FINAL REPORT

Independent Pricing and Regulatory Tribunal

Review of NSW Office of Water's water management expenditure

30 June 2010

PricewaterhouseCoopers

Halcrow

Contents

1 Executive summary

This review

PricewaterhouseCoopers (PwC) and Halcrow Pacific Pty. Ltd. (Halcrow) were engaged by the Independent Pricing and Regulatory Tribunal (IPART) to undertake a review of the efficiency of the New South Wales (NSW) Office of Water's (NOW's) actual and forecast water resource management costs for the period 2006-07 to 2014-15. The scope of the review is as follows:

- The expenditure review encompasses NOW's proposal for the operating and capital expenditure to deliver its identified monopoly services, including both the user and the government shares.
- The efficiency of costs incurred by NSW as part of its commitments to the Murray Darling Basin Authority (MDBA) and Border Rivers Commission has not been reviewed by PwC (and are excluded from the consultancy brief).
- Where data has been available, quantitative analysis informs PwC's findings but where data was not available or reliable, PwC findings are informed by judgement and experience (which is consistent with the consultancy brief).
- The direct costs involved in managing consent transactions (licensing, trade approvals, works approvals etc) are reviewed separately to the rest of NOW's water management and planning activities. The indirect costs and overheads associated with providing consent transaction services are assessed as part of the wider operating expenditures of NOW.

The results of this review will form part of IPART's assessment of NOW's pricing submission for the upcoming regulatory period. NOW's current regulatory arrangements are due to expire on 30 June 2010, and therefore IPART is currently reviewing NOW's pricing submission for the next regulatory period.

Key features of NOW's submission

Based on NOW's identified monopoly services, the agency has reported a total operating cost base of $48.8 million in 2009-10 (excluding costs relating to water consent transactions, MDBA and Border River Commission).

The cost of water consent transactions is accounted for separately as IPART sets transaction fees to recover the cost of these activities, and the fees are uniform across the state. In 2009-10 NOW has budgeted $5.8 million and 52.5 full-time equivalent employees (FTEs) for consent transactions, which represents an 11 per cent decrease in costs relative to 2008-09.

NOW's proposed capital expenditure program is minor when compared to its forecast operating expenditure requirement. The forecast capital expenditure for the period 2010-11 to 2014-15 is $9.4 million (2009-10 real).

NOW is requesting an additional 47.5 FTEs by 2012-13 (over and above 2009-10 budgeted resources) to deliver its core water management activities, excluding water consent transactions. This is equivalent to a 19 per cent increase in FTEs attributed to proposed activities for inclusion in the regulated costs base (for the purposes of this report these activities will be referred to as IPART-related costs) on estimated 2009-10 levels. The extra staff resources result in NOW's annual operating budget increasing by 16.4 per cent (in real terms) over a three year period relative to 2009-10.

Over the five-year period to 2014-15, NOW has forecast an increase in its IPART-related FTE resources of 68 FTEs, equating to a 27 per cent increase in FTEs attributed to IPART-related activities from current levels. This corresponds to a 22.5 per cent real increase in annual costs by 2014-15.

In a second scenario presented by NOW, a further 57 FTEs per annum are estimated to be needed to implement the water reforms under the federal *Water Act 2007* and the Murray Darling Basin Intergovernmental Agreement (the MDB IGA). In total, therefore, a 22 per cent increase in full time staff is suggested to be needed (on 2009-10 levels).

The additional 57 FTEs are budgeted to add an extra $10.4 million to NOW's cost base. In the event that the Commonwealth does not reimburse NOW for these costs, NOW is proposing that these additional costs would need to be recovered through the IPART process. If this was the case, the annual operating budget for NOW, by 2012-13, would be 38 per cent higher than that for 2009-10.

Objectives and scope

The review assesses the efficiency of NOW's actual and forecast cost base. Both operating expenditure and capital expenditure are analysed.

Efficiency in the delivery of government services – such as water management activities – has two key dimensions:

- allocative efficiency – that the right 'mix' and level of activities are undertaken, and that there are no gains to be achieved in refocusing effort/resources across different areas; and
- technical efficiency – that those activities undertaken are delivered at 'least cost', and with the most efficient combination of input resources (labour and capital etc). This includes considerations about whether the right level, intensity and sophistication of inputs are being applied to deliver a particular outcome or service.

These elements of efficiency, and the degree to which NOW's services meet the criteria, are examined using a variety of methods including (but not limited to) benchmarking, assessments of whether adequate business cases have been prepared, whether project monitoring and evaluation frameworks have been developed, whether consideration has been given to alternative ways of delivering the service, and whether there is evidence of 'valued outcomes' being produced with current levels of investment.

The adequacy and appropriateness of the accounting methods used by NOW to derive costs for each activity and the methods used to allocate costs to valleys and water sources is also assessed.

Key findings

NOW's business drivers

NOW has identified a number changes since the 2006 Determination that form the basis for NOW's proposed increase in its core operating costs over the next five years[1]. The main changes include:

- Expansion of NOW's hydrometric network (by 128 stations), which will give rise to additional monitoring and maintenance requirements, including the need to increase the frequency of visits to these stations from three to six visits per year to meet national standards.
- Upgrades to surface water databases for which NOW has received $8.3 million in capital funding to date, with a further $3.0 million expected by 2012. NOW advises that these databases will impose additional operating and maintenance costs on its business.
- The monitoring of increased extractions from groundwater sources for stock and domestic purposes, which has been induced by water users substituting groundwater in place of surface water during the drought.
- The scheduled development of an additional 38 WSPs over the next three years (the first 45 plans were developed over a period of nine years). Once in place, the additional WSPs will require implementation – and NOW has forecast that this will place additional demand on its resources.
- A requirement to review and remake 31 WSPs before 2014, prior to their 10 year expiry date.
- Additional compliance effort is forecast to be necessary in response to lower water availability, increasing competition for

[1] Core operating costs refer to the activities and service levels that NOW propose it would need to deliver under Scenario 1 (that is, before considering the costs of meeting new, specific requirements under the Commonwealth *Water Act 2007* and the MDB IGA).

the resource and the fact that the additional WSPs will enlarge the absolute number of rules to monitor and enforce.

- The finalisation and implementation of a number of operational plans and policies to address floodplain harvesting[2], domestic and stock rights, aquifer interference, water return flows, stormwater harvesting and daily extraction rights.

The business of managing water resources is becoming more complex and sophisticated, thus increasing the demands on resource managers. This change has arisen due to the progressive introduction of a range of water reforms over the past decade (and the ongoing implementation of these), including those identified by NOW over the forthcoming regulatory period — for example, WSPs, stronger compliance frameworks, expanded metering and monitoring, improved databases and water accounting.

The prolonged drought over the past five years has heightened the need for these reforms. However, even without the drought, ongoing improvements in water management are viewed as prerequisites to support the necessary efficient allocation and management of water resources.

The system of water entitlement shares established in NSW by the *Water Management Act 2000* represented a quantum change in the way water is managed, primarily by strengthening the property rights underpinning water access and use. But such a system needs to be accompanied by higher levels of measurement, monitoring and enforcement if the operational integrity of the system is to be maintained and underlying confidence supported.

In assessing NOW's proposal for additional resources, we have taken into account the requirement for higher levels of managerial sophistication to manage what is inherently a more complex system than that which existed less than a decade ago.

We have also considered the total cost of water resource management and planning in NSW relative to the market value of the resource, which is considerable. For 2008-09, the National Water Commission reported the total value of water entitlement trades in NSW to be $1.7 billion and the value of the temporary market in allocation trades to be $450 million.[3] Individual water entitlements traded, on average, at $2,400 per megalitre (ML) for high security water.

Services and outcomes

- NOW's selection of services to include in the regulated cost base are, with some minor adjustments, considered to be

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2 Up to $50 million of Commonwealth funding has been approved, in principle, for NSW to improve management of water on the floodplains through modification to floodplain structures and extractions. This project will mainly constitute capital works.

3 National Water Commission (2009) *Australian Water Markets Report,* Canberra.

appropriate and consistent with recommendations contained in the Draft National Water Initiative Pricing Principles. However, greater clarity and transparency about what activities are excluded from the cost base, and why, would assist stakeholders to understand how the cost base was assembled.

- While the business of managing water is becoming more complex and is placing increased demand on NOW's services, we are concerned that NOW has not adequately examined possibilities for using existing resources more effectively and efficiency. Nor has the agency provided in all cases clear and demonstrable links between its planned activities and planned outcomes.
- Evidence is lacking about tangible efficiency gains having been made over the period 2006-07 to 2008-09 in delivering services and outcomes with a constrained set of resources. The information provided by NOW primarily focuses on the need and justification for additional resources as opposed to explaining how NOW has made strategic adjustments to its business to meet the growing (or changing) demands on its business.
- The corporate business plan provided by NOW fell short of providing a clear statement of its strategic objectives, its existing activities, service levels and expenditure, current outputs and outcomes against these services, and target changes in outputs/outcomes over the next three to five years against which NOW will be assessed.
- Difficulties were encountered in reconciling how past activities/outcomes relate to forward activities/planned outcomes as past achievements are not documented in the same activity-outcome framework that is used for documenting future planned achievements. This makes it difficult to get a clear picture of how NOW adjusts its resources over time (from one regulatory period to the next) to service different planned outcomes and changing activity levels in proportion to service priorities. This does not necessarily mean that these decisions are not being made, simply that it is not sufficiently transparent.
- Our review assessed whether there was any evidence that business cases had been developed for each major activity undertaken by NOW – that is, a more detailed justification of the high level corporate business plan. These business cases should not be limited to justifying the need for additional funding, but should set out the case for existing levels of funding plus forward estimates. In most cases, there is insufficient evidence of robust strategy or business cases underpinning the historical and forecast operating expenditures.
- Apart from an example of reallocating staff from water plan implementation to water sharing plan development, there is no other clear evidence that consideration has been given to the possibility of reallocating staff resources from existing activities

that are being scaled back to new areas of work that require higher priority.

- There is no documented evidence that levels of service have been 'stress tested' – for example, what would happen to outcomes if resources were reduced by some plausible level, or what additional outcomes could be delivered from an increase in resources applied to an activity. These calculations may have been performed informally by NOW, but no tangible, written evidence of this was provided for this review.
- The performance indicators and output measures proposed by NOW can be improved to better enable objective assessment of how efficiently it is delivering services and how cost effective its activities are.
- The link between performance information and timelines, cost, quantity, quality, and the achievement of strategic objectives, is in many instances not clear, and in others absent altogether.
- No allowance has been made for progressive efficiency gains in any of the direct operating activities.[4]
- The unit overhead rate per FTE is assumed to remain constant, despite some overheads and indirect costs being fixed in nature and unlikely to increase with additional staff.
- There are several inconsistencies in the accounting methodologies for determining historical and future expenditure, which make comparisons of past versus future activities and costs complicated and imprecise.

Benchmarking results

As part of this review a benchmarking analysis was undertaken to examine how NOW's operational costs for particular activities compare to other water resource management agencies in Australia. Benchmarking was performed for three activities:

- groundwater quantity monitoring (bore observations and maintenance);
- licence compliance; and
- water licence transactions processing and associated administrative overheads.

These are the activities for which comparable (like-for-like) cost data was available. The analysis found that NOW has:

- the highest unit cost per bore ($794 per bore as opposed to $502 and $209 for the other agencies);

[4] NOW has allowed for a 4 per cent efficiency gain in corporate services in each of 2010-11 and 2011-12.

- the lowest licence transaction processing costs ($223 per licence as opposed to $575 and $366); and
- NOW is middle-ranked against the other two agencies for its unit compliance costs ($73 per licence as opposed to $102 and $57).

While these results provide an indicative measure of the scale of unit input costs across the three water management agencies, care needs to be taken in interpreting the benchmarking results. The cost benchmarks are comparisons of unit input costs as opposed to dollar per unit of outcome delivered. Therefore, no allowance is made for differences in the standard or quality of outcomes delivered between the different agencies.

It must also be remembered that the benchmarks represent 'point in time' estimates of input costs. Thus, for example, in the case of the inter-agency comparison of compliance costs, while NOW may be proposing to increase its spend per licence, we have not assessed whether other agencies are intending to follow a similar trend. A longitudinal assessment of benchmarks over time would therefore be more instructive to understand how NOW ranks against other agencies. Unfortunately time series data could not be obtained for this analysis.

Recommended adjustments to base year operating expenditure

Several adjustments are recommended to the proposed number of FTEs for 2009-10, the base year against which NOW has developed its expenditure forecasts. Collectively, these adjustments result in a reduction of 23 FTEs and bring the total number of FTEs down to 233. The adjustments result in a revised base level of expenditure of $45.4 million, which is a 6.9 per cent reduction on NOW's proposal (Table 1.1).

Table 1.1: Recommended base level 2009-10 FTEs and operating expenditure ($2009-10)

	FTE	Operating expenditure ($m)	% Reduction in expenditure
NOW Submission	256	48.809	
Adjustment for overhead calculation		-0.245	-0.5%
Less Metro Water proportion	-3.5	-0.475	-0.97%
Reduction in Business Admin to 2008-09 levels	-1.3	-0.176	-0.36%
Removal of FTEs not allocated to activities	-18.3	-2.481	-5.08%
Total adjustment	-23.1	-3.377	-6.92%
Recommended base	**232.9**	**45.432**	

Note: These adjustments are based on remuneration costs of $102,973 per FTE, and overheads of $32,625 per FTE.

PwC investigated NOW's proposed requirement of 256 FTEs to deliver water management and planning services in 2009-10. This represents 47 more than the actual number of direct FTEs reported by NOW for 2008-09. Because of the magnitude of the difference, we sought to investigate the reason for the increase.

NOW advised that the increase is partly due to the fact that an estimated 24 FTEs are not completing cost allocation sheets. NOW has incorporated these FTEs into its historical costs (including the 2008-09 year) as an overhead, as opposed to accounting for the FTEs as direct resources. In 2009-10, these resources are reported as direct FTEs spread across a number of activities, thus appearing in the accounts as an apparent increase in staffing.[5]

In particular, Business Administration is shown to have an increase of 7 FTEs on the previous year. In the course of our inquiries, NOW indicated that 5.7 of these FTEs have been assigned out of the indirect resources pool of 24 FTEs, thus leaving 18.3 FTEs with no direct attribution to a particular activity.

Other observed increases for 2009-10 are 7 FTEs for metropolitan water planning activities and 10 FTEs for legal services. These resources have not previously been accounted for in the historical years.

On the basis of the above information, we make the following recommendations.

Efficiency adjustment

Based on the findings from a detailed audit of four activities (Chapter 5), PwC is concerned that there are inefficiencies in NOW's existing deployment and allocation of staff resources across activities. For example:

- In the case of Operational Planning, the reported outputs for this activity (one completed policy guideline identified on page 101 of NOW's submission), does not appear to be commensurate with the 20 to 25 FTEs that have been working in this area over the past four years (though progress in the drafting of others is acknowledged).
- There is no evidence of a clear and transparent strategic framework for guiding compliance activities over the past four years.
- The delay in water sharing plan development over the last four years (in part due to NOW waiting for greater clarity about the Murray Darling Basin Plan (the Basin Plan) requirements) should have freed up staff resources that could be deployed

[5] By email from NOW, 8 February 2010.

on other activities — but there is no evidence of this or alternative outcomes achieved.

- NOW has not identified potential cost savings to its operational budget as a result of its capital investments in groundwater and water quality databases (which should make it easier to search, extract and deliver relevant information for water resource management, thus leading to a labour saving) or the telemetry systems and installation of data loggers on gauging stations – which likewise, should reduce labour costs.

