737.9	$1,156.1	$1,138.7	$1,121.7	$1,104.8	$1,088.3	$5,609.6
W08-03	**Compliance management**							
	Forecast Opex	$3,990.9	$4,322.1	$4,333.4	$4,343.5	$4,278.3	$4,214.1	$21,491.4
	Adjustment	$0.0	-$216.1	-$216.7	-$217.2	-$213.9	-$210.7	-$1,074.6
	Recommended	$3,990.9	$4,106.0	$4,116.8	$4,126.3	$4,064.4	$4,003.4	$20,416.9
W08-99	**Water consents overheads**							
	Forecast Opex	$716.2	$719.0	$717.3	$717.1	$717.1	$717.1	$3,587.7
	Adjustment	$0.0	-$35.9	-$35.9	-$35.9	-$35.9	-$35.9	-$179.4
	Recommended	$716.2	$683.0	$681.4	$681.3	$681.3	$681.3	$3,408.3
W10-01	**Customer management**							
	Forecast Opex	$1,946.3	$1,843.5	$1,815.8	$1,788.6	$1,761.8	$1,735.3	$8,945.0
	Adjustment	$0.0	-$92.2	-$90.8	-$89.4	-$88.1	-$86.8	-$447.3
	Recommended	$1,946.3	$1,751.3	$1,725.0	$1,699.2	$1,673.7	$1,648.6	$8,497.8
W10-02	**Business governance support**							
	Forecast Opex	$2,244.3	$1,860.0	$1,831.9	$1,804.4	$1,777.6	$1,753.1	$9,027.1

Code	Activity	Current year 2015-16 (Budget)	2016-17	2017-18	2018-19	2019-20	2020-21	Total (2016-17 to 2020-21)
	Adjustment	$0.0	-$93.0	-$91.6	-$90.2	-$88.9	-$87.7	-$451.4
	Recommended	$2,244.3	$1,767.0	$1,740.3	$1,714.2	$1,688.7	$1,665.5	$8,575.7
W10-03	**Billing management**							
	Forecast Opex	$1,504.7	$1,482.6	$1,460.4	$1,438.5	$1,416.9	$1,395.7	$7,194.1
	Adjustment	$0.0	-$74.1	-$73.0	-$71.9	-$70.8	-$69.8	-$359.7
	Recommended	$1,504.7	$1,408.5	$1,387.4	$1,366.6	$1,346.1	$1,325.9	$6,834.4
Total	**Forecast Opex**	**$53,982**	**$52,192**	**$52,035**	**$51,066**	**$49,428**	**$49,733**	**$254,455**
	Adjustment	**$0**	**-$5,671**	**-$5,708**	**-$5,426**	**-$4,894**	**-$5,332**	**-$27,031**
	Recommended	**$53,982**	**$46,521**	**$46,327**	**$45,640**	**$44,534**	**$44,401**	**$227,424**

Note: Table shows total operating expenditure (as opposed to user shares). Excludes water consent transaction costs, meter reading services and MDBA/DBBRC contributions

B Cardno Report - Efficiency of MDBA and BRC contributions

DPI Water efficiency review – Review of MDBA and DBBRC contributions

Report

3605-37

Prepared for
Synergies

January 2016

Cardno
Shaping the Future

Contact Information

Cardno (QLD) Pty Ltd
ABN 57 051 074 992

Level 11, Green Square North Tower
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006

Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822

www.cardno.com.au

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1 Introduction

1.1 Requirement

IPART noted in its scope of work that it may require that an "analysis of strategic activities, efficiency of operating expenditure and efficiency of capital expenditure related to DPI Water's contributions to the Murray-Darling Basin Authority (MDBA) and the Dumaresq-Barwon Border Rivers Commission (DBBRC)" be undertaken as part of this review of DPI Water's expenditure. IPART confirmed that it required this assessment to be undertaken. IPART further clarified that the requirement was to determine to what extent DPI Water gained assurance that its contributions represent value for money.

1.2 Background

DPI Water is responsible for recovering a proportion of the total contribution made by New South Wales to the MDBA. DPI Water's contribution is for the New South Wales share of the MDBA's water planning and natural resource management activities. Contributions are also made by WaterNSW for river operation activities. DPI Water determines what portion of its contribution should be recovered from users based on that National Water Initiative Pricing Principles. The balance is contributed by State Treasury.

The DBBRC is a creation of the Queensland and New South Wales State Government and is responsible for managing water resources that are shared between the two states. Costs for the DBBRC are shared between Queensland and New South Wales.

1.3 Approach

Cardno undertook the following activities to address this requirement:

- Review of the governance and cost sharing arrangement for each body to set out the context in which the contributions are made and the ability of DPI Water to influence and have oversight over the contributions it is determined to be responsible for collecting
- Review of the approach that DPI Water takes to allocate contributions to users
- Review of historical and proposed contributions to identify trends at an activity level
- Discussions with DPI Water staff
- Review of relevant publically available information relating to the effectiveness and efficiency of the MDBA's activities[1].

The contributions made by DPI water to the MDBA are an order of magnitude greater than those made to the DBBRC and we therefore have discussed the contributions to the MDBA in greater detail than those to the DBBRC.

1.4 Cost base

All costs in this report are $2015/16 unless otherwise noted which is consistent with DPI Water's regulatory submission.

[1] In particular, the efficiency assessment of the MDBA's River Murray Operations activities; this efficiency assessment was undertaken in 2014 by Synergies Economic Consulting supported by Cardno and was commissioned by the Federal Department of Environment. This efficiency assessment is publically available at this location: http://www.mdba.gov.au/media-pubs/research-reports/reviewing-the-efficiency-of-river-murray-operations

2 Governance and cost sharing arrangements

2.1 Governance of MDBA

It is important to recognise the context in which the MDBA operates. The MDBA is an independent Commonwealth agency that is governed by the Water Act 2007. This Act sets out the governance arrangements of the MDBA as shown in Figure 2-1.

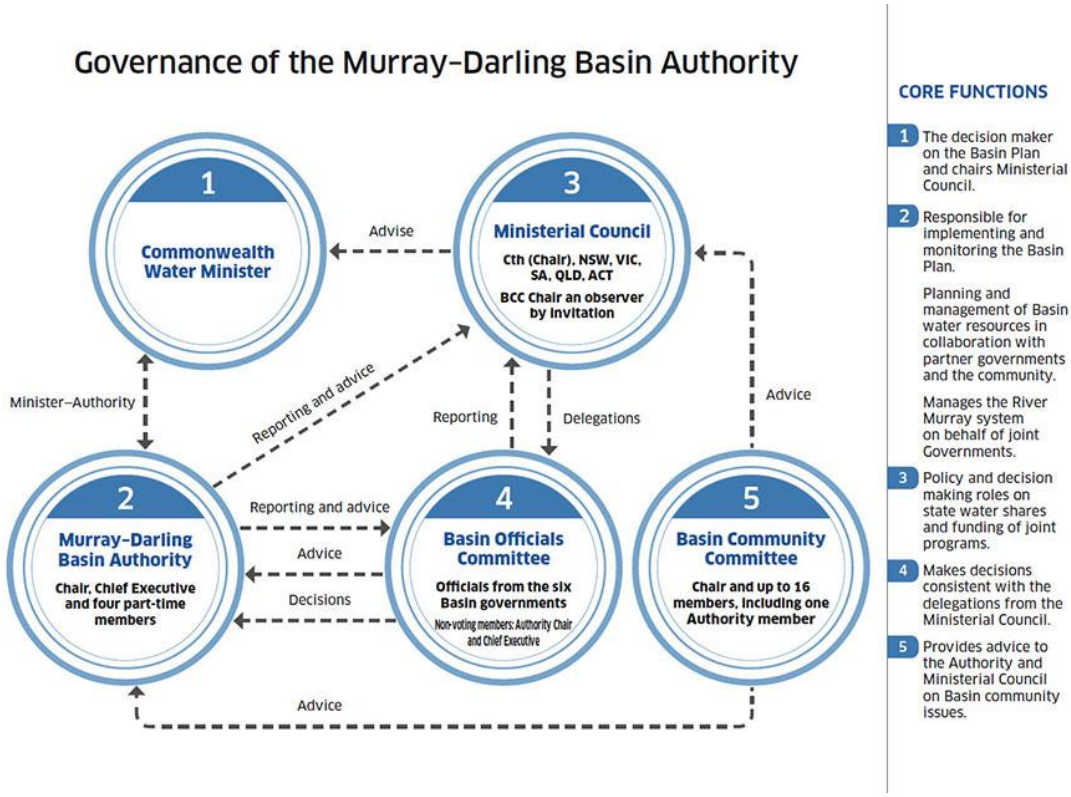

Figure 2-1 MDBA governance arrangements
Source: http://www.mdba.gov.au/about-mdba/governance