In large part as a proxy recognition for the above inefficiencies, we recommend removing from the cost base those 18.3 FTEs whose time is 'unallocated' to any specific water management activity. While PwC accepts that these FTEs exist, it is difficult to determine whether these resources represent an efficient component of NOW's service, given the lack of transparency around what these FTEs are delivering. Furthermore, if the cost of these FTEs were to be retained in the cost base as an indirect cost, it would contribute to the pool of overheads that already exceeds what is considered reasonable for an organisation of NOW's size (refer to section 7.4).

Other recommended FTE adjustments

- A proportion of NOW's metropolitan water planning activities should be removed from the cost base, as at least some of the activities are inconsistent with the Water Services Order. This accounts for 3.5 FTEs (refer to Chapter 4).
- NOW's forecast requirement of 7 FTEs for Business Administration should be reduced to 5.7 FTEs, the latter being the level of resources identified by NOW that it has allocated out of the indirect pool of 24 FTEs. This represents a reduction of 1.3 FTEs.
- No adjustment has been made to the 10 FTEs that have been identified as being required for providing legal services. NOW advises that these 10 FTEs represent a share of the total legal resources existing in NOW (numbering 19 FTEs in total, before allowing for vacancy rates). This is a reasonable level of staffing, commensurate with the demand for legal advice relating to NOW's compliance and licensing tasks.

Recommended adjustments to forecast operating expenditure

On the basis of our assessment of the NOW's proposed activities and service levels, a number of adjustments are recommended to the forecast expenditure levels for the five year period to 2014-15. These adjustments are made relative to the recommended revised costs for the base year (2009-10).

- An ongoing, annual efficiency improvement of 0.5 per cent is recommended — which reflects an expectation that NOW should be able to make continuous improvements to its

service delivery based on its current FTE resources (including, but not limited to, staff productivity improvements, streamlining of administrative tasks and reallocating resources from under-performing parts of the business).

- An adjustment to the corporate overhead and indirect cost unit rate to remove variances between the historical accounts and forecasts with respect to the assumed annual number of hours per FTE. The correction of this results in a $1,000 reduction in the unit overhead rate per FTE.
- With the introduction of additional resources throughout the upcoming regulatory period, the use of a constant unit rate of $29 per FTE to recover corporate overhead and indirect costs could lead to an over-recovery of these costs (given that some overheads are fixed with respect to agency size). Therefore we recommend a reduction of the unit rate by 25 per cent to be applied to all additional resources through the five year period to 2014-15.
- A further reduction of approximately $800,000 in NOW's corporate overhead costs (by 2014-15), to bring the overhead cost proportion into line with the NSW Government's *Council on the Cost and Quality of Government* benchmarks for corporate overheads – that is, 12 per cent of total operating costs.
- We further recommend that the additional staff resources sought by NOW be reduced by 20 per cent to account for:
  - the scope for efficiency and productivity gains to be achieved in delivering the additional services;
  - the expectation that some resources should be freed up from existing activities to service new and emerging areas of core business (for example, the transition from Water Sharing Plan development to operational aspects of these plans); and
  - concerns about the lack of clear business cases to support proposals for additional resources and the absence of documented strategic decision making processes.
- In making the 20 per cent adjustment to FTEs we have also removed the variable component of corporate overheads (75 per cent) for each FTE and retained the profile adopted by NOW, and adjusted each year by 20 per cent (see Table 1.2 below).

Table 1.2: Adjusted additional resources (FTEs)

	2010-11	2011-12	2012-13	2013-14	2014-15
NOW's proposed additional resources (FTEs)	11	28.5	47.5	63	68
Adjusted additional resources	8.8	22.8	38.0	50.4	54.4

Note that the FTE adjustment retains a net increase in FTEs over the next five years. By 2014-15 the total recommended, efficient

level of additional resources is approximately 14 FTEs fewer than that proposed by NOW.

Table 1.3 contains a summary of these adjustments and how they affect expenditure. The combined impact of the adjustments is to reduce NOW's total forecast expenditure by 13.1 per cent by the year 2014-15. Again, the adjustments allow for a net increase in expenditure over the next five years, but starting from a lower base (Figure 1.2)

Figure 1.1: Recommended staff resources after applying the 20 per cent reduction to proposed requirement (FTE)

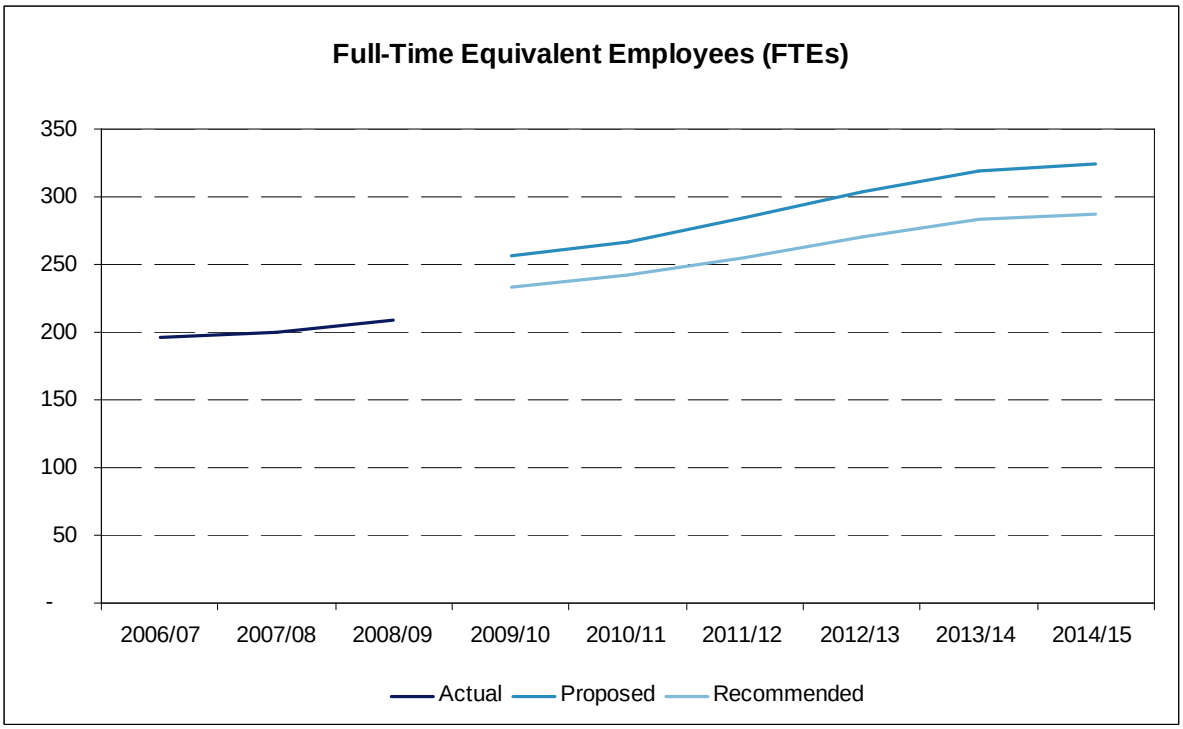


Figure 1.2: Recommended operating expenditure relative to NOW proposed

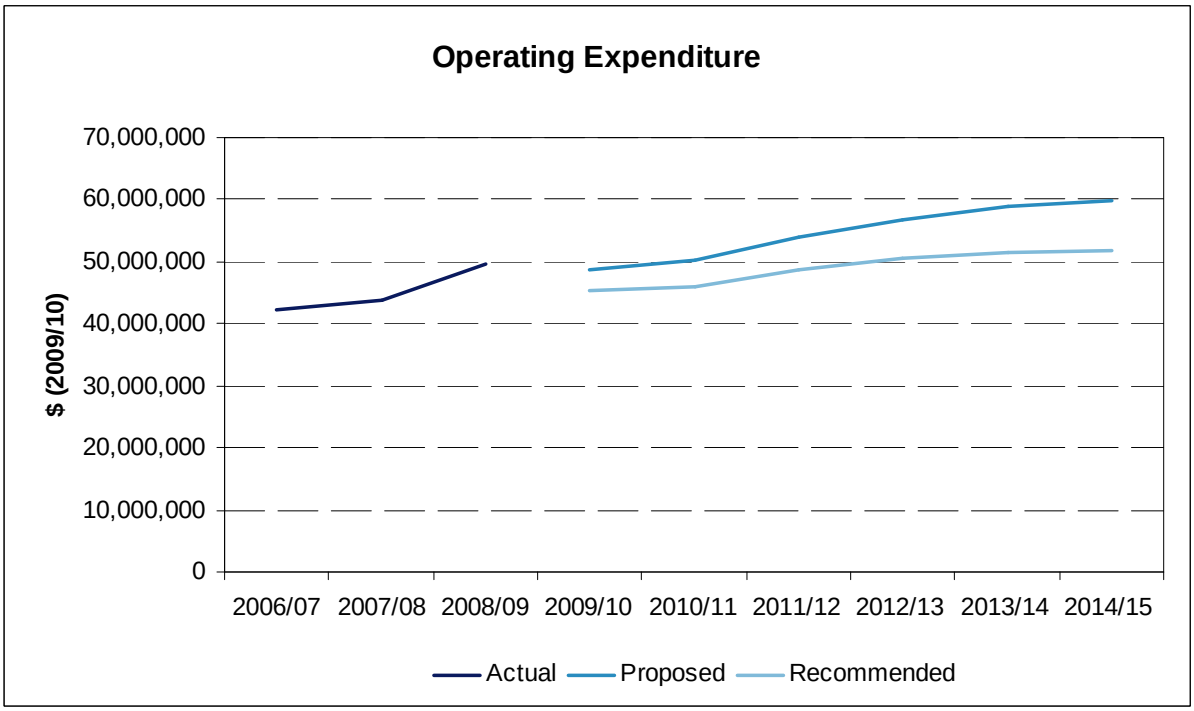


Table 1.3: Recommended operating expenditure for 2010-11 to 2014-15 ($2009-10, '000s)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Proposed operating expenditure ('000s)	48,809	50,180	53,913	56,807	59,036	59,797
Reduction for inconsistencies in overhead unit rate	-245	-245	-250	-267	-280	-285
Reduction due to business administration	-176	-175	-173	-173	-173	-173
Reduction due to Metro Water	-475	-470	-465	-465	-465	-465
Reduction of unallocated FTEs	-2,481	-2,458	-2,433	-2,433	-2,433	-2,433
Reduction due to 20% reduction in new FTEs		-295	-758	-1,263	-1,675	-1,808
Reduction due to fixed overhead costs for additional FTEs		-92	-228	-380	-503	-543
Reduction in corporate overheads to meet benchmark target of 12% of total operating costs by 2014-15		-205	-410	-615	-820	-820
Total reduction in operating expenditure	-3,377	-3,940	-4,716	-5,595	-6,350	-6,527
Adjusted operating expenditure	45,432	46,240	49,197	51,212	52,687	53,270
Reduction due to efficiency adjustment of 0.5% p.a. for forecast period		-231	-491	-764	-1,046	-1,319
Recommended operating expenditure	45,432	46,009	48,706	50,448	51,641	51,952
Percentage reduction in total operating expenditure	-6.9%	-8.3%	-9.7%	-11.2%	-12.5%	-13.1%

Efficiency of forecast expenditure on water management consent transactions

For 2009-10, a total of 52.5 FTEs are estimated by NOW to be assigned to processing water consent transactions pertaining to provisions under the *Water Management Act 2000* and the *Water Act 1912.* The total operating budget for the direct costs of this activity is $5.76 million in 2009-10. This excludes overheads and indirect costs, as these are recovered through water resource management charges as opposed to transaction fees.

In the 2006 Determination, IPART allowed $2.8 million each year for consent transactions. However NOW subsequently incurred costs of $4.7 million (2006-07), $6.7 million (2007-08) and $6.5 million (2008-09) resulting in a considerable variation between actual and allowed expenditure.

The principal driver of costs over the last four years has been the higher-than-estimated amount of time and effort required to process transactions, as opposed to higher-than-expected transaction numbers.

NOW has forecast a constant annual cost of $5.8 million and 52 FTEs for water consent transactions over the next five years. PwC recommends that an on-going efficiency gain of 0.5 per cent per annum should be built into the forecasts, in recognition of the expectation (and scope for) ongoing improvements in on-line lodgement of applications, efficiencies arising out of information system upgrades, improvements to registers, staff training and general streamlining of administrative tasks as a consequence of the approvals system becoming bedded down (now that the *Water Management Act 2000* has been operational for a decade).

The following table sets out the recommended level of expenditure for water consent transactions after allowing for this efficiency gain.

Table 1.4: Adjustments to consent transaction expenditure for recommended efficiency gains ($2009-10, '000s)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Proposed expenditure	5,762	5,762	5,762	5,762	5,762	5,762
Adjustment for efficiency gains (0.5% p.a.)		-29	-57	-86	-114	-143
Recommended expenditure	5,762	5,733	5,704	5,676	5,647	5,619

Note: Numbers may not add due to rounding

Capital projects

Based on our review of NOW's historical and proposed capital expenditure, we are of the opinion that there are a number of weaknesses in NOW's capital planning framework. We recommend that NOW review its capital planning framework to identify those areas where it currently falls short of best practice. A more robust capital planning framework will provide confidence that its capital expenditure is appropriately targeted and prioritised, and that capital investment is both prudent and efficient.

Much of NOW's historical expenditure over the period 2006-07 to 2009-10 has involved upgrading and increasing its existing groundwater and metering networks. These projects, which have been funded by NOW, have delivered assets which form part of NOW's regulatory asset base.

NOW's proposed capital expenditure over the period 2010-11 to 2014-15 primarily relates to one project – the renewal of hydrometric network assets ($8.2 million).

NOW is yet to complete a business case for this expenditure, or undertake any form of cost benefit analysis or cost effectiveness analysis. The forecast expenditure included in NOW's submission is based on an 'average replacement value' of a typical gauging station and assumed asset lives of gauging station components.

On the basis of our review, we consider that the proposed renewals program is prudent, although this should be confirmed with development of a robust business case. In addition, it will be

necessary to ensure that expenditure is targeted towards those assets most critical to enabling NOW to meet its water management objectives.

We note that some efficiencies may be gained by delivering the renewals using a period contract, or bundling the work into large packages.

Recommended adjustments to capital expenditure

Historical expenditure

With the exception of the metering and data system project, we are generally satisfied that the projects undertaken have been necessary to enable NOW to meet its strategic objectives and legislative requirements. However, the absence of detailed business cases for most of the projects has meant that we have been unable to confirm with certainty that all of the decisions to invest have been prudent and have contributed to delivery of NOW's monopoly services and water management objectives.

While the metering and data system project has delivered some outputs, it is unclear whether the expenditure incurred to date will actually contribute to planned project outcomes. We recommend that the expenditure on this scheme be excluded from NOW's Regulatory Asset Base until such time as NOW is able to demonstrate to IPART that the expenditure has contributed to its monopoly services and water management objectives.

For ongoing schemes, NOW's expenditure forecasts assume spend up to the level of funding approved by Treasury. NOW has not undertaken any reassessment of these projects to confirm that planned outcomes will be delivered, or to examine where efficiencies might be achieved.

The significant delay in delivery of projects has, and very likely will continue to, have an impact on NOW's ability to deliver all of the proposed project outputs. Given NOW's delivery track-record, we have some doubt that it will deliver the full expenditure forecast for 2009-10. We recommend that the capital expenditure forecast be re-profiled to account for the likely slippage.

On the basis of our review, we recommend the following adjustments to NOW's historical expenditure before it is rolled into NOW's Regulatory Asset Base.