While the Commonwealth Water Minister is response for decision relating to the Murray Darling Basin Plan and chairs the Ministerial Council, the responsibility for approval of funding to the Authority rests with the Ministerial Council. This funding approval function is exercised through the Ministerial Council's approval of the MDBA's Corporate Plan. The Corporate Plan covers a period of four years but is updated and is required to be approved annually. The Ministerial Council has membership from all the cooperating states and territories – Queensland, New South Wales, Australian Capital Territory, Victoria and South Australia.

The Ministerial Council is advised by the Basin Official Committee. This Committee is composed of officials from the six cooperating governments. The New South Wales representative is currently the Department of Primary Industries Deputy Director General Water, i.e. a representative of DPI Water. Therefore, New South Wales has direct oversight over approval of funding of the MDBA through the annual corporate planning process and this is exercised by the Ministerial Council, advised by the Basin Officials Committee.

DPI Water noted that one of the strongest controls over MDBA activities is that any State or Territory can opt out of the cost sharing arrangements agreed annually. This trigger means that expenditure proposals need to be sufficiently rigorous to be able to convince all participants of their value. DPI Water notes in its submission that the New South Wales State Government withheld funding from the MDBA in 2013/14, 2014/15 and 2015/16 as it sought greater clarity over the efficiency of the MDBA's operations.

2.2 MDBA budget setting process

As noted above, the MDBA prepares a four year Corporate Plan. This Corporate Plan includes expenditure projections over the four year period based on the information available on the MDBA's future activities. However, expenditure is only committed to annually under the existing governance arrangements which results in some uncertainty for the MDBA for the medium term. DPI Water notes that it has based its submission on the 2015/16 level of contributions for New South Wales being consistent across the remaining years of the regulatory period despite the Corporate Plan forecasting an increase in following years. Therefore, there is significant risk that DPI Water's contributions, and there corresponding user share will be higher than that included in DPI Water's submission.

2.3 MDBA cost sharing arrangements for New South Wales

The contributions made to the MDBA by New South Wales are recovered in part through charges made by WaterNSW (formerly State Water) and DPI Water to customers. These entities determine the extent to which:

- their contribution to the MDBA will be recovered from water users, and
- costs will be met by budget appropriation.

The contributions made to the MDBA by DPI Water support New South Wales' share of water planning and management activities. As such, DPI Water contributes to a range of activities including: operations of salt interception schemes, river channel management, post water management, hydrometric services, water quality monitoring, biological monitoring and groundwater assessment and monitoring. Under the Water Act 2007, DPI Water's water management activities are also required to cover regulatory framework development and implementation, information provision, consultation, reporting and negotiation with the Commonwealth.

In its submission, DPI Water has noted that the total New South Wales contribution to the MDBA for Joint Programs in 2015/16 is budgeted at $24.7M, of which $10.1M is for water planning and management activities and therefore to be contributed by DPI Water. DPI Water includes in its submission in Table 5.27 a summary of contributions made by New South Wales in recent years. We have extended this summary in Table 2-1 to make explicit the contribution to the MDBA made by State Water/WaterNSW. The table also includes the then NSW Office of Water's (NOW) forecast of contributions to MDBA made at the time of the 2011 Determination and the variance between the contributions made by NOW/DPI Water over preceding years and this 2011 forecasts. In total, DPI Water has contributed to the MDBA $41.7M (nominal) less than the forecast it included in its proposal[2]. DPI Water notes that the reduced contributions were a measure undertaken by the New South Wales Government to assist it in gaining greater confidence over the effectiveness and efficiency of its contributions.

Table 2-1 Summary of New South Wales contributions to MDBA ($Nominal)

	11/12	12/13	13/14	14/15	15/16	Total
Total New South Wales contribution	35,800	13,500	9,300	18,900	24,700	102,200
River Operations (WaterNSW /State Water)	17,086	141	8,010	13,009	14,609	52,855
Water planning and management activities component (DPI Water)	18,714	13,359	1,290	5,891	10,091	49,345
NOW Forecast t MDBA contributions at time of 2011 Determination (for water planning and management activities)	17,441	16,252	18,646	19,093	19,571	91,003
Variance in contribution for water planning and management activities compared to 2011 forecast	1,273	-2,893	-17,356	-13,202	-9,480	-41,658

[2] Note that the 2011 Determination only covered the period of 2011/12 to 2013/14. The scheduled 2014 determination was deferred for two years due to ongoing uncertainty over the structure of DPI Water (New South Wales Office of Water at the time). Therefore, the figures for 2014/15 and 2015/16 are the 2013/14 figure inflated by CPI.

At the time of the 2011 Determination, IPART was not provided with sufficient evidence by NOW to justify the proposed user share of contributions to the MDBA significantly increasing over historic levels. Therefore, IPART's Determination allowed NOW to recover historic amounts ($1.69M/year $2009/10) from users.

2.4 DBRRC governance and cost sharing arrangements

The Dumaresq-Barwon Borders Rivers Commission (DBBRC) was constituted under the provisions of the New South Wales-Queensland Border Rivers Agreement in 1946. The agreement is contained in the schedule to each state's 'Border Rivers Act'.

As illustrated in Figure 2-2, the DBBRC consists of three commissioners. One is appointed by the Governor of Queensland; another by the Governor of New South Wales; while the third, the Chair, who must be a person not in the service of either government, is appointed by the Premiers of the two states. Each commissioner is appointed for a term not exceeding five years.

The day-to-day affairs of the Commission is managed by a committee, comprising staff from the Queensland Department of Natural Resources and Mines, the Queensland Department of Energy and Water Supply and DPI Water.

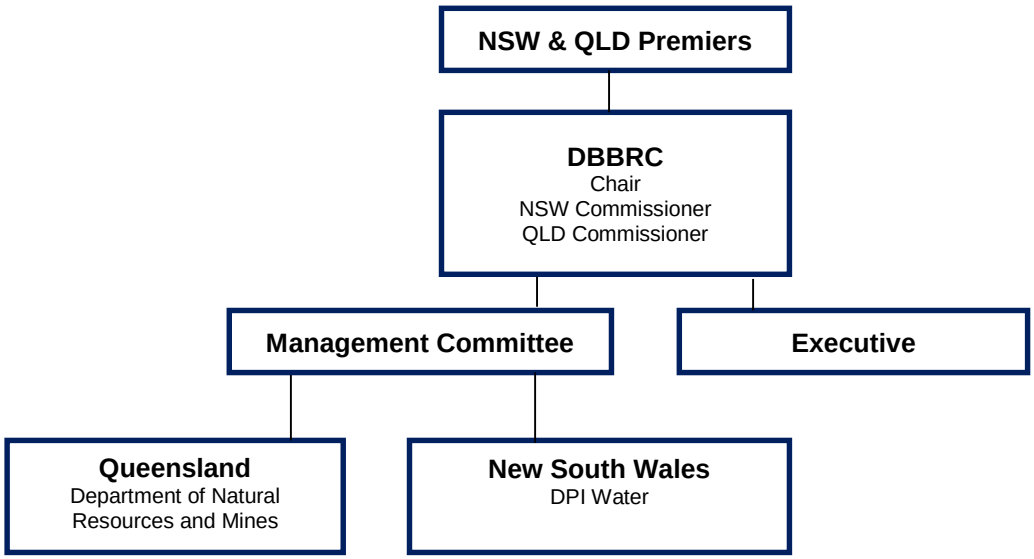

Figure 2-2 Governance of DBBRC

The NSW Government contributes to the costs the DBBRC on a 50:50 basis with Queensland state government. The contributions support two main functions: water delivery activities and water planning and management activities. 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.

2.5 DPI Water approach to recovering MDBA costs

In its submission DPI Water state that 'water management pricing aims to secure sufficient revenue to allow efficient delivery of the required services, under the principle of impactor or user pays'. For its contributions to the MDBA, DPI Water has assessed what portion of the contributions should be paid for by users. It states that this is done based on consideration of National Water Initiative pricing principles and by consideration of which activities are deemed to be monopoly services under the Water Service Order 2004 including ensuring that costs related to supporting Government are excluded. The user pays share for each activity over the forward period is summarised in

Table 2-2. This table also shows the MDBA activities that have been included as part of each DPI Water activity.

Table 2-2 Applied user shares by activity

Activity Code	Description	MDBA Activity	User share applied
W01-03	Surface water quality	▪ River Murray Water Quality – Program management – water quality monitoring ▪ River Murray Water Quality – Data Collection – biological monitoring ▪ Water quality and salinity management	50%
W01-05	Surface water ecological monitoring	▪ Monitoring and Evaluation Program – Pest Fish Management ▪ Monitoring and Evaluation Program – Showcase methods to restore river health ▪ The Living Murray Condition Monitoring	50%
W04-01	Surface water models	▪ Water Resources – Code modelling	50%
W05-01	Systems operation and water availability	▪ Water markets – interstate water trade policy	100%
W06-02	MDB Water Plan development	▪ The Living Murray Planning Delivery ▪ The Living Murray Modelling Support ▪ The Living Murray Indigenous Partnership	70%
W07-01	Water management works	▪ NSW River Channel Management ▪ RMW Office Asset Management ▪ Murray Mouth sand pumping ▪ Operate/Maintain existing SIS	50%

How DPI Water allocates its contributions to users is an important part of considering the prudence of the contributions from a user's perspective. That is, whether there is justification for the user to be contributing to a proportion of the specific MDBA activity. We note that in the report commissioned by DPI Water to provide economic analysis to support its submission[3] that it is stated:

> *IPART has consistently applied the 'impactor pays' principle for the attribution of costs between users and government in the last two price Determinations, and has rejected previous arguments for any substantial change to this principle. The 'impactor pays' principle has also been embedded in the 2010 National Water Initiative Pricing Principles. We are not aware of any recent legislative or policy changes that would affect the allocation of user shares in this way. We therefore propose to maintain the principle previously used by IPART for the next price Determination period.*

This report goes on to review the user cost sharing arrangements for which the scope of activities has been revised in the current regulatory period. DPI Water has adopted the recommended user shares. We note that the two largest absolute components of the user contributions are under W06-02 MDB Water Plan development (70% user share) and W07-01 Water management works. Our assessment based on the limited information available is that the recommended shares are appropriate.

[3] The Centre for International Economics, Economic analysis to support 2015 Price Determination for WAMC, April 2015

3 DPI Water oversight of MDBA contributions

DPI Water noted that it, as an agent of the State Government and through its membership of the Basin Officials Committee, had been a significant driver for improved scrutiny and transparency over the effectiveness and efficiency of the MDBA's costs. Two initiatives championed by New South Wales were expressly intended to provide assurance in this area. These were the efficiency review of River Murray Operations mentioned previously and the Strategic Review of Joint Programs.

DPI Water noted that numerous other changes had been made in recent years to improve transparency over the MDBA's activities and that many of these changes had been initiated by New South Wales. These changes include:

- The MDBA's Corporate Plan is now required to be made publically available
- It is now mandatory that programs are required to be supported by Cost Benefit Analysis within the Business Case
- Completion of an independent, updated review into cost sharing arrangements (Available at: http://www.mdba.gov.au/media-pubs/research-reports/review-of-cost-shares-for-joint-activities).

In addition to the above initiatives, DPI Water is able to influence the activities of the MDBA and subject its decision making to oversight through the following measures:

- Review of quarterly performance reports published by MDBA
- Internal audits of nominated MDBA activities
- Some proposals for expenditure undertaken by the MDBA are prepared by DPI Water and are therefore subject to its internal assurance processes
- The annual funding share contributed by New South Wales is subject to Cabinet scrutiny and approval.

4 Historical and proposed contributions

4.1 DPI Water contributions to MDBA

Figure 4-1 illustrates the past five years of contributions from DPI Water to the MDBA for water planning and management activities compared with DPI Water's forecast made at the time of the 2011 Determination (and for 2013/14 and 2014/15 contributions to be no more than the 2013/14 contributions in real terms). This demonstrates that DPI Water has contributed significantly less to MDBA than forecast. As detailed in Section 2.1, this is largely due to DPI Water's dissatisfaction with the governance, transparency and efficiency of MDBA costs.

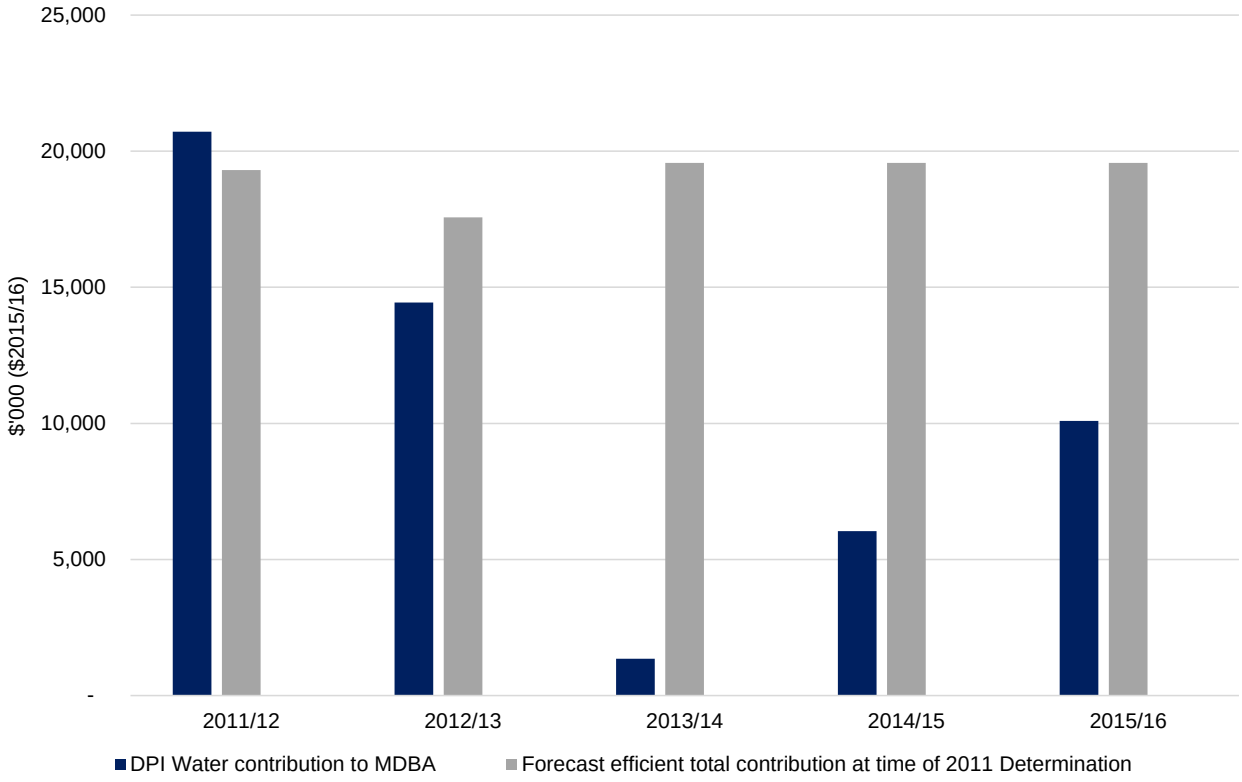

Figure 4-1 DPI Water contributions to MDBA 2011/12 to 2015/16 ($15/16)

For the purposes of its submission for the next Regulatory Period, DPI Water has based its assumed contributions on the 2015/16 level of contributions, i.e. $10.1M in total. This figure is some $9.5M lower, or nearly half of the amount forecast at the time of the 2011 Determination[4]. While DPI Water's overall contribution to the MDBA is proposed to be relatively lower than that forecast at the 2011 Determination, it proposes a significant increase in user share from that allowed by IPART, $1.96M[5] ($2015), to $5.47M in 2016/17, noting that the allowed user share for preceding years is significantly less than that proposed by the then NOW at the time of the 2011 Determination. The proposed level of user share for the upcoming regulatory period is based on DPI Water's determination of appropriate levels of user shares for MDBA activities as set out in Section 2.5. IPART did not question these user shares at the time of the 2011 Determination but, as noted, because of its concerns over the efficiency of DPI Water's contributions to the MDBA, it decided to hold the amount that DPI Water could recover from user shares at the level allowed for in its 2006 Determination.