Table 1.5: Recommended capital expenditure ($2009-10, $million)

Financial Year Ending	2006-07	2007-08	2008-09	2009-10
NOW's 2009 Submission	1.28	2.42	3.41	2.94
Adjustments for likely program delays				
Groundwater Monitoring				-0.86
Adjustment for non prudent expenditure				
Metering and data systems	0.00	-0.21	-0.25	-0.92
Recommended capital expenditure	1.28	2.21	3.16	1.16

Forecast capital expenditure

On the basis of our review, we have proposed some minor adjustments to the capital expenditure forecasts included in NOW's submission to IPART. We have made an adjustment to the expenditure in 2010-11 to account for carryover from 2009-10 to account for likely delays to the groundwater monitoring project. In addition, we have included a correction for the error in NOW's submission for 2010-11 expenditure on its hydrometric network, and have made adjustments to account for the latest estimate of stations to be delivered by the Hydrometric Network Expansion project.

Table 1.6: Forecast capital expenditure ($2009-10, $millions)

Capital Expenditure	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Allowance in 2009 submission[1]	1.29	2.03	2.03	2.03	2.03	9.42
Adjustments	-	-	-	-	-	-
Deferral of expenditure from historical schemes	0.86	-	-	-	-	0.86
Adjustment to hydrometric network renewals cost estimate	1.37	- 0.07	-0.07	- 0.07	- 0.07	1.11
Recommended capital expenditure	3.52	1.97	1.97	1.97	1.97	11.39

Note (1) The expenditure reported in Table 5, p 45 of NOW's submission is rounded, and the total expenditure reported for 2012-13 is incorrect. The figures reported here have been confirmed back to relevant supporting data. While NOW's submission does not report any capital expenditure for 2013-14 or 2014-15, supporting documentation indicates that expenditure on hydrometric network renewals will be required in these years.

2 Introduction

2.1 Background

IPART is an independent body that oversees the regulation of the water industry in NSW. It was established primarily to regulate the maximum prices charged for monopoly services by government utilities and other monopoly businesses.

Clause 3 of the *Independent Pricing and Regulatory Tribunal (Water Services) Order 2004* outlines those water management activities which constitute government 'monopoly' services for the purposes of the *Independent Pricing and Regulatory Tribunal Act 1992*. These services include:

- the making available of water;
- the making available of Water Administration Ministerial Corporation's (WAMC's)[6] water supply facilities; or
- the supplying of water, whether by means of WAMC's facilities or otherwise.

The primary purpose of water resource management is to ensure the long-term sustainability of the resource, to allow continued water extraction and to maintain the health of the natural ecosystem.

PwC and Halcrow have been engaged by IPART to undertake a review of the efficiency of the NOW's actual and forecast water resource management costs for the period 2006-07 to 2014-15.

The results of the review are to form part of IPART's assessment of NOW's pricing submission for the upcoming regulatory period. NOW's current regulatory arrangements are due to expire on 30 June 2010, and therefore IPART is currently reviewing NOW's pricing submission for the next regulatory period.

IPART has previously undertaken two determinations for bulk water services, a one-year determination in 2005 and a four-year determination from 2006-07-2009-10.

2.2 Overview of the NSW Office of Water

There has been significant restructuring of Government agencies within NSW in recent years. NOW has not been immune to these restructures. At the time of the previous determination the water management activities regulated by IPART were undertaken by the Department of Natural Resources (DNR). Not long after the previous

[6] The Water Administration Ministerial Corporation (WAMC) is the legal entity responsible for water management in NSW. NOW is responsible for undertaking these activities on behalf of WAMC.

determination, this department was abolished and the water management activities were subsequently undertaken by the Department of Water and Energy (DWE).

Another restructure occurred in 2009, whereby from 1 July 2009 the water planning and management functions previously undertaken by DWE were now amalgamated into NOW within the Department of Environment, Climate Change and Water.

Following these restructures, NOW has obligations both to IPART and other government agencies and is specifically responsible for:

- determining how water available during a year is allocated to towns, industry, irrigators and farmers, and the environment;
- developing statutory WSPs which set the broader rules for water sharing on a longer-term basis;
- negotiating inter-state and national water agreements and representing NSW interests at water forums;
- approving the extraction and use of water, and setting the policies and procedures for the permanent trade of water entitlements and the annual trade of available water; and
- monitoring water extractions and the quantity, quality, and health of our aquatic ecosystems and evaluating the effectiveness of management strategies.

NOW advises that as at 31 January 2010, it has 643 permanent and temporary full-time equivalent staff members. This is different from the 619 FTEs as at October 2009 outlined in NOW's submission, NOW outlines that the increase in FTEs since October relates mainly to an increase in FTEs in its water operations divisions.

The majority of the total staff members are situated within the Licensing and Compliance, Water Systems, and Water Management and Implementation divisions within NOW.

NOW's operations go beyond its water management requirements with IPART and therefore it does not recover the costs for all of its operations through regulated prices. NOW must therefore determine the extent to which its staff and the costs it incurs are the result of IPART related activities. These water management costs recovered through this IPART process are also recovered across both users and government, with this allocation depending on the activity being undertaken.

2.3 NOW's submission

NOW has proposed a regulatory period of three years. Therefore NOW's submission does not provide forecast information beyond 2012-13. NOW's stated reason for requesting a shorter regulatory period is that it is concerned about the high degree of uncertainty in relation to the additional operational requirements it will incur as part

of the implementation of the Basin Plan and the potential approval of Commonwealth funding for the State Priority Projects.

However, as this review was commissioned by IPART with a view to reviewing information for the entire regulatory period to 2014-15, NOW has provided cost forecasts for the full five years (through the 'information return' accompanying the submission). This information has been documented in this report. The approval of a shorter time period for the review is not something for consideration by PwC as part of this review. That decision is to be undertaken by IPART.

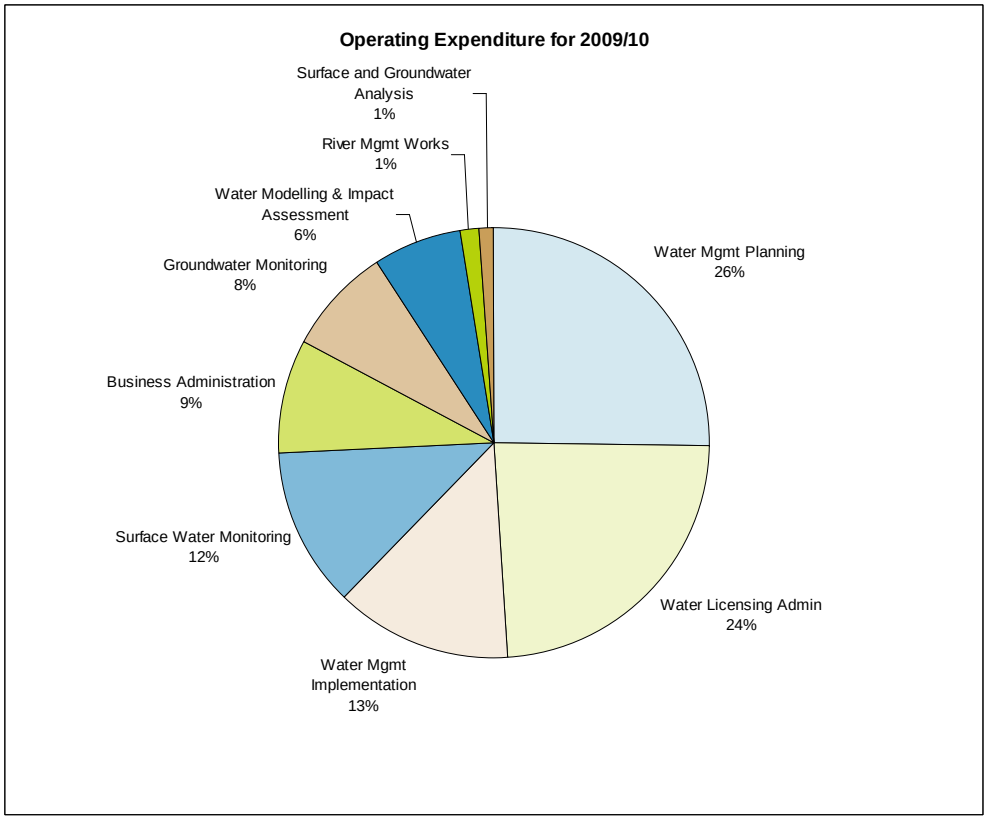
Breakdown of 2009-10 operating expenditure

Based on NOW's identified monopoly services, the agency has reported a total operating cost base of $48.8 million in 2009-10 (excluding water consents transactions, which is taken out of the cost base for pricing purposes as IPART requires the cost of this activity to be recovered through separate transaction fees). Most costs incurred by NOW are operating costs as opposed to capital, which amounted to $3.0 million (both capital expenditure and depreciation on capital assets) in 2009-10.

For the purpose of the IPART regulatory process, NOW has organised its operations into 12 high-level activities and 41 lower-level activities. A large proportion of NOW's operating costs (75 per cent) are attributable to only four high-level activities (Figure 2.1), namely:

- water management planning (26 per cent);
- water licensing administration (24 per cent);
- water management implementation (13 per cent); and
- surface water monitoring (12 per cent).

Figure 2.1: Breakdown of 2009-10 operating expenditure by high level activity codes



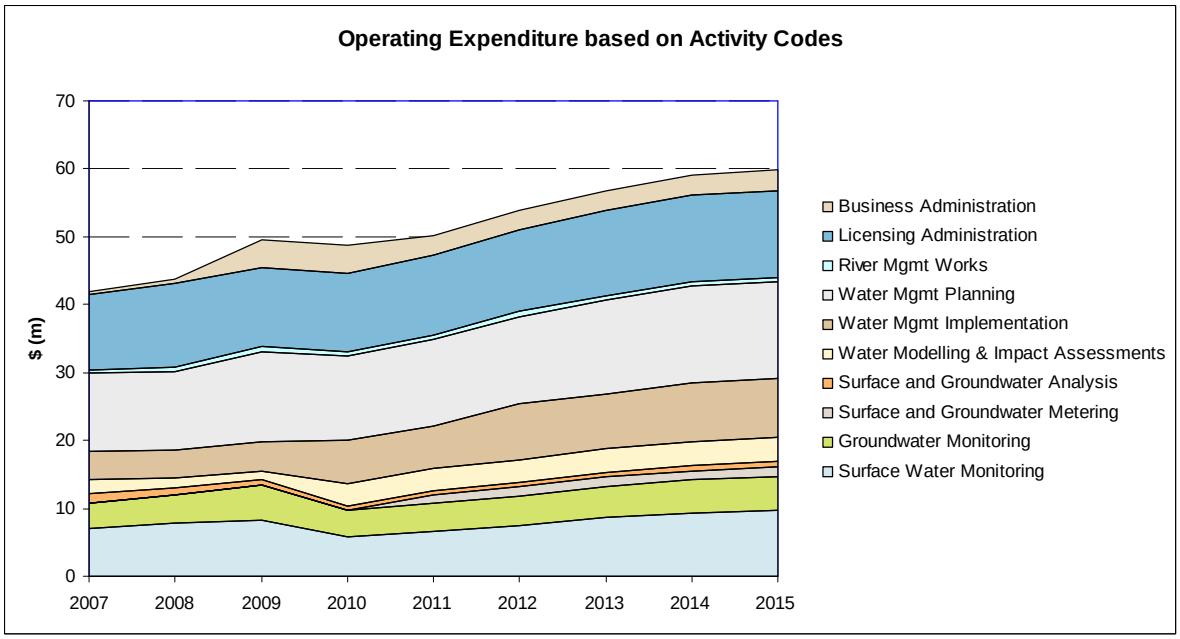
Note: There were no surface and groundwater costs

Annual operating expenditure by activity

Figure 2.2 show the breakdown in NOW's operating expenditure from 2006-07 through to 2014-15 across the high level activity codes.

The sections that are expanding are the activity codes that are increasing in costs, with the overall total operating costs increasing over the time period. NOW is requesting a 16.4 per cent increase in total annual operating expenditure by 2012-13 relative to 2009-10, and a 22.5 per cent increase out to 2014-15 relative to 2009-10.

Figure 2.2: Breakdown of actual and forecast operating expenditure by high level activity codes ($2009-10)



NOW has put forward two different cost base scenarios which we have defined as Scenario 1 and Scenario 2. This report focuses on Scenario 1.

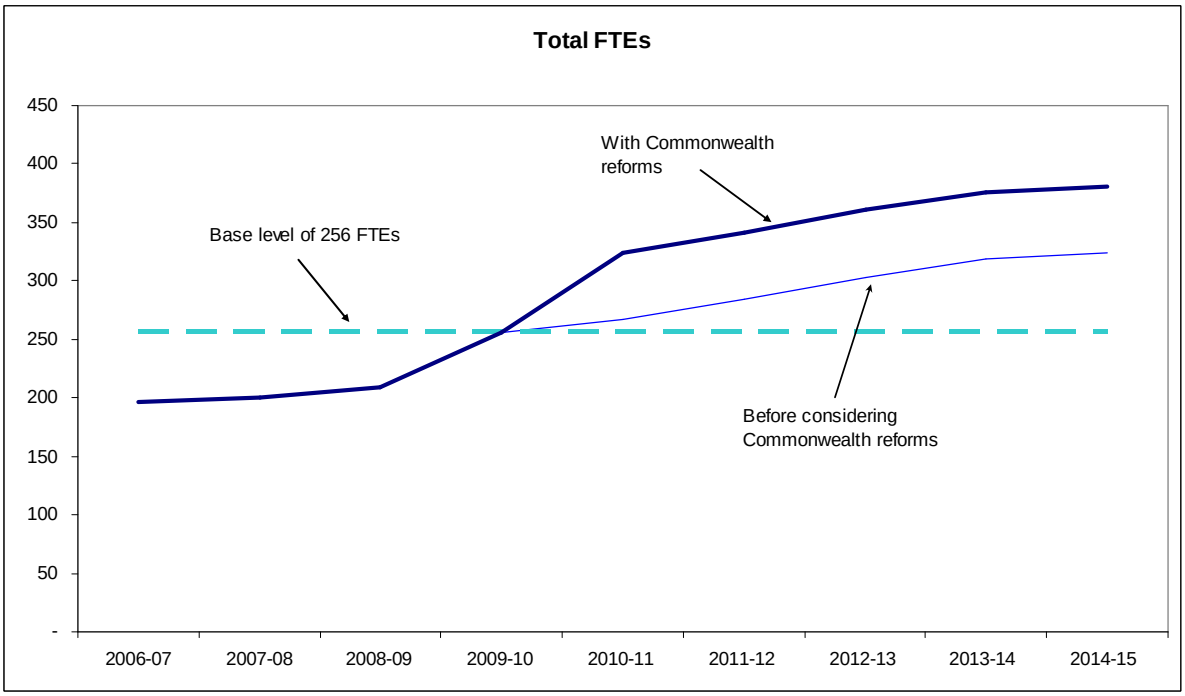
Scenario 1: Standard cost base, excluding the cost of complying with the *Water Act 2007* and IGA. (The Commonwealth has agreed to fund any real increases in costs directly attributable to complying with the *Water Act 2007*, but any requested cost increases by the Basin States are subject to due diligence by the Commonwealth. There is currently uncertainty about the proportion of additional costs identified by NOW that will be funded by the Commonwealth).

Scenario 2: Cost base to include net additional costs of complying with the *Water Act 2007* and the MDB IGA, should the Commonwealth Government not fund those additional costs.

Additional FTEs requested for forecast regulatory period

NOW is requesting an additional 47.5 FTEs by 2012-13 (see Figure 2.3). This is equivalent to a 19 per cent increase in full time equivalent staff on estimated 2009-10 levels. Over the five-year period to 2014-15, NOW has forecast to increase its FTE resources by 68 FTEs, equating to a 27 per cent increase in FTE levels from the base level (2009-10).