[4] This figures is calculated as the amount forecast for 2014/15 adjusted for inflation.
[5] This figures is calculated as the amount forecast in $2009 adjusted for assumed inflation of 2.5% p.a.

The significant reduction in DPI Water's contribution from the 2011/12 total to the 2015/16 total (ignoring the intervening years as anomalous) may be considered a result of increased 'efficiency' if the same, or increased, outcomes have been achieved for a reduced level of input. However, we caution that this conclusion is complicated by the peak of work associated with preparing the Basin Plan, The Living Murray initiative and other programs of work in the 2000s and the significant change to the MDBA's assets, operations and activities as it has increased its focus on environmental outcomes. Further, as a result of the reduction in contribution made by New South Wales, the MDBA ceased some activities in New South Wales. What is clear though is that the actions of New South Wales have led to a step reduction in the quantum of costs recovered from its users.

Figure 4-2 shows the total contribution to be made by DPI Water for 2015/16 by activity, along with the proposed user share for each activity. Figure 4-3 shows the proportion that each activity contributes to the total user share. This illustrates that most of the 2015/16 contributions are for:

- MDB Water Plan Development (32% - mainly portfolio fees and delivery charges), and
- Water Management Works (45% - most of which is to operate/maintain SIS and Murray Mouth Sand Pumping).

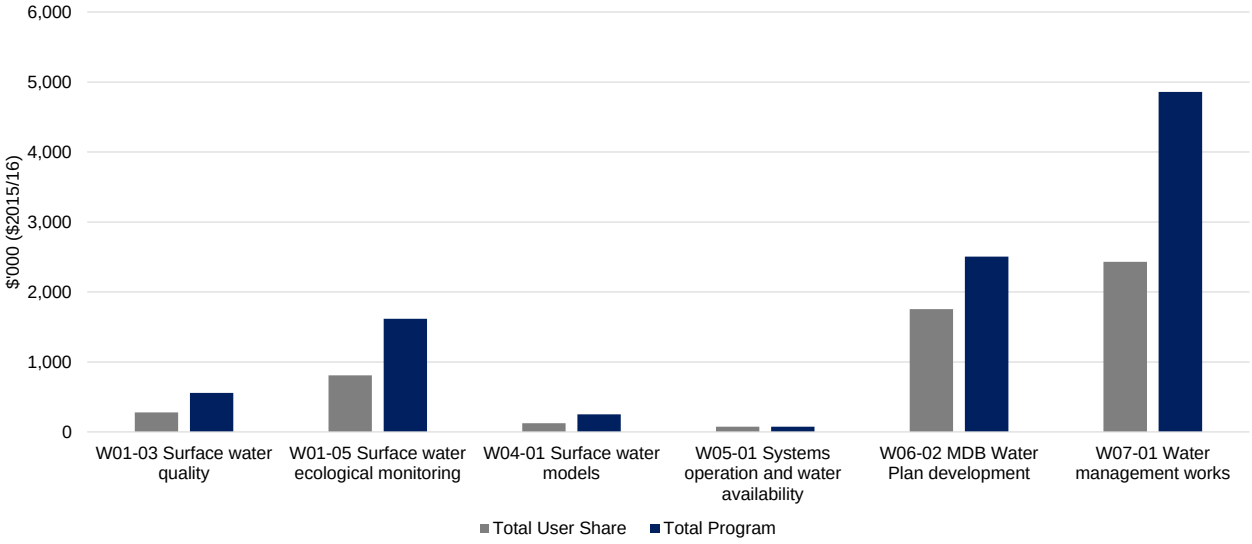

Figure 4-2 Total program contribution and user share for 2015/16

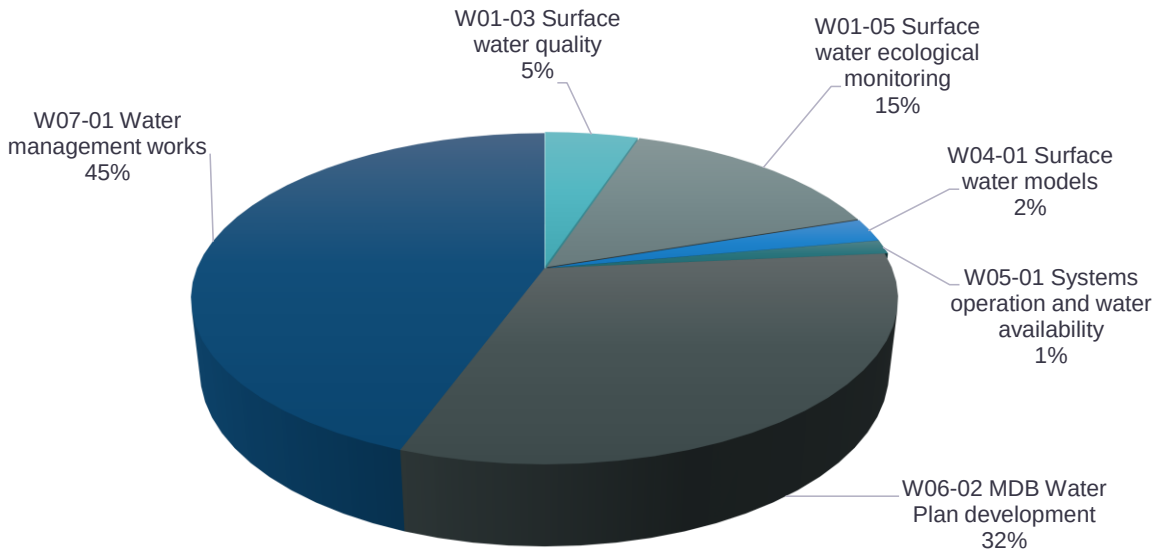

Figure 4-3 2015/16 User share by activity

The activities for which DPI Water's users contribute the most significant share of all user shares, have been subject to external review of their effectiveness and efficiency as set out in Table 4-1. This provides further assurance that the contributions made by DPI Water's users represent value for money. The Strategic Review of Joint Programs report is not publically available.

Table 4-1 Most significant MDBA activities by user share

Activity Code	Description	MDBA Activity	Subject to external review?
W06-02	MDB Water Plan development	▪ The Living Murray Planning Delivery ▪ The Living Murray Modelling Support ▪ The Living Murray Indigenous Partnership	Yes, through Strategic Review of Joint Programs (SKM, 2011)
W07-01	Water management works	▪ NSW River Channel Management ▪ RMW Office Asset Management ▪ Murray Mouth sand pumping ▪ Operate/Maintain existing SIS	Yes, through Efficiency Review of River Murray Operations capital and operating expenditure (Cardno, 2011)

4.2 DPI Water contributions to DBRRC

Figure 4-4 illustrates the past five years of contributions from New South Wales to the DBRRC for Water Planning and Management activities (i.e. that contributed by DPI Water) compared with the allowance from IPART's 2011 Determination. DPI Water has contributed less to the DBBRC than what IPART allowed for in 2011. Over the five years, a total of $186k, or 9% less has been contributed. That DPI Water has contributed less to the DBBRC than allowed by IPART in 2011 suggests that DBBRC costs have been controlled over this period[6].

[6] Note that as for contributions to the MDBA, the 2011 Determination did not cover 2014/15 and 2015/16. The figures for these years is the 2013/14 figure held constant in real terms.

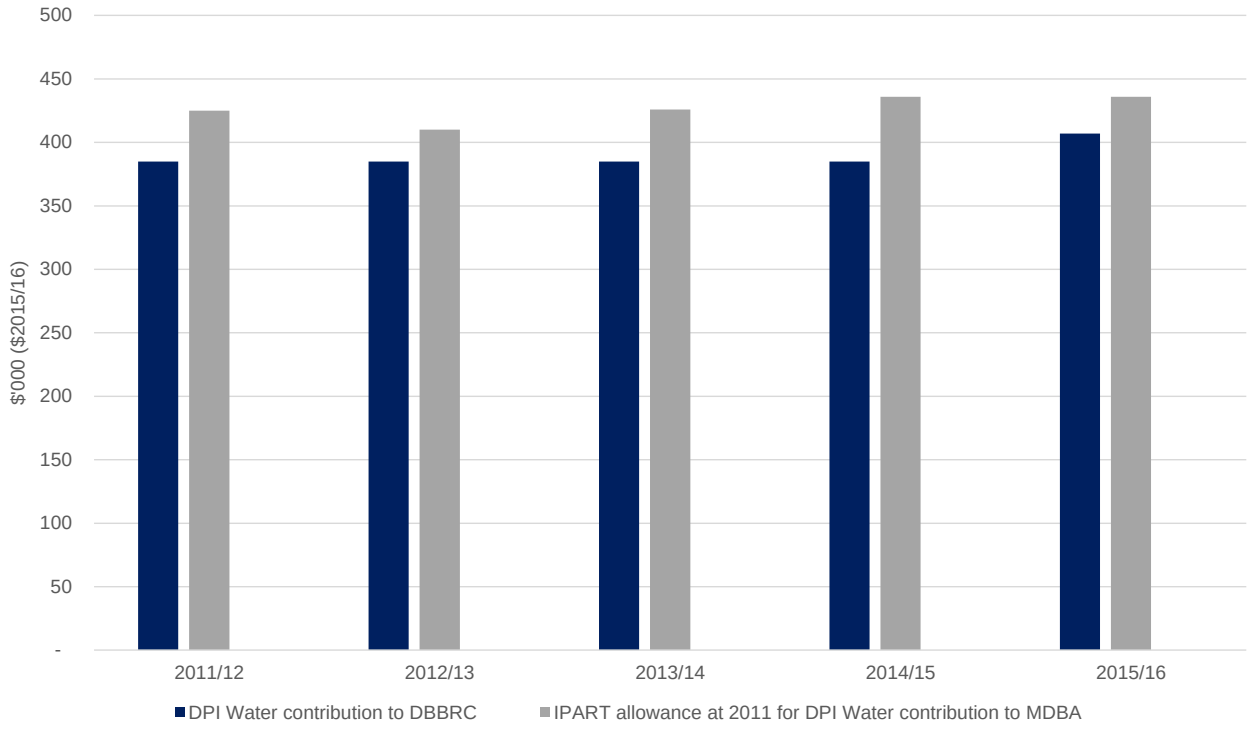

Figure 4-4 Historical contributions to DBBRC and IPART 2011 Determination

The trend in DPI Water's proposed contributions to DBBRC compared with historical contributions is shown in Figure 4-5. This shows a decreasing trend across the forward period as contributions decrease by around $58k in real terms between 2015/16 and 2019/20. This represents a reduction of 14% in the level of the 2015/16 contribution. This reduction in real terms also suggests that the contributions made by DBBRC are being used efficiently.

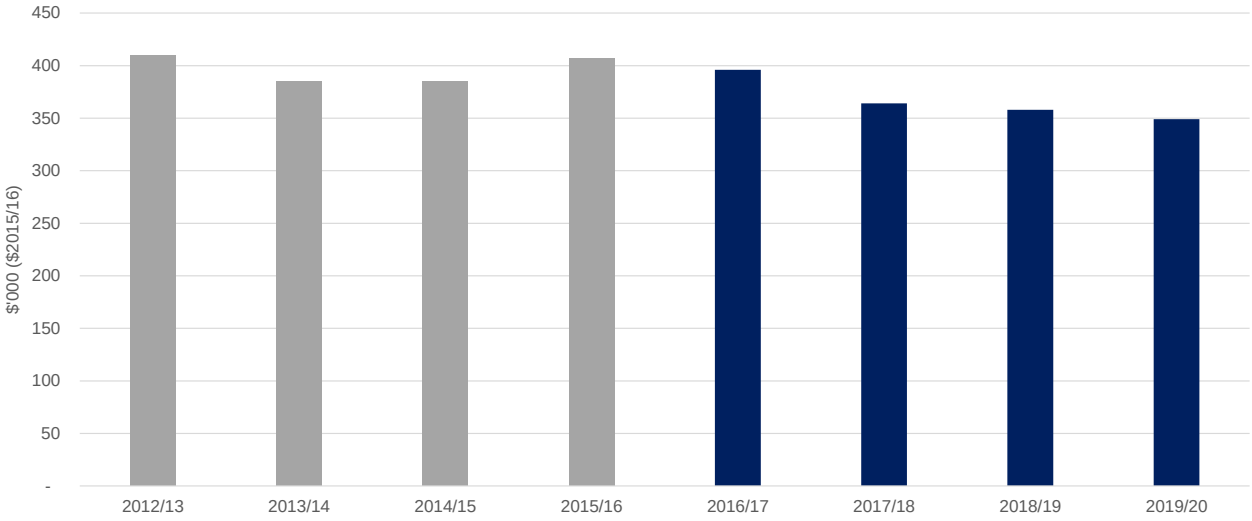

Figure 4-5 Historical and proposed contributions to DBBRC

5 Conclusions

We consider that DPI Water, alongside the New South Wales government, places considerable scrutiny over the expenditure undertaken by the MDBA and DBBRC. In recent years, significant activities have been undertaken, some driven by New South Wales, that have expressly sought to provide assurance over the efficiency and effectiveness of MDBA expenditure.

We consider that the contributions to the MDBA and DBBRC proposed by DPI Water are appropriate. .

C Cardno Report – Asset Management and Capital Planning Review

DPI Water efficiency review – capital expenditure and asset management

Report

3605-32

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Shaping the Future

Contact Information

Cardno (QLD) Pty Ltd
ABN 57 051 074 992

Level 11, Green Square North Tower
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006

Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822

www.cardno.com.au

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1 Introduction

1.1 Purpose of this report

Synergies Economic Consulting has been commissioned by IPART to undertake a review of the prudence and efficiency of the expenditure forecasts proposed by DPI Water. This review is to support IPART's determination of the prices that DPI Water can charge its customers for the upcoming regulatory period.

Cardno is supporting Synergies Economic Consulting for this review in the areas of asset management, capital expenditure planning and historical and future capital expenditure.

1.2 Background

DPI Water operates two major infrastructure networks to support its water management services – groundwater monitoring bores and surface water hydrometric stations. The total replacement value of the hydrometric network is over $9.1M and the replacement value of the groundwater monitoring network is $256.8M.

As a consequence of IPARTs review in 2011, the opening value of DPI Water's RAB in the 2011 determination was set to zero (at July 2011) due to concerns over DPI Water's capital planning and asset management competencies.

This current review therefore requires an assessment of DPI Water's asset management and capital planning system to be undertaken to ascertain the efficiency and prudence of DPI Water's capital expenditure over 2009-10 to 2015-16.

1.3 Scope of this report

This report addresses the following scope of works relating to the review of DPI Water's expenditure forecasts with reference to the scope of works set by IPART:

- Review of DPI Water's asset management and capital expenditure planning practices (Task 3-3) – Section 2
- Review of DPI Water's historical capital expenditure (Task 3-3) – Section 3.2
- Review of DPI Water's future capital expenditure (Task 3-4) – Section 3.3.