Figure 2.3: Actual and forecast additional FTEs



In scenario 2, NOW has estimated a further 57 FTEs per annum are needed to implement the water reforms under the federal *Water Act 2007* and the MDB IGA. A 22 per cent increase in full time staff (based on 2009-10 base levels) is expected to be needed in the first year of the regulatory period.

The additional 57 FTEs are budgeted to add an extra $10.4 million per annum to NOW's cost base.[7] In the event that the Commonwealth does not reimburse NOW for these costs, the Office of Water is proposing that these additional costs would need to be recovered through the IPART process. If this was the case, the annual operating budget for NOW, by 2012-13, would be 38 per cent higher than that for 2009-10.

A note on historical staff resources

With reference to Figure 2.3, the apparent large increase in FTEs in 2009-10 relative to the previous year is somewhat misleading. For the period 2006-07 to 2008-09 a number of FTEs directly engaged in water resource management activities have been 'unallocated' to activities because these staff have not completed cost allocation sheets. NOW estimated these account for approximately 24 FTEs (based on an assessment of the 2007-08 financial year). The cost of

7 For the additional Scenario 2 costs, there is a difference between the information return provided by NOW and its submission. NOW's submission states that the additional cost is $10.5 million (relating to 57 FTEs), however the information return (and NOW's internal models) state that the additional cost is $10.37 million (relating to 56 FTEs). We have used the cost data from the information return as being the correct amount.

these FTEs is incorporated in the historical expenditures as an indirect overhead. Going forward, from 2009-10 onward, NOW has accounted for these 24 FTEs as 'direct' resources and hence they appear in the FTE total.

NOW also advised that 17 FTEs for metropolitan water planning and legal services are included in the forecasts but excluded from the historical accounts.

Breakdown of forecast revenue requirements

The following table (Table 2.1) provides a breakdown of NOW's proposed revenue requirement for each year of the forecast regulatory period, excluding water consent transactions. Evident from this is that operating expenditure is the largest component of the total revenue requirements.

Table 2.1: NOW's proposed revenue requirement over the forecast regulatory period ($2009-10, '000s)

Scenario 1	2010-11	2011-12	2012-13	2013-14	2014-15
Operating Expenditure	50,180	53,913	56,807	59,036	59,797
Depreciation Assets	1,913	1,913	1,913	1,913	1,913
Depreciation Capex	54	209	413	616	819
Return on Assets	2,379	2,351	2,344	2,325	2,331
MDBA and BRC	18,456	16,957	15,535	17,264	17,264
Total Revenue Requirement	**72,982**	**75,344**	**77,013**	**81,144**	**82,124**
Scenario 2	2011	2012	2013	2014	2015
Operating Expenditure	60,550	64,283	67,177	69,406	70,167
Depreciation Assets	1,913	1,913	1,913	1,913	1,913
Depreciation Capex	54	209	413	616	819
Return on Assets	2,379	2,351	2,344	2,325	2,331
MDBA and BRC	18,456	16,957	15,535	17,264	17,264
Total Revenue Requirement	**83,352**	**85,714**	**87,383**	**91,524**	**92,494**
Additional Scenario 2 costs	10,370	10,370	10,370	10,370	10,370

Note: MDBA Murray-Darling Basin Authority, BRC Border River Commission

2.4 Methods for this review

Review of operational expenditure

The review of NOW's operating expenditure comprises two main elements.

- The first element, which is documented in Chapter 3, is an assessment of the accounting methods and algorithms used by NOW to derive costs for each activity and how costs are allocated to valleys and water sources.
- The second part of the review is undertaken at a more strategic level. The objective is to assess whether the services selected by NOW for inclusion in the regulated cost base are appropriate (in the sense that they meet the definition of monopoly services) and are efficient.

A variety of methods are used to conduct the strategic evaluation of NOW's submission:

- Examine how activities map to outcomes.
- Examine the extent to which the activities undertaken by NOW align to its core business and legislative obligations.
- For services that extend beyond core business, what framework has been used to determine investment priorities and service levels?
- Evidence of resource reallocation within NOW to meet new demands and optimise service delivery.
- What cost drivers underpin NOW's costs — past and future?
- Are variations between actual expenditures in the last regulatory period (2006-07 to 2009-10) and IPART approved expenditures for that period adequately explained and justified?
- Are forecast changes in expenditures over the coming regulatory period underpinned by a robust and defensible rationale?
- Have productivity improvements been allowed for – through, for example, technological advances, better management expertise, outcomes of past capital investment and strategic business decisions.
- Have levels of service been put to the market test?
- Have investigations been made into potentially cheaper ways of delivering outcomes?
- Insights from benchmarking costs to those reported by comparable agencies in other jurisdictions.

Review of performance indicators

NOW has put forward a number of performance indicators as a means of measuring and communicating performance for each of its activities.

As part of this review (see Chapter 9), we examined the purpose of performance indicators and best practice characteristics of performance indicators. The relative strengths and weaknesses of NOW's proposed performance indicators and output measures are examined in relation to the 'SMART criteria' adopted by the Australian National Audit Office (ANAO).

An overview of what comparative service providers are reporting on is also provided.

Drawing on this information, we recommend an alternative set of performance indicators and measures that will enable quantifiable assessment of NOW's efficiency and performance in the delivery of its monopoly services by IPART and NOW's other stakeholders over the period 2010-11 to 2014-15.

Benchmarking analysis

This analysis, which is reported in Chapter 8, involves the collection of information on comparable services from other jurisdictions to develop cost information on an activity basis to provide further assessment as to the efficiency of NOW.

This benchmarking analysis focuses on the identification of costs for discrete 'like' activities undertaken by comparator entities where sufficient and robust information is available. Benchmarking analysis is performed for the following activities:

- groundwater quantity monitoring (bore observation and maintenance);
- water consent transactions processing and associated administrative activities; and
- licence compliance.

Review of capital expenditure

In undertaking our assessment of capital expenditure in Chapter 11, we have sought to understand NOW's asset management and capital planning framework, and the key drivers of expenditure.

Due to the small size of NOW's capital expenditure program, we have reviewed all of the capital projects from the 2006 Determination and all of the proposed capital projects for the period 2010-11 to 2014-15. We have reviewed these projects in order to gain an understanding of the prudence and efficiency of NOW's historical and proposed expenditure.

Consistent with the terms of reference for this review, our assessment of efficiency has examined ‘whether [NOW’s] actual and proposed expenditure represents the best way of meeting the community’s need for the relevant services’. It involves examining whether the expenditure represents the least cost way of achieving a given outcome.

Our assessment of prudence involves assessing whether, ‘in the circumstances that existed at the time, the decision to invest in the asset is one that [NOW], acting prudently, would be expected to make. The prudence test must assess both: the prudence of how the decision was made to invest; of how the investment was executed (i.e. the construction or delivery and operation of the asset), having regard to information available at the time’.

3 Accounting methods

Key Findings

Deriving historical costs

- The allocation of IPART-related expenditure is based on FTE hours within NOW's internal system, with non-remuneration costs related to jobs being directly allocated to codes based on actual invoices. This is a reasonable approach, however some issues arise through staff not completing cost allocation sheets (NOW has treated these unallocated costs as indirect costs).
- NOW has allocated its corporate overheads and indirect costs across its IPART-related activities through using an hourly unit rate and applying this to each hour attributed to IPART-related activities within its internal system. This approach to allocating these costs appears reasonable.
- NOW's expenditure for 2009-10 was derived using the forecast methodology rather than historical. This creates inconsistencies with the historical expenditure and creates difficulties in undertaking comparisons.

Deriving forecast costs

- NOW used an estimated base year of 2009-10 to forecast additional costs rather than the last year of actual expenditure (2008-09). This results in a disconnect between the base year and actual expenditure, leading to difficulties in determining whether the base level is efficient.
- NOW reduced the initial base level (2009-10) of resources requested by Directors by 20 per cent as it considered the process over-estimated the necessary level of FTEs. The process undertaken by NOW does not represent the most effective way to establish the base level of resources.
- NOW made a 20 per cent reduction to the additional resources requested by its Directors for the upcoming regulatory period and also adjusted the profile of these additional resources. This appeared to be a relatively arbitrary process and there is no clear process to determine what additional obligations these additional resources will be addressing.
- NOW has not applied a consistent approach with regard to the number of annual FTE hours in its calculation of the corporate overheads and indirect costs unit rate. This inconsistency resulted in a unit rate that was over-estimated by approximately $1,000 per FTE.
- NOW has adopted a cost driver approach in allocating costs to valleys and water sources for forecast expenditure, which is an improvement on the method used for the 2006 Determination.

3.1 Introduction

This chapter contains a critical review of the methods used by NOW to construct financial accounts of actual, historical expenditure and budgets of forecast revenue requirements out to 2015.

The purpose of this chapter is to present a concise analysis of the methods used, including an assessment of:

- whether the methods are appropriate;
- whether the methods are correctly applied and adhered to; and
- any constraints in the accounting system that may introduce inaccuracies in the costs.

Matters relating to the efficiency of costs, the appropriateness of service levels and other aspects of a strategic nature are addressed in subsequent chapters.

3.2 Overview of NOW's accounting system

NOW operates on an activity-based costing approach rather than an output-based or outcome-based approach. This results in a greater emphasis in the planning stages being placed on activities, rather than the outcomes of these activities.

The financial system of accounts employed by NOW has been designed for a purpose other than the preparation of regulation pricing reports for IPART. NOW's responsibilities extend beyond the IPART-related water management activities, and it has therefore employed a financial system of accounts that is based on internal job codes, hence the activity codes used for the IPART review do not form the basis of NOW's financial accounting system.

There are a number of implications from this approach. Firstly, NOW must undertake a process of mapping the job codes within its financial system to the activity codes for IPART purposes. Second, difficulties arise in mapping activities to *outcomes*, making it difficult to determine the cost effectiveness of the service delivery, including benchmarking.

Furthermore, inconsistencies between regulatory periods have arisen in the processes used by NOW in allocating its costs. When stating that the accounting methods may exhibit 'inconsistencies', we are referring to the different approaches used by NOW in allocating costs for its historical and forecast expenditure. We are not suggesting that there are systemic problems or inconsistencies within NOW's financial accounting system, nor was it within our scope to assess these matters.

These inconsistencies between regulatory periods can lead to difficulties in making meaningful comparisons between historical and forecast activity costs.

Determining IPART related activity codes

NOW does not allocate its costs within its financial system based on the activity codes that are used for the IPART determination. This therefore requires NOW to firstly determine which job codes relate to IPART activities and which job codes do not and subsequently allocate each IPART-related job code to an appropriate activity code for IPART purposes.

This initial process of determining which job codes are considered water management activities, and costs therefore recoverable through IPART-regulated charges, is an important step in the process for determining NOW's operating expenditure for this review.

Given the fundamental importance of this step, we would expect that the process undertaken by NOW to allocate jobs between IPART and non-IPART related activities, would be a robust, well-documented procedure in order to ensure that the cost of activities undertaken by NOW are not being recovered more than once.

However, NOW was unable to provide any documentation setting out these procedures. The process as we understand it is ad-hoc and provides insufficient assurance against inappropriate cost allocation decisions.

3.3 Key changes since last determination

A number of accounting changes have occurred since the previous determination. Table 3.1 provides an overview of the changes that are proposed by NOW. These changes relate to a consolidation of sorts with the number of codes and water types being reduced. The changes create difficulties in comparing the expenditure from one regulatory period to the next.

Table 3.1: Accounting changes from previous determination

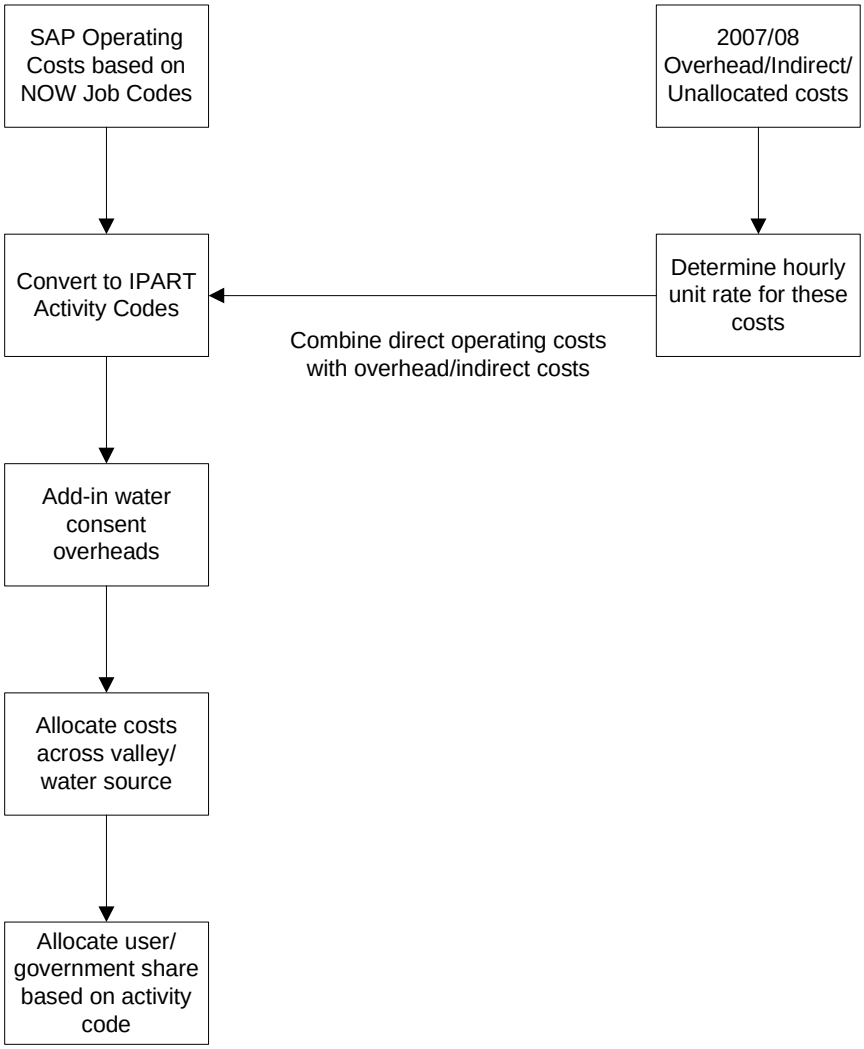
	Regulatory period	
	2006-07 to 2009-10	2010-11 to 2014-15
Activity groups	12	11
Individual activities	61	36
Water types	4	3
Valleys	12	12

3.4 Derivation of historical operating costs

Overview

In determining the actual historical operating costs to be used for the IPART review, NOW has estimated direct costs, indirect costs and corporate overheads. As noted earlier, NOW has responsibilities outside of IPART and therefore an allocation process is required to determine the appropriate levels of expenditure to be attributed to its IPART related activities. The following diagram outlines the processes undertaken by NOW in allocating these costs to IPART related activities (the diagram assumes that the decision as to what activities are IPART related and those that are not has already been undertaken).

Figure 3.1: NOW's historical cost allocation process



Determination of direct costs

The operating costs that NOW consider are direct costs are taken from each job code within its internal SAP software. These direct costs reflect the timesheet information for each job code for NOW employees and also any cash costs that may have also been incurred.

NOW has assigned each of these internal job codes to an activity code in order to determine the direct costs for each activity code for IPART purposes. This process, similar to the IPART/non-IPART allocation, appears to have been undertaken on an "as needed" basis when job codes are established, with no clear policies in place to outline procedures to be followed during the decision-making process.