2 Asset management and capital planning

2.1 Asset management

To establish context for DPI Water's asset management practice and process, it is important to set out the governance frameworks within which DPI-Water operate:

- DPI Water is part of NSW government and therefore is required to follow its Total Asset Management (TAM) processes http://www.treasury.nsw.gov.au/tam/tam-intro.
- NSW Treasury's TAM Policy requires agencies to plan for their non-current physical assets as part of their corporate planning responsibilities. It requires agencies to develop an Asset Strategy plan that supports the delivery of services identified in their Results and Services Plan (RSP) or Statement of Business Intent (SBI) and detailed in their Corporate Plan.
- TAM submissions are required to be provided to Treasury as part of the budget process, inclusive of 10 year capital expenditure programs.
- Treasury guidelines outline requirements for: TAM Submissions (TPP13-03), (NSWTC 13/08) as well ashttp://www.treasury.nsw.gov.au/__data/assets/word_doc/0015/3309/How_to_Prepare_an_Asset_Strategy.doc how to prepare an asset strategy (TAM06-1).
- DPI Water prepares content for TAM submissions that are consolidated into the wider Department of Primary Industries submission which is also consolidated into the Department of Industry's submission.

DPI Water has an Asset Strategy (2016/17) in place as well as an Asset Management Policy (the latter is contained within the strategy document). The existence these documents indicates that DPI Water is committed to ensuring assets are managed to meet service level requirements.

A desktop review of DPI Water's Asset Strategy was carried out against TPP13-03 requirements. These outline the objectives and content expected to be in an asset strategy. Table 2-1 Assessment of Asset Strategy against TPP13-03 provides the results from this review. It indicates that some aspects of the strategy are not yet aligned with the TPP13-03 requirements.

Table 2-1 Assessment of Asset Strategy against TPP13-03

TPP13-03 Requirements	DPI-Water Strategy
Provide a brief summary of the existing asset base (covering all asset classes) and how it supports agency services.	Lists some asset details and what aspects of service delivery they relate to, but does not present the information by asset class. Ideally, for each asset class, a strategy should include further detail on the asset and its management approach, covering: asset description, asset performance/capacity, asset data and condition, maintenance plan, replacement plan, creation/acquisition, disposal.
Identify any significant asset gaps between the agency's existing asset base and the required asset base to continue service delivery.	Identifies where gaps are generally, but does not present this this in future capex/opex costs
Identify future pressures driving demand for services and any demand management strategies considered or proposed to keep service levels sustainable within resource limits. Agencies should take into account changes to the operating environment.	Summarises issues/pressures driving demand for services and proposes actions to address these. No specific demand management plan included, however it is noted that the plan for implementation of asset management systems at DPI Water is on hold pending further clarification of DPI Water's functional roles, which will help clarify the physical asset base going forward.

TPP13-03 Requirements	DPI-Water Strategy
Outline inter-relationships between proposed projects or programs (highlighting projects or disposals involving multiple agencies), and how these support a cohesive, integrated asset and service strategy.	The interrelationships are not immediately obvious in Table 2 of the strategy. There are references to Action 17 (information management strategy) against two other action items. No comment on how any interrelationships support a cohesive, integrated asset and service strategy.
Outline service risks, over both short and long term, if proposed projects are not funded.	A risk register was developed in 2014/15. This summarises high level risks and mitigation strategies but the linkage to the risk of asset failure is not strong. This register was developed prior to the asset strategy being developed.
Explain how the proposed capital projects as identified in TAM data tables are prioritised within projected funding limits with reference to priority service levels as identified in the agency's corporate and business planning documents or Statement of Corporate or Business Intent (SCI/SBI).	Within the strategy there is no explanation on how projects are prioritised with respect to the priority service levels
Outline evidence used to support the prioritisation of capital projects. For example, how economic and financial appraisals; risks assessments; and asset maintenance plans have been used to inform decision making.	This information does not appear to be contained within this strategy, There is no evidence Economic/financial appraisals and asset maintenance plans have been used to inform decision making. A high level risk register exists. It is noted that the Asset Strategy currently provides the platform for the subsequent development of detailed planning for capital investment, maintenance and disposal strategies.
Provide measures of asset utilisation or non-functionality (current and projected) that support asset disposals identified in the TAM data tables, where available.	There is no data on asset utilisation or disposals. It is noted that the strategy currently provides the platform for the subsequent development of detailed planning for capital investment, maintenance and disposal strategies. The TAM data tables have not been sighted.
Demonstrate how proposed projects relate to Government priorities including those outlined within NSW 2021: A Plan to make NSW Number One and The State Infrastructure Strategy 2012-2032.	This is not obvious.
Reference any consultation with local government or any other government agency.	In developing the strategy, consultation with Water Administrative Ministerial Council (WAMC) has occurred. DPI Water undertakes consultation with customers regarding specific proposals. DPI Water also consults with MDBA and DBBRC regarding annual budgets and work programs.
Explain how intervention options have been assessed. For example, how decisions relating to asset base expansion against maintenance of existing assets have been undertaken.	Not included in current asset strategy. It is noted that the strategy currently provides the platform for the subsequent development of detailed planning for capital investment, maintenance and disposal strategies.
Provide brief descriptions of the nature, costs and benefits of any planned projects or ongoing programs for which no business case has yet been submitted to Treasury.	Actions table (Table 2) identifies that DPI Water is contributing to the development of a National Hydrological Modelling Platform called eWater SOURCE. Significant Commonwealth and Treasury capital investment is programed over the next 3 years for this – but this is not identified as CapEx in 2015 Treasury papers.
Include and report on progress against any TAM or project-specific planning actions agreed through negotiation with Treasury.	This is not obvious within the Asset Strategy

We make the following further observations regarding DPI Water's asset management practices:

- While the Asset Strategy provides a summary of the main issues and subsequent actions to address these, the information is not presented with distinction between the different asset classes. It is difficult to match up the actions (Table 2) with the timetable (Appendix 2) to track expenditure.
- In its submission, DPI Water states that the quality of information varies across asset classes and databases. It is very likely that this is having an impact on the effectiveness of asset management. However, DPI Water intends to develop an information management strategy to validate and consolidate the various databases into a platform in order to manage condition assessment and maintenance programs.
- The NSW government requires that the asset strategy should detail how an agency's assets support service delivery and in particular, how the proposed capital projects are prioritised and integrated to support a cohesive service delivery strategy. This is not currently obvious within the strategy document. We note that prioritisation of capital projects does occur at the Departmental level.
- It is noted that the Asset Strategy is preliminary, pending development of DPI Water's Business Plan(s) 2015 – 2018.
- When considering the quantum of assets managed, the duration of the strategy appears very short (one year). While this document may be updated on an annual basis, a strategy should ideally have a long term perspective. This perspective is not apparent within the current Asset Strategy.
- A risk register is included within the Asset Strategy which we consider to be an important element of effective asset management. This risk register covers strategic risks linked to the strategic plan. However, there is no obvious linkage made between the actions in the Asset Strategy to the relevant mitigation measures on the risk register and asset-specific risks are not presented. DPI Water's submission, states that implementation of a strategy across each asset category will be prioritised within a risk management framework.
- Another indication of DPI Water's commitment to ensuring effective asset management is the appointment of an Asset Management Co-ordinator in early 2015. It is understood that the purpose of this role is to coordinate and manage the design and implementation of a comprehensive asset management strategy. An asset management system, including the information management platform is expected to be endorsed by the executive in late 2016 and be fully operational in 2017/18.

2.2 Capital expenditure planning

DPI Water's capital expenditure planning processes are largely governed by the requirements of Treasury with internal Departmental processes also providing an initial gateway to decide which projects will proceed through to the Treasury business case submission process (depending on value). As such, there appears to be a robust governance framework in place guiding how capital investment decisions are made.

The TAM submission process requires DPI Water to provide Treasury with business cases based on the size and risk profile of the project or program (see Table 2-2). There are specific guidelines provided by Treasury that DPI Water is obliged to follow for this process. These include: Guidelines for Capital Business Cases (TTP08-5), Submission of Business Cases (NSWTC 12/19), Gateway Reviews system (NSWTC 10/13).

Table 2-2 Treasury capital planning documentation thresholds

Capital planning document	Estimated Total Cost			
	<$5M	$5-10M	$10-50M	>$50M
Preliminary Business Case	Not required to be submitted to Treasury	No, unless requested by Treasury	Yes – for projects in years 2-4 of the upcoming forward estimates period	Yes – for projects in years 5-10 of the upcoming forward estimates period

Capital planning document	Estimated Total Cost			
	<$5M	$5-10M	$10-50M	>$50M
Final Business Case	Not required to be submitted to Treasury	Yes	Yes	Yes
Risk Assessment	Not required to be submitted to Treasury	Done by Agency. Results reviewed by Treasury	Done by Agency. Treasury to formally sign off on risk assessment for proposals assessed by Agency as low risk	

Prior to any business case submission, the Department of Primary Industries undertakes its own governance process for capital project prioritisation and approval. Concept proposals across all divisions of the Department are submitted. All projects are then assessed within each division to ensure proposals are consistent with priorities. All projects are then assessed against standard criteria by a reference group. The selected projects are then recommended for consideration by the Department Executive Team.

A matrix of assessment criteria - health and environmental impacts, state of good repair, alignment with DPI objectives, leverage potential, compliance, urgency, financial investment – is used to assist project prioritisation. The DPI Board ultimately decides on which projects will get funding.

The assessment framework described above was used for DPI Water projects for first time in 2015/16 and criteria are expected to be refined for 2017/18 submissions. This indicates that DPI Water within the wider Department is seeking to continually improve this process.

2.3 Conclusions

It is clear that DPI Water has undertaken considerable work to improve its approach to asset management and capital planning since the 2011 efficiency review. The most significant improvements include:

- Development of an Asset Policy and Strategy
- Recruitment of a Asset Management Co-ordinator
- Application of assessment criteria framework for capital project prioritisation at Department level
- Comprehensive Groundwater monitoring review
- Clarification of cost drivers.

While significant improvement has occurred, there is still considerable scope for DPI Water's asset management practices to improve and this is acknowledged by DPI Water. However, we consider that the existing processes are sufficient to support the capital program put forward by DPI Water. Opportunities for improvement over the coming years include better coverage and quality of asset data and identifying appropriate life cycle strategies at the asset class level and the resulting long term capital and operating expenditure requirements.

We consider that DPI Water's processes for identifying and developing capital projects are sound. These processes are required to meet Treasury's requirements but there is also significant oversight of capital proposals at Department level. DPI Water is not able to develop and progress its capital plan autonomously. This constrained environment is likely to prevent imprudent expenditure.

3 Capital expenditure

3.1 Overview

A comparison of DPI Water's past and future capital expenditure by year is provided in the graphs below (less funding). Previous capital expenditure has been on a variety of projects, as outlined in DPI Water's IPART submission. Many were for development or upgrade of systems and investment in the hydrometric network. Some large value water metering and bore projects were funded fully or partly by others. From 2013/14 - 2015/16 a total of $21.1M ($2015/16) has been invested, of which $13.81M was externally funded making a net investment of $7.32M. In comparison, a total of $25.43M ($2015/16) is proposed over the next five years to 2020/21, $4.51M of which is externally funded making net capital investment $20.91M. The annual average gross capital expenditure over the current regulatory period of $5.28M is consistent with that for the next regulatory period of $5.09M although we note that the current regulatory period is dominated by a single large investment in 2015/16. The expenditure profile over the current and next regulatory periods is shown in Figure 3-1.

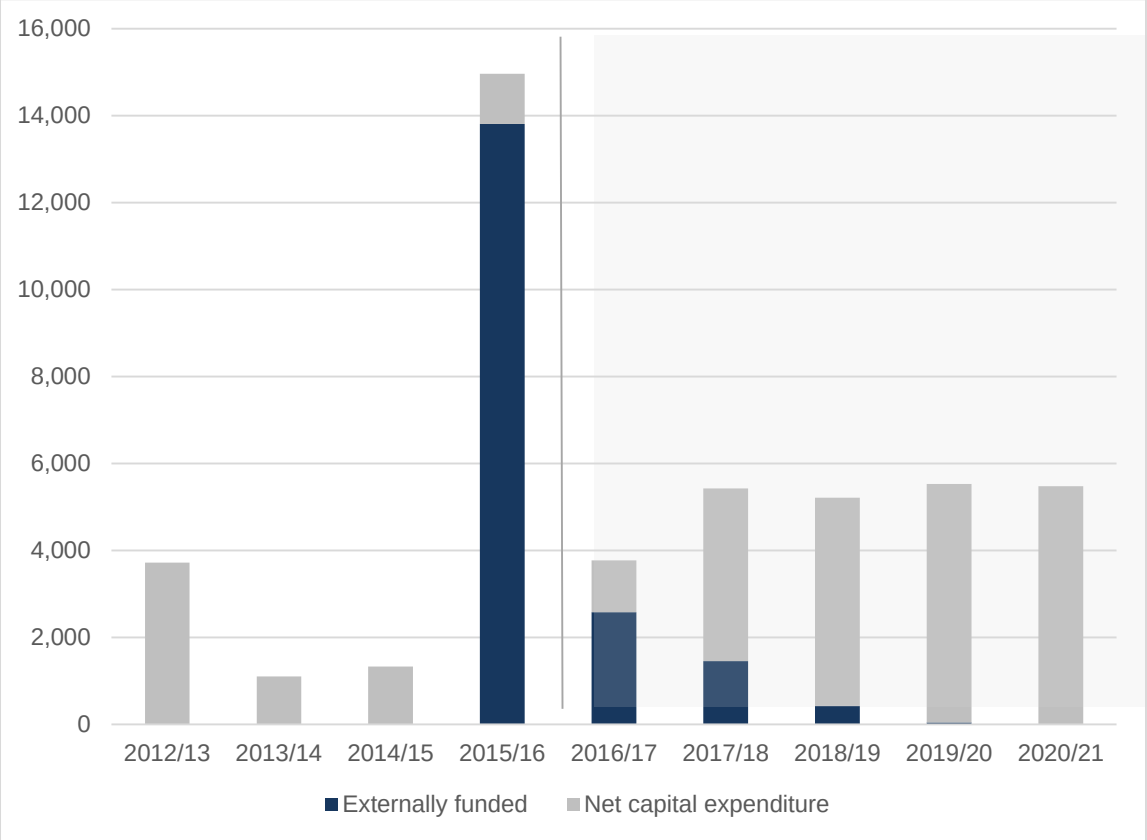

Figure 3-1 Historical and proposed capital expenditure ($'000, 2015/16)

The major outcomes proposed from the forward program are shown in

Table 3-1, along with DPI Water's assigned expenditure driver, which is predominantly asset and service reliability. Note that this table includes expenditure for the next five years, i.e. to 2020/21.

Table 3-1 Capital expenditure outcomes ($'000, 2015/16)

Expenditure Driver	Project	Cost	External and Grant Funding
Asset and Service Reliability	Water Access Licence system enhancement	1,225	
	Water take strategy systems development	1,020	
	Replacement of water models to assess water take impacts	3,400	3,400
	KWiQm database enhancements	150	
	Replacement server equipment and data migration	470	90
	Lab Equipment	990	
	Equipment	1495	975
	Groundwater Monitoring Network	13,780	
	Asset Management System	50	
Government Program	Installation of water take measures – southern unregulated	50	50

3.2 Historical capital expenditure

Gross capital expenditure by category is shown in Table 3-2. The data are for the period 2011-12 to 2013-14. The highest expenditure was in the infrastructure category, being predominantly for the hydrometric network, followed by intangibles which DPI water clarified relates to development of information systems.