The primary driver for these direct costs is staffing costs. The costs related to FTEs are clearly the most significant costs incurred by NOW with remuneration costs making up nearly half of NOW's historical operating costs (this does not include the costs of those FTEs that have not been allocating their costs through cost allocation sheets as these costs are considered as indirect and allocated to activity codes through a unit rate). The remainder of the operating costs are made up of cash costs and overhead costs.

NOW has also allowed 25 per cent of salary costs for on-cost related expenditure (annual leave, long-service leave etc.). This approach is generally intended to account for the full costs of employee remuneration.

Our review of NOW's operating costs has assumed that NOW has correctly transferred these costs from its SAP system to its costing models. We have therefore not attempted to reconcile NOW's costing models with its SAP system information.

Determination of indirect costs and overheads

The other component of deriving NOW's IPART-related costs is the indirect costs and overheads. In allocating these costs across NOW's operations, it initially allowed overhead costs at a rate of $30 per FTE hour. This allowance was incorporated into NOW's financial accounting system with each FTE hour on a job code attracting an overhead cost of $30 per hour. This cost has then flowed through to the IPART activity codes. NOW subsequently calculated a unit rate to apply for historical expenditure purposes as a means of ensuring that all corporate overhead and indirect costs were accounted for. The following sections outline the calculation of this unit rate and its application.

Calculation of hourly unit rate

In allocating overhead costs, NOW incorporated this $30 hourly unit rate into the calculation of overhead costs within SAP. NOW subsequently calculated a retrospective unit rate to allocate its

corporate overheads and additional indirect costs to its IPART related activities. This retrospective unit rate was based on historical costs for the 2007-08 year as this year was considered to be the most stable in relation to corporate costs as there was no restructure of the Department.

Through this calculation process, NOW determined that a unit rate of $46.33 per hour was required to recover all of its corporate overheads and indirect costs. The following table outlines the corporate overheads and additional indirect costs and the processes used by NOW in deriving this $46.33 an hour unit rate.

Table 3.2: Information used by NOW to derive historical corporate overhead and indirect costs unit rate ($2007-08)

Based on 2007-08 accounts	
Total Corporate Overheads	
Finance	$1.5 million
Office Director-General	$0.7 million
Ministerial and Executive Services	$2.8 million
Strategic Corporate Development	$18.4 million
Corporate Counsel	$0.6 million
Estimated Service First Cost	$7.9 million
Total Corporate Overheads	**$31.8 million**
Deductions	
Facility Expenses	$5.4 million
Other (Motor vehicle fleet and Customer Programs)	$3.4 million
Total Deductions	**$8.8 million**
Total NOW Corporate Overheads	**$23.0 million**
Share of corporate overheads allocated to Water Management Division	
Number of 07-08 non-overhead FTEs	571
NOW Corporate Overhead per FTE	$40,217
Estimated number of Water Management Division FTEs at 2007-08	418
Water Management Division overhead costs (WMD FTEs x overhead unit rate)	**$16.8 million**
Indirect costs	
Indirect costs (including unallocated FTEs)	$5.7 million
Regional accommodation (417.87 FTEs x $4,786)	$2.0 million
Motor vehicle costs	$2.4 million
Total indirect costs	**$10.0 million**
Total corporate overhead and indirect costs	**$26.8 million**
Estimated number of FTEs completing timesheets	376
Number of FTE hours per annum	1,550
Corporate overhead and additional indirect costs hourly unit rate	**$46.33**

Note: Totals may not add due to rounding

Based on the fact that NOW's calculation of actual indirect costs and corporate overheads resulted in a higher hourly unit rate than incorporated within the financial system, NOW proposed incorporating these additional indirect costs to its total operating expenditure. In order to incorporate these additional costs, NOW calculated the number of FTE hours allocated across each job and multiplied each FTE hour by the additional unit rate per hour amount ($16.33).

Application of the hourly unit rate

For both 2006-07 and 2007-08, NOW has applied the additional hourly unit rate amount of $16.33, however for 2008-09 NOW applied an additional indirect unit rate of $17.69. NOW states that this adjustment in the unit rate is to account for inflation as the calculation of the unit rate was based on 2007-08 information.

The adjustment from $16.33 to $17.69 is effectively an adjustment from $46.33 to $47.69 and therefore represents an increase of 2.9 per cent.

There was no adjustment for inflation (or deflation in this case) for the unit rate calculated for 2007-08 and 2006-07. NOW states that this differing approach was undertaken to reflect additional corporate overhead costs incurred in 2006-07. NOW advised that in 2006-07 there was a significant restructure that resulted in a number of additional costs incurred by NOW (or the version of NOW at the time), and that these costs would be difficult to determine. Therefore in attempting to reflect these additional costs, it has not deflated the 2007-08 corporate overhead costs to 2006-07 thereby resulting in a higher overhead unit rate.

This approach adopted by NOW results in a higher corporate and indirect cost for 2006-07 of approximately $0.5 million.

Allocation of costs across valleys and water sources

For the years with actual historical information (2006-07 to 2008-09), NOW has allocated its IPART-related costs across valleys and water sources based on allocation ratios that were developed from a 2002-03 survey of regional managers.

For the 2009-10 year, NOW has allocated the costs across valleys and water sources based on the approach adopted for the forecast expenditure (this approach is discussed in detail in section 3.5). That is, NOW's method of allocating costs across water sources and valleys for 2006-07 to 2008-09 is different to its allocation method for 2009-10 to 2014-15.

2009-10 operating costs

Operating costs for 2009-10 have been treated by NOW as forecast expenditure and have therefore been derived using the methodology for forecast operating costs. Therefore while these costs are in effect historical costs for IPART purposes, the details regarding the methodology for deriving 2009-10 operating costs is discussed in section 3.5 (Derivation of forecast operating costs).

Appropriateness of methods

As NOW's IPART-related costs are not the only costs that NOW incurs, a number of assumptions must be made about the

appropriate allocation of FTEs, corporate overheads and indirect costs between activities within and outside the regulated cost base. While PwC holds some reservations about the robustness of the process used for deciding whether a job is included or excluded from the cost base, we conclude that post this decision, the accounting methods for allocating shared costs and FTEs appears reasonable.

There are questions regarding some of the assumptions NOW has used as part this process, which may inflate the recovery of overheads. These concerns are discussed in more detail in the next section.

3.5 Derivation of forecast operating costs

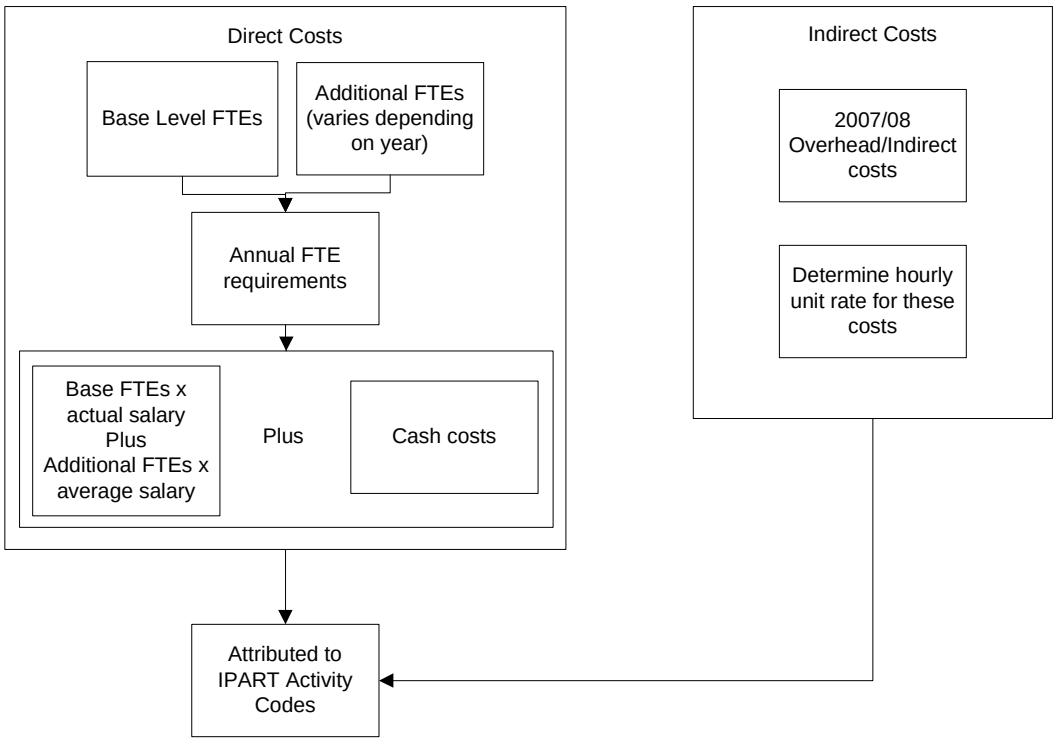
Overview

In determining the forecast operating costs, NOW has used a “budget-style” approach, rather than a base-line plus step changes approach (reflecting additional costs to meet additional requirements). This difference in approach has also resulted in a number of changes in methodologies between historical and forecast expenditure, thereby making comparisons difficult.

The budget-style approach adopted by NOW uses a base level year and the additional FTEs required above those FTEs incorporated within the base year. Appendix A provides an overview of this budget-style approach that NOW has adopted and how the costs are ‘built-up’ within its model.

Figure 3.2 outlines the processes undertaken by NOW in determining its forecast operating costs (the diagram assumes that the decision as to what activities are IPART related and those that are not has already been undertaken).

Figure 3.2: NOW's forecast cost allocation process



Selection of a base year

In determining forecast operating costs, NOW has undertaken an internal budget process for the years up until 2014-15. For this budget process, 2009-10 has been used as the base year from which forecasts of additional resources are made.

While NOW has effectively treated 2009-10 in the same manner as a forecast year, 2009-10 is considered a historical year for the purposes of the IPART review. This has resulted in some inconsistencies in the allocation methodologies applied by NOW, with 2009-10 being a historical year, but using allocation methods derived for forecast expenditure years.

The selection of a base year for regulatory purposes generally involves the use of the last year of actual accounting information (in this case 2008-09) and adjusting this amount for assumed efficiencies from the previous determination and any step changes in expenditure that are expected (i.e. regulatory or legislative changes). This process allows the regulator to determine a base year that is reflective of actual costs that have been incurred by the regulated business. Following the establishment of this base level expenditure, additional resource requirements are determined to establish the level of forecast additional expenditure to be approved.

NOW's use of a base year is different to that normally undertaken by regulators and regulated businesses, as NOW have determined its base year of 2009-10 using its internal budgeting processes. This

creates an issue as the base level of expenditure for the review is not based on actual expenditure but on budgeted expenditure.

Deriving a base level of FTEs

Base level 2009-10 expenditure was determined with significant input from Directors within NOW. The Directors for each division within NOW were provided with budgetary information regarding each of their individual divisions and required to submit a level of FTEs that it required for 2009-10. NOW indicated that this decision by the Directors was to be based on both the level of budget already available to them (provided through the budgetary information) and also the level of FTEs the Director deemed was required for 2009-10.

This process resulted in a base level of FTEs for 2009-10 that NOW's management considered would result in unreasonable price increases. NOW's management therefore reduced this base level of FTEs by 20 per cent. NOW states that it reduced the base level FTEs by 20 per cent based on a number of factors, with the primary reasons being:

- from a commercial perspective NOW believed that industry would expect that the level of forecast costs for 2009-10 to be approximately the same as for the previous year, and
- on review of the forecasts it was clear that the basis of preparing corporate budgets led to an over-estimation of resource needs.

Other reasons cited by NOW included:

- the Directors' original forecast was based upon the total staff lists which included an average of 11 per cent vacancies;
- on resignation/retirement of staff there is inevitably a delay before replacement staff are appointed (NOW has an ageing workforce). This was not factored into NOW's corporate budget;
- staff are being requested to reduce their excessive leave entitlements; and
- a level of productivity gain was not factored in to specifically cover the additional resources of Metro Water and Legal branch.

There does not appear to be a clear process that NOW has applied in determining the resources needed for the required activities. NOW relied significantly on the assessments of its Directors, however there was no robust process to test the base level of resources required with the activities and obligations that Directors are required to meet.

This process of reducing the Directors' requests resulted in a base level of FTEs of 256 for 2009-10, in contrast to 209 FTEs for 2008-09 based on NOW's cost allocation information (this number

does not include those FTEs that were not filling in cost allocation sheets).

NOW stated that of the 43 estimated FTEs that had not been filling in cost allocation sheets (discussed earlier), 24 of these FTEs related to water resource management. Furthermore, it also stated that there were resources for 2009-10 which did not form part of the 2008-09 FTE levels. These other resources include:

- 10 FTEs from legal branch, which until recently had resided within a separate unit within the former Department of Water and Energy (but now incorporated into NOW). The 10 FTEs represent a share of the 19 FTE positions in legal branch (before allowing for staff vacancies); and
- 7 FTEs from Metro Water (which was previously part of DEUS and therefore excluded from historical water resource management costs).

NOW indicated that with the addition of these other resources, the difference between the 2008-09 and 2009-10 FTE levels is estimated to be only 5 FTEs.

These additional resources for 2009-10 (which were not in the 2008-09 operating expenditure) were not identified by NOW until late in the review process. This highlighted a lack of thorough understanding of the allocation of FTEs to IPART and non-IPART activities within NOW.

NOW provided a reconciliation of its total FTEs across Divisions, however it is not structured into dedicated IPART and non-IPART related work areas. The total number of FTEs working on IPART related activities is derived through the completion of cost allocation sheets that allocate work to different activities retrospectively. This system accommodates for staff whom work on both IPART and non-IPART related activities. NOW was unable to provide a reconciliation that outlined a clear approach to determining a forecast base level of 256 FTEs on a ‘bottom up’ basis.

Determination of forecast FTEs and additional resource requirements

NOW’s forecast of operating expenditure for 2009-10 was based on the resource and other expenditure needs identified by each Director within the 2009-10 budget. Each Director was provided information on 2008-09 actual costs and resource levels to assist with estimating budget requirements over the next five years. The Directors were required to assess the changes to the 2009-10 water management activities and associated resource needs for each of the forecast years for the period. These additional resource needs were broken down into activity code levels within NOW’s internal budget.

NOW states that this process formed the initial basis of the resource needs for the price regulated water management activities undertaken by NOW.

NOW's management was of the view that the resulting forecast costs would create unacceptable price increases for both users and Government. It was also considered that the increases had not factored in productivity increases and did not take into account of NOW being constrained by the overall Government budgeting requirement.

NOW reviewed the proposed additional resources, however it was of the view that any change at an activity level would be subjective and therefore an overall reduction of 20 per cent was more appropriate. NOW therefore applied a 20 per cent reduction over the total additional FTEs requested by Directors for the period to 2014-15. This 20 per cent reduction in the additional FTEs requested by the Directors for the period was in addition to the 20 per cent reduction that was applied to the forecast base (2009-10) level of FTEs.

The additional resource requests outlined by Directors were heavily 'front-loaded' in the budget, with the large majority of additional FTEs being acquired at the beginning of the regulatory period. NOW considered that this front-loaded approach would be commercially unrealistic, due to the time lags in hiring additional staff, and therefore it applied a smoothing of additional FTEs.

NOW therefore derived an alternative schedule of additional FTEs that resulted in a total level of additional FTEs that was still 20 per cent below that requested, by the end of the pricing period. The following table outlines the additional FTEs requested by Directors and the additional FTEs proposed by NOW for this review. As can be seen from the table, the total additional FTEs has been reduced by 20 per cent (by 2014-15) and the acquiring of additional FTEs has been smoothed out over the period.

Table 3.3: Comparison of additional resource requests from Directors and the additional resources proposed by NOW

	2010-11	2011-12	2012-13	2013-14	2014-15
Cumulative Additional resources requested	43.9	66.5	82.1	83.1	85.1
NOW's proposed cumulative additional FTE	11.0	28.5	47.5	63.0	68.0

NOW did not undertake an assessment as to where these additional FTEs would best be applied or where they were most needed as it considered this level of precision to be impractical. Rather, while NOW has allocated additional FTEs to activity codes, it has not specified the activities within these codes that are in addition to the activities that are currently being undertaken that would require additional resources.

There does not appear to be any risk management processes regarding where NOW should focus its attention first in order to achieve its outcomes and satisfy its responsibilities

Further, NOW has not outlined an approach as to how it would acquire these additional FTEs. NOW acknowledges there would

most likely be a mixture of reallocation of staff from non-IPART activities and external sources, however there does not appear to be a plan in place to fill these supposed required additional resources.

Changes to the system of activity codes

NOW stated in its submission that there have been some changes to the current list of activity codes compared to those that have been used previously. It stated that these changes are the result of activities that represent new services which have not been provided by NOW in the past, activities that were not previously classified, or the amalgamation or deletion of some past activities.

Appendix 4 of NOW's submission provided a 'map' between the old activity codes and the new activity codes NOW has adopted.

Based on this map from Appendix 4, a conversion of costs from the old activity codes to the new activity codes was undertaken. This enabled a clearer comparison between costs for specific activity codes from the historical regulatory period to the forecast.[8]

Treatment of overheads

NOW has allocated corporate overhead and indirect costs to its IPART-related activities through initially calculating an estimated unit rate per hour based on information from the former DWE. This hourly unit rate was adjusted to reflect an FTE unit rate and was subsequently applied to NOW's internal budget at this FTE level.

Calculation of hourly unit rate

NOW has calculated its forecast corporate overhead expenses, based on information provided from the former DWE's Finance division, as being $15.3 million, with additional indirect costs of $14.3 million. These costs are the Finance division's 'best estimates' of corporate overheads and indirect costs for 2009-10. These indirect costs include accommodation expenses, motor vehicle fleet and the cost of the business development unit.

NOW has stated that it incorporated the costs of the business development unit through this process as it was unable to assign the unit's costs to specific activities. It therefore deemed that the most appropriate way to recover these costs was to incorporate them into the corporate overhead and indirect costs unit rate to be applied across all staff (and consequently all activity codes).

The following table outlines the corporate overheads and indirect costs that have been used in order to calculate a unit rate.

[8] Since NOW provided its submission, it was found that costs had been attributed to an activity code that was not outlined in its submission. NOW has subsequently informed IPART that these costs, for C09-04, relate to overheads for consent transactions.

Table 3.4: Information used by NOW to derive its forecast corporate overheads and indirect cost unit rate ($2009-10)

Based on 2009-10 budget estimates	
Total corporate overheads	
Finance	$1.7 million
Strategic Corporate Development	$19.3 million
Corporate Counsel	$0.6 million
Estimated Service First Cost	$3.3 million
Total Corporate Overheads	**$25.0 million**
Deductions	
Facility Expenses	$7.0 million
Other (Motor vehicle fleet and Customer Programs)	$2.7 million
Total Deductions	**$9.7 million**
Total NOW Corporate Overheads	**$15.3 million**
Number of 2009-10 non-overhead FTEs	599
NOW Corporate Overhead per FTE	$25,531
Indirect costs	
Regional accommodation	$7.0 million
Business Development unit	$3.4 million
Motor vehicle costs	$4.0 million
Total indirect costs	**$14.3 million**
Total FTE in NOW	796
Indirect cost per FTE	$17,991
Total corporate overheads and indirect cost per FTE	$43,522
Number of FTE hours per annum	1,500
Corporate overhead and additional indirect costs hourly unit rate	**$29.01**

Note: Totals may not add due to rounding

There are some inconsistencies between the costs that have been used to derive the historical and forecast unit rates. For the forecast unit rate, NOW has excluded costs that relate to the Office of the Director-General and Ministerial Executive Services. However these costs were included in NOW's calculation of $46.33 unit rate for historical purposes.

NOW's regional accommodation costs have increased significantly from the historical to the forecast unit rate. Such an increase would not usually be expected in such a short period, however it should be noted that the base year for the information was different (and therefore a different Department) and the approach to deriving regional accommodation costs was different.

The historical regional accommodation costs were determined through a proxy of using costs per FTE, while the forecast costs

were the Finance division best estimates. It is possible that the allocation approach used for the historical unit rate under-estimated the full-costs of regional accommodation that was actually incurred.

Incorporating corporate efficiency gains

These estimated costs for 2009-10 have been used as the basis for corporate overheads and indirect costs for each year of the period 2010-11 to 2014-15. The only adjustment to the costs outlined above relate to an assumed corporate efficiency gain that NOW has incorporated into its budget processes.

NOW has assumed a corporate efficiency gain of 4 per cent for 2010-11, with an additional 4 per cent for 2011-12, which it expects to retain for the following years. NOW stated in its submission that it recognises the need for continual improvement at both an output performance and financial level. During interviews for the review it noted that incorporating efficiency gains was in-line with a NSW State Government initiative to reduce corporate costs.

NOW does not have any specific reasoning for the quantum of the 4 per cent reduction, other than it was considered reasonable. NOW also does not state how it intends to achieve this targeted efficiency of 4 per cent.

Calculating the corporate overhead unit rate per FTE

Following the calculation of this hourly unit rate of $29.01, NOW has determined a rate per FTE to be applied within its budget model. NOW's costing within its budget model is based on FTEs rather than FTE hours.

The following table outlines the process NOW undertook to transform the hourly unit rate into an FTE unit rate, while incorporating the assumed efficiency gains.

Table 3.5: NOW's calculation for its corporate overhead unit rate per FTE ($2009-10)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Hourly unit rate	$29	$29	$29	$29	$29	$29
Hours per FTE	1,533	1,533	1,533	1,533	1,533	1,533
Efficiency gains		4.00%	8.16%	8.16%	8.16%	8.16%
FTE unit rate	$44,457	$42,679	$40,829	$40,829	$40,829	$40,829

There are inconsistencies with regard to the number of hours that are attributed to each FTE per annum. For historical purposes (in calculating the 'additional indirect overheads'), NOW has used 1,550 hours per FTE per annum. However in calculating the overhead unit rate for the forecast expenditure NOW used 1,500 hours to determine the unit rate per hour, and then 1,533 hours to determine the rate per FTE. If a consistent approach had been applied, the corporate overhead and indirect cost unit rate per FTE would fall by almost $1,000 per FTE.

As these FTE unit rates for each year were used for the build-up of expenditure within NOW's budget model, we have adjusted the unit rate to account for these consistencies and recalculated the operating expenditure. To make the adjustment, we applied a consistent annual FTE hours of 1,500 hours, with the following table outlining the resultant FTE unit rates. There is not a significant impact on the annual operating expenditure proposed by NOW, with the reduction each year reflecting a 0.5 per cent reduction.

Table 3.6: Re-calculating the corporate overhead unit rate per FTE accounting for inconsistencies in hours per annum ($2009-10)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Hourly unit rate	$29	$29	$29	$29	$29	$29
Hours per FTE	1,500	1,500	1,500	1,500	1,500	1,500
Efficiency gains		4.00%	8.16%	8.16%	8.16%	8.16%
FTE unit rate	$43,500	$41,760	$39,950	$39,950	$39,950	$39,950

Table 3.7: Impact on operating expenditure of adjusting unit rate for consistency ($2009-10)

	2010-11-	2011-12	2012-13	2013-14	2014-15
Proposed operating expenditure ($m)	$50.2	$53.9	$56.8	$59.0	$59.8
Adjusted operating expenditure ($m)	$49.9	$53.7	$56.5	$58.8	$59.5
Percentage impact	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%

Cost driver approach to allocating costs to valleys and water sources

In discussions with NOW, it outlined that the historical allocation of costs across valleys and water sources was based on internal advice that was provided a number of years prior.

NOW considered this may not necessarily be a good indication of the actual costs incurred across the valleys, and it therefore derived a replacement that relied on cost drivers. In adopting these new cost drivers to allocate costs across valleys, NOW stated that:

> *The use of cost drivers for allocation of costs to water sources has been validated against historical costs and has been adopted as a much more efficient method for allocating forecast costs to water sources.*

NOW has therefore attributed certain cost drivers for each activity code and determined their allocation ratio across valleys and water sources. These ratios are effectively determined for each valley and water source as the percentage of the total quantum for each cost driver that is located within the valley and water source.

The following table provides an example cost driver used by NOW and how this driver was used to allocate costs across valleys and water sources. Firstly, the number of gauging stations within each region was determined, and this was then turned into a percentage

based on the total number of gauging stations. This percentage is then used as the allocation factor across valleys for this cost driver.

Table 3.8: NOW's approach to calculating the cost driver allocations[9]

		Licences	Entitlement (ML)	Gauging Stations
Regulated	Border	411	290,363	3
	Gwydir	464	566,690	7
	Namoi	676	287,396	2
	Peel	196	48,292	1
	Lachlan	1,627	693,779	15
	Macquarie	1,517	684,325	12
	Far West	2	0	0
	Murray	3,308	2,434,137	10
	Murrumbidgee	1,658	2,740,800	35
	North Coast	63	10,330	2
	Hunter	1,552	218,702	3
	South Coast	87	15,121	1
Unregulated	Border	394	31,283	7
	Gwydir	477	68,745	6
	Namoi	535	154,036	16
	Peel	199	19,932	2
	Lachlan	693	44,079	1
	Macquarie	1,403	91,597	13
	Far West	472	206,685	19
	Murray	578	58,008	15
	Murrumbidgee	1,092	82,647	39
	North Coast	3,605	267,679	80
	Hunter	2,796	597,306	27
	South Coast	3,119	1,259,538	69
Groundwater	GW Basin	6,238	1,501,252	0
	GW Coastal	3,807	395,676	0
Total		**36,969**	**12,768,397**	**385**

ALLOCATION SHARES		Licences	Entitlement (ML)	Gauging Stations (Percentage of total)
Regulated	Border	1.1%	2.3%	0.8%
	Gwydir	1.3%	4.4%	1.8%
	Namoi	1.8%	2.3%	0.5%
	Peel	0.5%	0.4%	0.3%
	Lachlan	4.4%	5.4%	3.9%

[9] The values listed are not the same as the number of billable licences or billable entitlement. They are the total number of licences and a total for entitlement that takes account of all types of entitlement (such as Supplementary Water and Flood Plain Harvesting) for a water type in a valley.

ALLOCATION SHARES		Licences	Entitlement (ML)	Gauging Stations (Percentage of total)
	Macquarie	4.1%	5.4%	3.1%
	Far West	0.0%	0.0%	0.0%
	Murray	8.9%	19.1%	2.6%
	Murrumbidgee	4.5%	21.5%	9.1%
	North Coast	0.2%	0.1%	0.5%
	Hunter	4.2%	1.7%	0.8%
	South Coast	0.2%	0.1%	0.3%
Unregulated	Border	1.1%	0.2%	1.8%
	Gwydir	1.3%	0.5%	1.6%
	Namoi	1.4%	1.2%	4.2%
	Peel	0.5%	0.2%	0.5%
	Lachlan	1.9%	0.3%	0.3%
	Macquarie	3.8%	0.7%	3.4%
	Far West	1.3%	1.6%	4.9%
	Murray	1.6%	0.5%	3.9%
	Murrumbidgee	3.0%	0.6%	10.1%
	North Coast	9.8%	2.1%	20.8%
	Hunter	7.6%	4.7%	7.0%
	South Coast	8.4%	9.9%	17.9%
Groundwater	GW Basin	16.9%	11.8%	0.0%
	GW Coastal	10.3%	3.1%	0.0%

In the absence of more cost reflective cost drivers, in some cases it appears as though NOW has applied an approach which allocated costs across valleys and water sources by entitlement volumes. This assumption may not necessarily provide a reflection of the actual cost driver for such activities and is simply used as a simple way of apportioning costs.

Assessment of NOW's cost drivers

Appendix 3 of NOW's submission contains the set of cost drivers used to allocate the costs of each activity across valleys and water types. Also presented in this Appendix is the rationale used by NOW for the selection of each of the cost drivers.

We have undertaken an assessment of the appropriateness of each of these cost drivers for allocating costs (Table 3.9). Our criterion for determining 'appropriateness' is the degree to which the cost driver is a suitable proxy for explaining the geographic incidence of costs across valleys and water types, noting that for some activities it is difficult to identify a single factor that is perfectly correlated to the incidence of costs. More often the case, costs are influenced by multiple factors that do not neatly align to geographic areas or water types.

It is also important to note that this assessment does not extend to an examination of whether the costs and underpinning drivers are efficient. For example, the distribution of streamflow gauging stations across valleys is a major factor responsible for the geographic incidence of surface water quality and quantity monitoring costs. Our assessment therefore regards NOW's choice of this driver as 'appropriate'. However, this should not be taken as endorsement of the selected distribution of gauging stations or the decision processes used by NOW to determine the number and density of stations across the valleys. Further discussion on the efficiency of NOW's hydrometric network is presented in section 5.2

Our assessment of the cost drivers was undertaken based on the information provided by NOW on the calculations used for each cost driver and our understanding of the activities being undertaken by NOW. In some cases, internal information provided by NOW on cost drivers was more detailed than that provided in Appendix 3 of the submission and, in one case, the information was inconsistent. In this case we have relied on the internal information provided by NOW as this was how NOW actually allocated the costs.

Table 3.9: Assessment of NOW's cost drivers

Cost Driver	Activity Code	Proportion of operating expenditure	Assessment
Entitlement ML (RUG)	- Environmental Water Management commitments	7.7%	Questionable
	- Environmental water planning		Questionable
	- Cross-border and national		Questionable
	- Water industry regulation		Questionable
Access Licences (RUG)	- Licence conversion and entitlement specification	8.6%	Appropriate
	- Licence administration		Appropriate
Entitlement ML/Access Licences (RUG)	- Trading and accounts management	11.8%	Appropriate
	- Compliance		Questionable
Gauging stations (RU)	- Surface water quantity monitoring	11.8%	Appropriate
	- Surface water quantity data mgmt and reporting		Appropriate
	- Surface water monitoring assets management		Appropriate
Ecology, biology and algal sampling events	- Surface water ecology, biology	0.5%	Appropriate

Cost Driver	Activity Code	Proportion of operating expenditure	Assessment
(RU)	and algal monitoring		
Water quality sampling events at key sites (RU)	- Surface water quality monitoring	2.2%	Appropriate
Water modelling and impact assessment (RU)	- Water sharing/water management modelling	4.7%	Appropriate
	- Resources assessments		Appropriate
Active monitoring bores (G)	- Groundwater quantity monitoring	8.8%	Appropriate
	- Groundwater database management		Appropriate
	- Groundwater monitoring assets management		Appropriate
	- Groundwater modelling		Appropriate
Water quality lab tests (RUG)	- Water quality analysis	1.3%	Appropriate
Meter readings (2010) (UG)	- Metering operations – user owned	2.4%	Appropriate
Billing – licences billed p.a. (RUG)	- Metering data management	3.8%	Appropriate *
	- Financial administration		Appropriate
BGA Samples (RU)	- Blue-green algae management	0.7%	Appropriate
Water operations (FTE then operation complexity) (RUG)	- Systems operation and water availability management	2.4%	Appropriate
Water Planning activity (calculation no.s plans and complexity) (RUG)	- Plan performance monitoring and reporting	13.5%	Appropriate
	- Water sharing plan development		Appropriate
Extraction related entitlement (RUG)	- Operational planning	13.5%	Questionable
	- Business development		Questionable
Extraction related entitlement ML (RU)	- Surface water quality and biological database management	1.0%	Appropriate
	- Water balances and accounting		Appropriate
Groundwater	- Groundwater	0.2%	Appropriate

Cost Driver	Activity Code	Proportion of operating expenditure	Assessment
Entitlement ML (G)	quality monitoring		
Consent transactions (RUG)	- Consent transaction overheads	3.9%	Appropriate
River management works (R)	- River management works	1.2%	Appropriate

Note: * No rationale provided for the use of this cost driver for this activity (submission indicated a different cost driver was used), however the use of this new cost driver appears appropriate; R = Regulated, U = Unregulated, G = Groundwater.