Table 3-2 Gross capital expenditure by category ($'000, Nominal)

Category	Total
Business and computing equipment	500
Infrastructure	12,640
Intangibles (IT software systems developed)	6,179
Laboratory equipment	303
Plant and equipment	587
Specialised equipment	465
Vehicles	90
Subtotal	20,764

Review of Hydrometric Network Expansion Project

The Hydrometric Network Expansion Project established 50 instrumented gauging stations and nine staff gauge sites. The number of instrumented sites was reduced from an initial scope of 70 to better reflect its requirements under water sharing plans. Sites were generally installed using a consistent layout, equipment configuration and types of instrumentation. This is to realise ongoing efficiencies in maintenance and renewal of the assets.

The project received external funding of $6.0M from the Commonwealth Government. Consequently, the project was subject to considerable external scrutiny including independent audit. Under the agreement, DPI Water is required to prepare a 10 year plan for the use, continuous improvement and maintenance of the upgraded gauging stations. We reviewed the Commonwealth Funding Agreement and the Project Completion Report and we are satisfied that the project represents prudent and efficient investment.

3.3 Findings from review of proposed capital expenditure projects

Water Access Licences systems enhancements (Total $1.225M)

The main drivers for this project are identified as 'reporting and transparency requirements from changes to business needs and legislation' (e.g. Water Management Act 2000). Alignment to strategic goals are identified. A DPI Capital Project Concept Proposal form has been completed for this and contains project drivers, priority and project assessment. The project total provided in the proposal form is $690k for 2015/16. Of this $150k is to be funded by Treasury the other $540k is to come from DPI internal funding. We note that no external funding is identified in DPI Water's submission to IPART. There is a procurement strategy for the $150k and the project is proposed to be delivered by 30 June 2016. There is no outline of the assets to be replaced, disposed of or upgraded. There is no procurement strategy for the $540k of DPI internal funding - it is unclear what this is to be spent on. The total cost ($1,225,000) is apportioned at $225k per year over the 5 years from 2016/17-20/21[1]. It is not clear what the proposed expenditure is being spent on nor the basis for the cost estimate.

Groundwater Monitoring Network (Total $13.78M to 2020/21)

In 2012 an assessment of groundwater management and monitoring costs in Australia was undertaken by Sinclair Knight Mertz. It was recognised that much of Australia's monitoring bore network was ageing, and a critical assessment was required to understand the gaps in current planning and management activities and the adequacy of existing and future funding arrangements. Findings from this showed that most of the monitoring bores are between 30-50 years old. Although a large cohort were also established in the 1990s. PVC, steel and FRP are the predominant construction materials. This report identified that 19% monitoring pipes were at or beyond their effective life.

DPI Water proposes to undertake renewal and replacement works of groundwater monitoring network to address the issues identified in the SKM report. Development of the Business Case is scheduled for 2015/16 and $100,000 for preparing this business case has been included in the DPI Water 2015/16 budget. The project proposal is required to go through the NSW Government gateway process as it is >$5M. However, we have not been provided with information that sets out how the cost estimate has been derived nor the scope of works proposed.

In preparation for the above project, DPI Water has carried out a comprehensive review of the network assets to ensure that the monitoring network remained fit-for-purpose. The outputs from this review have allowed DPI Water to rationalise the number of monitoring sites based on an assessment framework that determined the relative importance of each site. A summary of the results from this exercise is provided in the table below. This indicates that the total number of pipes will be reduced by nearly 10%.

	Pipes with telemetry	Pipes with loggers	Pipes manually monitored	Total number of pipes	Total number of visits
Existing	386	625	3,632	4,699	21,357
Rationalised	213	658	3,376	4,242	17,402
Change	-173	33	-256	-457	-3,954
% Change	***-44.8***	***5.3***	***-7.0***	***-9.7***	***-18.5***

A broad assumption could be made that this equates to an equivalent reduction in future renewal needs i.e. based on a network replacement value of $256M, future renewal needs may be reduced slightly to say $230M. This also assumes that DPI Water does not plan to formally decommission/dispose of these assets (as there would be costs involved with doing this too). Regardless, a significant quantum of assets will still be required to be replaced at some stage. Apart from the $13.78M to 2021 in the current program, there is

[1] Item 12 CapEx Program reflecting v11.2

minimal evidence to suggest that any other related significant renewal expenditure is being planned. The $13.78M groundwater monitoring network project only represents 5% of the network replacement value (1% investment per year over five years) which is a relatively small amount compared to the quantum of assets being manage, their typical useful life and typical patterns of failure. Further analysis is likely to be required by DPI Water to better determine future renewal needs.

Prudence

When looking at the prudence of DPI Water's asset management and capital planning activities, an assessment is required to determine how previous capital investment decisions have been made and subsequently how that investment has been executed.

This review has identified that there appears to be a robust external governance framework in place guiding how capital investment decisions are made via the NSW Treasury requirements. Supplementing this, DPI Water's internal governance has introduced a criteria assessment framework as part of its capital project prioritisation process. This indicates that DPI Water is introducing measures to ensure their capital investment decisions are consistent and robust. While a risk-based approach is purported, there does not appear to be a specific risk assessment framework applied to projects under $5M.

For the two projects reviewed, there was a clear need for some investment in the areas. However, due to the lack of information provided, it is not possible to draw solid conclusions regarding whether the quantum of investment is appropriate to meet the need as the projects have undergone limited development. However, there was some evidence of due process being followed in the form of a procurement strategy for one of the capital projects review. Furthermore, in the IPART submission DPI Water mention that it monitors capital projects in the corporate financial system. The Department of Industry also has guidance available via multiple intranet sites relating to asset definitions, capital expenditure and procurement.

Efficiency

When looking at the efficiency of DPI Water's asset management and capital planning activities an assessment is required to determine whether DPI Water's proposed expenditure represents the best and most cost effective way of meeting the community's need for the relevant services. This review highlighted that DPI Water is planning to increase net capital expenditure in the future. This is predominantly being driven by groundwater monitoring bore rehabilitation. In order to achieve its responsibilities, DPI Water need to specifically understand groundwater trends and resource availability to determine groundwater impacts as well as the development and implementation of WSPs as well as assessing performance; and applications and licences for water supply. Hence groundwater data derived from monitoring bores underpins many important water management activities for effective service delivery. It is therefore appropriate that some investment is made in the groundwater monitoring network. However, based on the information provided, it is not possible to conclude as to whether the proposed $13.78M is a cost effective way of meeting community needs.

3.4 Conclusion

While we consider that DPI Water has sufficient processes in place to ensure that only prudent capital expenditure is progressed, we do not consider that there is sufficient evidence to support the two projects reviewed at this time. We understand that DPI Water plans to prepare a detailed business case for the Groundwater Monitoring network project in 2016/17 and has budgeted $100k for this activity. We therefore propose a flatter expenditure profile for the project to reflect that we consider that there is significant likelihood that the proposed expenditure profile will not be achieved.

Our proposed expenditure profile for this project is set out in Table 3-3.

Table 3-3 Proposed expenditure profile for Ground Water Monitoring Network project ($'000, 2015/16)

	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Proposed	-	1,000	3,500	4,406	4,406	13,312
Recommended	0	1000	2500	3500	3500	10,500
Adjustment	-	-	-1,000	-906	-906	-2,812

We recommend that the only adjustment to DPI Water's forward capital program be that for the Ground Water Monitoring Network project. On this basis, our recommended prudent and efficient forward capital expenditure program is set out in Table 3-4.

Table 3-4 Recommended prudent and efficient capital expenditure ($'000, 2015/16)

	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Capital program	3,776	5,428	5,215	5,529	5,482	25,430
External funding	0	0	-	0	0	0
Third party	-135	-457	-425.0	-48	0	-1,065
Grants	-2,450	-1,000	-	0	0	-3,450
Net capital expenditure	**1,191**	**3,971**	**4,790.0**	**5,481**	**5,482**	**20,914**
Adjustments	*0*	*0*	*-1,000*	*-906*	*-906*	-2,812
Recommended net capital expenditure	**1,191**	**3,971**	**3,790**	**4,575**	**4,576**	**18,102**