Key findings

For the most part NOW has applied cost drivers that appear reasonable and appropriate for allocating costs of the specific activities nominated.

However, we question the use of 'entitlement volume' or forecast water use[10] as a driver for allocating the costs of some activities. This driver has been used to allocate approximately 34 per cent of operating expenditure and thus deserves particular attention. While for some activities there is a clear relationship between entitlement volume and incidence of costs, for other activities the relationship is either weak or non-existent. In the latter two cases, we assess the use of entitlement volume as 'questionable' and in need of further investigation.

Activities for which there is assessed to be no clear relationship between entitlement volume and cost:

- Business development (C11-02);
- Water industry regulation (C07-05); and
- Cross-border and national commitments (C07-04).

These activities that are typically 'state wide' in nature and do not have a natural geographic incidence – or whose incidence across valleys varies from year to year depending on the intensity of effort required to respond to seasonal factors such as drought and floods.

NOW's choice of entitlement volume as a means of allocating costs across valleys/water type (as opposed to an equal share to each valley/water type) appears to have been influenced by equity considerations. Where there is no clear factor responsible for the spatial incidence of costs, a pro-rata allocation of costs on the basis of entitlement volume results in valleys with large volumes of entitlement bearing a greater share of cost – which could be

[10] NOW notes that due to the lack of accurate water consumption information for some water sources (notably unregulated rivers), entitlement volumes have been used for these sources. Usage forecasts have been used as a driver for allocation across regulated river valleys.

regarded as equitable, particularly as the cost may be approximately equalised across valleys when expressed on a per ML basis.

Activities for which there is assessed to be only a weak relationship between entitlement volume and cost:

- Environmental water management (C06-05); and
- Environmental water planning (C07-03).

NOW has allocated the cost of these activities to valleys and water types on the basis of entitlement volume, and yet it seems possible that there would be instances where the complexity of environmental water management and planning (and thus required resources) bears no correlation to the amount of water used or entitlement volume held in a valley. For example, costs may be more related to the location of sensitive, high-value environmental assets.

NOW does acknowledge, in part, the limitations of this cost driver for allocating the costs of environmental water management: Detailed cost driver characteristics appropriate to this activity are still being developed through the WSPs. Until this information is available and a scientifically-determined driver can be developed, the relative volume of extraction is considered to be the most appropriate basis for allocating cost.' (Page 119 of NOW submission).

Activities for which there is assessed to be a clear relationship between entitlement volume and incidence of cost:

- Operational planning;
- Trading and accounts management;
- Compliance;
- Groundwater quality monitoring; and
- Surface water quality and biological database management.

In the main, NOW's choice of entitlement volume as a cost driver for these activities appears to be appropriate. However, we have questioned the appropriateness of the driver for operational planning (C07-02) and compliance (C09-03), as there may be other drivers that better reflect the incidence of costs for these activities. For example, the complexity of compliance and operational planning issues may not necessarily be related entirely to entitlement volume. It is understood from pages 41-42 of NOW's submission, for example, that there is a planned increase in compliance activities and investment, which will require 'at least two compliance officers located in strategic locations around NSW so that alleged activities can be investigated in a timely manner'. This being the case, perhaps a driver that recognises the 'hotspots' for compliance problems – and subsequent investment in additional resources - would be a more appropriate factor for allocating compliance costs to valleys.

Activities confined to the Murray Darling Basin

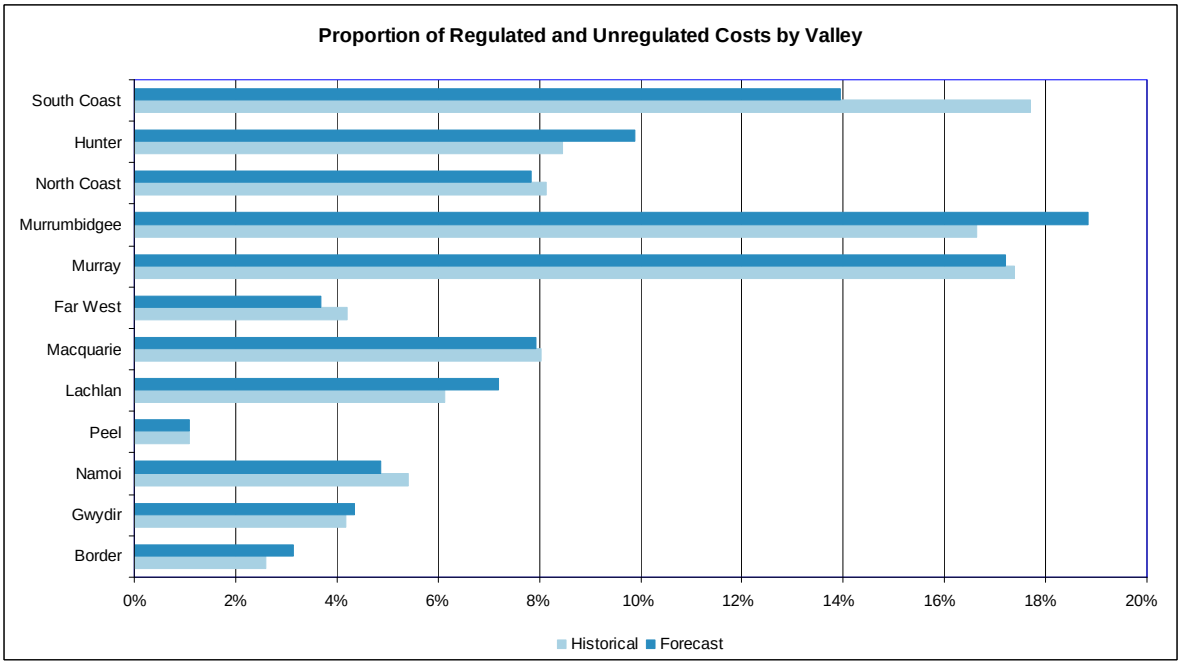
Some of NOW's activities relate specifically to valleys within the Murray Darling Basin and do not (or should not) extend to the coastal valleys. For example, activities included as part of NOW's Scenario 2 are, by definition, driven by policy settings related to the Murray Darling Basin (as they have arisen from the *Water Act 2007* and MDB IGA).

The cost drivers set out in Table 3.9 do not appear to have an in-built mechanism to prevent the cost of activities that are specific to the Murray Darling Basin being distributed to non-Basin valleys. It would be relatively easy to incorporate a rule in the cost allocation model that ringfences coastal valleys from receiving a share of Murray Darling Basin activity costs however, it is beyond the scope of this review to examine how NOW has allocated Scenario 2 costs to valleys/water types and the appropriateness of this allocation method.

Allocation of costs across valleys - historical and forecast

The following figure shows the variation between the allocation of total costs (for regulated rivers plus unregulated rivers) between valleys over the historical and forecast regulatory periods. Thus, the allocation of total expenditure over the past three years to 2008-09 is compared to the total forecast expenditure from 2010-11 to 2014-15. Due to the anomaly of 2009-10 being allocated using the cost driver approach (as per 2010-11 to 2014-15), it has been removed from the comparison.

Figure 3.3: Proportion of regulated and unregulated costs by valley for the historical and forecast periods



Note: Historical 2009-10 expenditure has been excluded as this was allocated based on the forecast approach

This comparison highlights the fact that even though significant changes have occurred in the allocation process across valleys, the majority of valleys do not appear to be materially affected. The Murrumbidgee and Hunter valleys appear to have the highest increase in proportion of expenditure, while South Coast will experience a considerable decrease in expenditure from the change in approach.

Appropriateness of methods

Selection of a base year

One of the most significant questions is the appropriateness of determining operating costs for the forecast regulatory period based on forecast budget information for 2009-10. In determining the costs for the last year of a regulatory period, the second last year of the period (generally the last year of actual information) should be used as the basis for establishing future costs. However NOW's approach has created a disconnect between historical actual expenditure and its forecast expenditure for the upcoming regulatory period.

During the process of this review, NOW devoted considerable effort to justifying the base level of 256 FTEs as being reasonable, given the variance to the number of FTEs in the previous year and the total FTEs for NOW. Far less effort was given to justifying the proposed 20 per cent 'reduction factor' to the resourcing profile submitted by the Directors.

NOW effectively undertook a top-down adjustment to determine the base level FTEs rather than a bottom-up assessment using actual information.

NOW's methods in determining the base level resources does not represent the most effective way of establishing a base level of resources for such a review. The process of using Director's requested/forecast resources for 2009-10 in effect as the primary determinant for the base level resources creates a disconnect with the actual resource and expenditure levels incurred by NOW and presented as a significant difficulty for our review.

Determination of forecast FTEs and additional resource requirements

The general process for regulatory purposes would be to address the additional obligations and requirements to be placed on regulated business over the forecast regulatory period, and determine the additional FTEs required. NOW has not undertaken this process of clearly matching additional obligations with additional resources.

The 20 per cent reduction applied by NOW is arbitrary and it is difficult to determine whether the resultant request for additional FTEs is prudent and efficient when there is no clear process of what additional obligations these additional FTEs will be addressing.

The approach of having a standard 20 per cent reduction across all activity codes for the regulatory period indicates that there is no risk management being undertaken by NOW to determine where resources would be best allocated.

Questions also arise from this process with regard to the managerial processes employed by NOW, raising concerns whether the processes are adequate to determine required FTEs due to the subsequent reduction of 20 per cent by NOW's management.

Changes to the system of activity codes

The change in activity codes is reasonable, however it may result in an aggregating of costs to a limited number of activity codes – thereby reducing the effectiveness of having this type of breakdown of expenditure. There needs to be a balance between not having enough activity codes and having too many.

In addition to this, it makes it harder to fully understand the changes in costs over time. This results in difficulties in determining whether there have been any reductions in costs through efficiencies, or whether these reductions are an outworking of the revised activity codes.

Treatment of overheads

There are some inconsistencies between the approach outlined by NOW and that which it actually undertook in its budget calculations.

NOW stated that it applied the same methodology for allocating corporate overheads and indirect costs for both historical and forecast purposes, however based on our review this is not the case.

NOW has not applied a consistent approach with regard to the calculation of the annual hours per FTE across historical and forecast approaches and there is also an inconsistency within the forecast approach. If a consistent approach was applied to the calculation of the forecast unit rate, there would be a reduction of approximately $1,000 in the unit rate per FTE.

There are also inconsistencies with the historical approach with regard to some of the costs that have been included. NOW incorporated some costs within the historical allocation, which it subsequently excluded from the build-up of corporate costs for the forecast allocation.

It would be assumed that businesses would seek to gain efficiencies in its overhead and indirect expenditure. While NOW has not provided clear reasoning on how it will achieve its target of 4 per cent, nor whether in aggregate this adjustment ultimately delivers a level of costs which is 'efficient'.

Cost driver approach to allocating costs to valleys and water sources

Although the allocation of these cost drivers is a step in the right direction, they are not necessarily being used in regard to the 'build-up' of costs incurred by NOW, merely as an allocation tool.

It would be expected that in the future as NOW develops a better understanding of its cost drivers, it will be able to use these drivers to begin to estimate and build-up costs rather than simply as an allocation mechanism.

Entitlement volumes have been used as a cost driver for a number of activities (making up 20 per cent of costs). In some cases it appears as though these volumes are being used for cost allocation in the absence of any more detailed cost driver being identified.

4 Review of monopoly services to be provided

This chapter contains a review of the monopoly services proposed by NOW in its pricing submission. The focus of this chapter is on the types of services to be delivered, as opposed to the level of service, which is examined in subsequent chapters. The purpose of this review is to assess the validity of including each of the nominated services in the regulatory cost base.

4.1 IPART regulatory requirements

The WAMC is the legal entity responsible for the water management in New South Wales, although NOW is responsible for undertaking these activities on behalf of WAMC.

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 it does not provide practical guidance on those water management activities which should be included as monopoly services. In the absence of more prescriptive guidance, there is a risk that any interpretation of the Water Services Order may be open to challenge by the regulated entity or other parties. For this reason, extensive interpretation of the Water Services Order has not been undertaken.

The 'making available of water' has been taken to mean any activities which are required to ensure water resources are managed on a sustainable basis to support long-term use. This includes activities relating to the assessment, allocation, planning, monitoring and reporting of water resources as far as these activities are undertaken to ensure supply to users. These activities 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.

The remaining two requirements have been interpreted simply as activities which are necessary to ensure the supply of water from WAMC's facilities, or have otherwise resulted from the supply of

water from these facilities. Again, these activities present monopoly service characteristics in that they are provided by a single government entity and there is limited scope for another party to provide these services.

In the absence of a more practical framework for the identification of water management activities as monopoly services, there is value in examining approaches adopted in other jurisdictions and national guidelines that have been prepared by the Australian Government.

4.2 National requirements and practices in other jurisdictions

National requirements

National Water Initiative

In June 2004, a number of state and territory governments across Australia agreed to the Intergovernmental Agreement on a National Water Initiative (the NWI). The NWI sets out objectives, outcomes and actions to support progress on national water reform. A key element of the NWI relates to the cost recovery of water planning and management activities, specifically:

> ***Paragraph 67*** *– The States and Territories agree to bring into effect consistent approaches to pricing and attributing costs of water planning and management by 2006, involving:*
>
> *i) the identification of all costs associated with water planning and management, including the costs of underpinning water markets such as the provision of registers, accounting and measurement frameworks and performance monitoring and benchmarking;*
>
> *ii) the identification of the proportion of costs that can be attributed to water access entitlement holders consistent with the principles below:*
>
> *a) charges exclude activities undertaken for the Government (such as policy development, and Ministerial or Parliamentary services); and*
>
> *b) charges are linked as closely as possible to the costs of activities or products.*

A difficulty for jurisdictions has been in the definition of water planning and management activities and subsequently the

identification of these activities for charging purposes. While the NWI provides guidance on the means by which cost-recovery approaches for water planning and management activities should be conducted; it does not specify the types of activities that should be included within the water planning and management spectrum.

The NWI Pricing Principles

The Australian Government has released the NWI Pricing Principles. These principles were developed jointly by the Australian Government and state and territory governments to provide a set of guidelines or road map for rural and urban pricing practices and to assist jurisdictions to implement the NWI water pricing commitments in a consistent way.

The principles are currently the subject of a consultation regulatory impact statement. The principles are contained in Appendix B.

Sections 3(9) and 3(10) of the draft principles provide guidance as to the definition of water planning and management activities.

Section 3(9) - In the context of the NWI, water planning and management involves activities:

a) to promote the long term sustainability of the resource and to maintain the health of natural ecosystems by minimising impacts associated with water extraction; and
b) that are necessary to manage the impacts of past, current and future patterns of water extraction; or
c) that are concerned directly with the hydrology of surface and groundwater systems (as opposed to wider catchment management activities, although there are close linkages); or
d) that protect the integrity of the entitlement system and the security of users' authorised access to water.

Section 3(10) - The activities broadly cover:

a) collecting and analysing data to gain a better understanding of the levels of extractions as well as the potential implications of extraction for the water system, and managing this data;
b) developing policies to manage the resource, including managing the interstate sharing of the resource;
c) developing plans and strategies/frameworks to allocate water among users and the environment, and to remediate impacts associated with water use;
d) implementing these plans/strategies/frameworks and monitoring compliance against the plans;

e) *undertaking capital works, such as the modification of weirs to achieve environmental outcomes; and*
f) *administering water entitlements, compliance, metering and trading systems.*

A detailed 'activities framework' is appended to the NWI Pricing Principles, and is also reproduced in Appendix B of this report.

The NWI specifically excludes the costs of activities undertaken for government, including the development of policy, and Ministerial and Parliamentary services (Paragraph 67 (ii a) of the NWI refers). The costs of associated activity costs should be allocated entirely to governments.

The application of this requirement to water planning and management cost recovery approaches is difficult; particularly as policy development can encompass a breadth of possible activities and can be conducted to meet various objectives. The pricing principles provide further guidance as to these excluded activities:

i. *Policy development includes the development and/or refinement of overarching policy frameworks designed to plan for, and manage water resources. Policy development will typically be characterised by the development of comprehensive strategies that articulate the long-term policy objectives for sustainable water management and the overarching policy and institutional framework for achieving these objectives. This includes overarching legislation (e.g. Water Act 2000 (Qld), Water Management Act 2000 (NSW), Natural Resource Management Act 2004 (South Australia)) or overarching policy frameworks (e.g. the State Water Plan (Western Australia), Securing our Future Together – White Paper (Victoria) and the State Water Management Outcomes Plan (NSW)).*

   Developing and refining statutory, catchment/valley/regional-level water plans or other secondary/subordinate legislation that operationalises water planning and management activities does not constitute policy development or a Ministerial or Parliamentary service and the associated activity costs should not be exempt from cost recovery.

ii. *Ministerial or Parliamentary services include reporting to parliament; advising parliament on*

> *issues where the agency has expertise; answering parliamentary questions; briefing Ministers and responding to Ministerial correspondence.*

Australian Competition and Consumer Commission

Under the *Water Act 2007*, the ACCC is to provide advice to the Commonwealth Water Minister on water planning and management charge rules to apply in the Murray-Darling Basin. Under the Act, the rules must contribute to the basin water charging objectives and principles, which are based on commitments made by parties to the NWI.

The ACCC has identified a range of water planning and management activities by governments that are necessary to ensure that surface and groundwater resources are used sustainably. Water planning and management activities include:

- collecting and analysing data to gain a better understanding of the levels of extractions as well as the potential implications of extraction for the water system, and managing that data;
- developing policies to manage the resource, including managing the interstate sharing of the resource;
- developing plans and strategies or frameworks to allocate water among users and the environment, and to remediate impacts associated with water use;
- implementing those plans, strategies and frameworks and monitoring compliance against the plans;
- undertaking capital works, such as the modification of weirs to achieve environmental outcomes; and
- administering water entitlements, compliance, metering and trading systems.

The ACCC's position paper on draft water charge rules for water planning and management charges (ACCC 2009a, page 16) found that processes for recovering and reporting water planning and management charges in the Murray-Darling Basin are often inconsistent or deficient:

> *States apply very different frameworks for funding water planning and water management activities. The costs of water planning and water management activities and funding arrangements are not consistently transparent across the Basin. There also appears to be inconsistency across the Basin (and within Basin states) as to whether the charges imposed for water planning and management costs are specifically linked to the costs of activities,*

> *although a lack of transparency of funding arrangements prevents a more thorough assessment.*

The ACCC also found that the available information about water planning and water management activities in the Murray-Darling Basin was not sufficient or provided in a way that promotes transparency. It considered that this lack of transparency was of concern because water market participants are unlikely to be fully informed when making decisions in the water market and also because it impedes the development of the most effective water charge rules for water planning and management.

Approaches adopted in other jurisdictions

The states and territories have adopted different approaches and levels of specification for activities. This reflects the differing arrangements adopted for addressing water resource issues (e.g. water resource centric versus integrated natural resource management approaches) and each jurisdiction's current progress in identifying and recovering associated costs.

In previous determinations, IPART noted that water resource management activities:

> *… arise from the need to manage a resource that is being consumed by a wide range of user groups. The overriding aim of water resource management activities is to ensure the long-term sustainability of the resource, to allow continued water extraction and maintain the health of the natural ecosystem.*[11]

The NSW DNR, in its 2006 submission to IPART, noted that water planning and management activities also 'protect the integrity of the entitlement system and the security of users' authorised access'. Accordingly, such activities protect the value of entitlements offering a direct commercial benefit to users, in part by allowing holders to use their entitlement as security to obtain finance.

The approaches adopted by other jurisdictions are summarised below.

Queensland

In Queensland, the process of developing a long-term charging framework and the analysis of the Government's water planning and management costs commenced in early 2003. A definition of water planning and management was developed prior to the introduction of the NWI. It was determined that water planning and management comprises:

[11] Independent Pricing and Regulatory Tribunal, 2006. *Bulk water prices for State Water Corporation and Water Administration Ministerial Corporation from 1 August 2006 to 20 June 2010.*

> *…those activities designed to ensure that the State's water resources are managed to support sustainable economic development and conservation of the environment, for the long-term benefit of the community.*

Under this definition, water management:

- includes activities associated with assessing, allocating, planning and monitoring the use of the resource, such as:
  - development and monitoring of catchment-based water resource plans (WRPs), resource operations plans (ROPs) to give effect to the WRPs, and water use plans;
  - hydrological modelling of river systems;
  - licensing and allocation of transferable water entitlements;
  - stream gauging and water quality monitoring;
  - management and publication of water resource data; and
  - various management activities such as rehabilitation of bores in the Great Artesian Basin and installation of fish ladders.
- does not include the supply or delivery of water or industry regulation or shareholder corporate governance functions of water supply authorities; and
- does not include wider catchment management activities

A water planning and management charging regime was developed for Queensland but was not introduced due to community concerns. Queensland has not progressed this issue further.

Western Australia

The Western Australian Treasurer asked the Economic Regulation Authority (Authority) on 2 April 2009 to undertake an inquiry into water resource management and planning charges. The ERA released an issues paper which outlined the water planning and management activities undertaken by the Department of Water for which costs may be recovered. These included:

- urban water management and services;
- water use allocation and optimisation;
- catchments and waterways health;
- underpinning support service - Water Resources Assessment, Measurement and Science;
- underpinning support service - Strategic Policy and Planning;

- underpinning support service - Regional Management;
- underpinning support service – Corporate Services; and
- underpinning support service – ODG.

In its draft report, the Authority recommended that the following principles be applied to the recovery of water resource management and planning costs:

- The costs of activities to address impacts, or potential impacts, arising from the use of water resources, be recovered from those parties who cause the costs to be incurred, if the parties can be identified. Costs may be caused by individuals (for example assessment and monitoring of individual licences) or groups (for example allocation planning for groups of licence holders).
- If the parties who cause costs to be incurred cannot be identified, costs be recovered from public funds.
- The costs of activities that produce outputs in the nature of public goods be borne by the public.
- If costs are incurred on behalf of private parties for activities that also produce outputs in the nature of public goods, the costs be shared between the private parties and the public.

In applying the draft principles to the costs that should be recovered, and on the basis that suitable cost estimates are provided by the Department, the Authority's draft recommendations are that:

- for water licensing, costs be recovered from licence holders, with charges reflecting the costs associated with application assessments and on-going monitoring and planning;
- where costs are incurred by the Department of Water on behalf of private parties and those costs also benefit the wider community (such as the costs associated with allocation planning, groundwater and surface water assessment and water measurement and information), the costs be shared between the wider community and the groups or individuals for whom the activity is carried out;
- where it is possible to identify the costs of activities carried out for particular large licence holders or projects, separate charges be levied on those parties;
- for water source protection plans, costs be recovered from public drinking water suppliers;
- for the assessment of subdivision applications, costs be recovered from the Western Australian Planning Commission; and
- for water metering, costs be recovered from metered licence holders.

Victoria, South Australia and the ACT

Victoria, South Australia and the ACT apply levies to recover some costs associated with water planning and management activities. However, these jurisdictions do not apply a specific definition of water planning and management, nor identify the actual costs of these activities, in developing the annual levies.

Tasmania and the Northern Territory

Tasmania and the Northern Territory do not levy a specific 'water planning and management charge' to recover the costs incurred by government in undertaking these activities.

International experience

There are few examples internationally where water planning and management activities have been defined for the purpose of cost-recovery.

An example of where water management activities have been expressly identified and defined for the purpose of cost-recovery is in South Africa. South Africa's Department of Water Affairs and Forestry defines water resource management as those activities that relate to water resource planning and management, as well as supply planning activities. Supply planning broadly involves the planning for future water supply, including planning for the development of new water infrastructure and alternate water supply options, such as waste water reuse.

4.3 Assessment of monopoly services

Office of Water's services

NOW is a separate office within the NSW Department of Environment, Climate Change and Water. The Office reports to the Minister for Water for water policy and the administration of key water management legislation, including the *Water Management Act 2000*, *Water Act 1912*, and the *Hawkesbury-Nepean River Act 2009*.

The Office of Water is responsible for the management of the State's surface water and groundwater resources, including:

- determination of the volume of water available for allocation each year to towns, water users and the environment, particularly during times of severe water shortage;
- ensuring that that all users, including the environment, have access to sustainable water supplies;
- developing statutory WSPs which set the rules for sharing water between users, and between users and the environment;

- negotiating inter-state and national water agreements particularly in view of the significant institutional changes occurring in the Murray-Darling Basin;
- approving the extraction and use of water, and the policies and procedures for the permanent trade of water entitlements and the annual trade of available water;
- coordinating the development of metropolitan, town and non-urban water policy; and
- monitor the quantity, quality, and health of our aquatic ecosystems and water extractions.

The key functions of NOW include:

- water planning and implementation of interstate programs;
- surface water and groundwater management;
- water licensing and compliance;
- implementation of major water infrastructure projects;
- water information and modelling;
- science and evaluation;
- policy and regulation of local water utilities;
- coordination of metropolitan water planning; and
- provision of legal advice on water matters to the government.

NOW's proposed business drivers

The NSW Government has a number of priorities for water management which impact on the proposed activities undertaken by NOW to 2013. These priorities are being driven by:

- changed Commonwealth/state responsibilities for water management in the Murray-Darling Basin;
- requirements to continue implementing the Council of Australian Governments (COAG) water reform agenda (some Commonwealth funding is dependent on progress against reforms being achieved);
- the funding of state priority projects by the Commonwealth but which require NOW contributions to ongoing operation, maintenance and compliance costs;
- ongoing drought conditions which are increasing the need for management input, in particular, compliance monitoring and technical decision-making; and
- further work to manage more complex water management issues (i.e. return flows, interception activities, surface water and ground water connectivity).

The business priorities identified by NOW include:

- the completion of WSPs (38 plans), particularly inland plans before the Basin Plan commences in 2011 including benchmarks for Commonwealth extraction limits and for risk assignment compensation issues (by 2014 all plans will need to be revised to meet standards set out in the Basin Plan, including reduction in available water);
- the associated conversion of water licenses to allow water users full access to water trading opportunities;
- the implementation of rules under more than 80 WSPs across NSW requiring increased metering, monitoring, compliance, water allocation assessment processes, and administer the resulting increase in water trading activity;
- increased monitoring and evaluation of the ecological and economic performance of WSPs;
- further operational planning to protect existing water rights and better manage water (e.g. floodplain harvesting, basic landholder rights, aquifer interference);
- management of return flows including the development of a policy position;
- increased water quality monitoring/analysis and response (e.g. algal blooms);
- further expansion and upgrade of NOW's hydrometric network and upgrade of water data network in NSW and the transfer of data to the national water database; and
- increased compliance activities to ensure water sharing rules and licence conditions are complied with.

Assessment of the business drivers

PwC accepts that the business of managing water resources is becoming more complex and sophisticated, thus increasing the demands on resource managers. This change has arisen due to the progressive introduction of a range of water reforms over the past decade, with ongoing implementation of these reforms, including those identified by NOW over the forthcoming regulatory period — for example, WSPs, stronger compliance frameworks, expanded metering and monitoring, improved databases and water accounting.

The prolonged drought over the past five years has heightened the need for these reforms. However, even without the drought, ongoing improvements in water management are viewed by PwC as a necessary means of increasing the economic returns and maximising the efficient allocation of the water resource.

The system of water entitlement shares established in NSW by the *Water Management Act 2000* represented a quantum change in the way water is managed, primarily by strengthening the property rights underpinning water access and use. But such a system needs to be accompanied by higher levels of measurement, monitoring and enforcement if the operational

integrity of the system is to be maintained and underlying confidence supported.

In assessing NOW's proposal for additional resources, PwC have taken into account the requirement for higher levels of managerial sophistication to manage what is inherently a more complex system than what existed less than a decade ago. We have also borne in mind the total cost of water resource management and planning in NSW relative to the market value of the resource, which is considerable. For 2008-09, the National Water Commission reported the total value of water entitlement trades in New South Wales to be $1.7 billion and the value of the temporary market in allocation trades to be $450 million.[12] Individual water entitlements traded, on average, at $2400 per ML for high security water.

Assessment of NOW's monopoly services

Table 4.1 contains details of all the functions of NOW and aligns these with those activities that have been included by NOW as monopoly services. A full description of the proposed monopoly services can be found at Appendix 1 of the NOW Submission to IPART (December 2009).

The third column of the table provides an assessment of whether the activities included as monopoly services are consistent with the *Independent Pricing and Regulatory Tribunal (Water Services Order) 2004*, and other guidance and jurisdictional approaches.

[12] National Water Commission (2009) Australian Water Markets Report, NWC, Canberra.

Table 4.1: Assessment of the monopoly services proposed by NOW

NOW Functions[#]	**NOW activities included as monopoly services**	**Assessment against the Water Services Order and other guidance**
Water planning and implementation of interstate programs	Water management planning Water sharing plan development Operational planning Environmental water planning Cross-border & national commitments Water industry regulation (legal and regulatory support for water management planning)	The water planning activities are concerned with establishing transparent frameworks for ensuring an appropriate balance between economic, environmental and public benefit outcomes. It aims to ensure the future sustainability of the resource and its supply to users. The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services.
Surface water and groundwater management	Water management implementation Systems operation & water availability management Trading & accounts management Plan performance monitoring & reporting Blue-green algae management Environmental water management River management works	The water management activities are concerned with operationalising and monitoring water plans to ensure they meet economic, environmental and social objective. The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services. System operation activities, blue-green algae management and river works management activities are included on the basis that they arise from the supply of water from NOW's facilities.
Water licensing and compliance	Water consents administration Consents administration Licence conversion & entitlement specification Compliance Consent transaction overhead Water consents transactions (included by NOW as a monopoly service but does not form part of the 256 estimated FTEs for 2009-10 as consent transactions are accounted for separately).	These activities are concerned with protecting the integrity of the entitlement system and the security of users' authorised access to water. The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services.
Implementation of major water infrastructure projects	State Priority Projects are yet to commence. NOW has noted its intention to include operational activities and expenditures associated with these projects in its proposed regulatory cost base beyond 2012-13, if and when the projects commence.	The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services

NOW Functions[#]	NOW activities included as monopoly services	Assessment against the Water Services Order and other guidance
Water information and modelling	Surface water monitoring Surface water quantity monitoring Surface water quantity data management Surface water quality monitoring Surface water ecology, biology & algal monitoring Surface water quality database management Surface water monitoring assets management Groundwater monitoring Groundwater quantity monitoring Groundwater quality monitoring Groundwater database management Groundwater monitoring assets management Surface & groundwater metering Metering operations Metering data management Metering water use systems on unregulated rivers & groundwater Surface water & groundwater analysis Water quality analysis Water modelling & impact assessment Water sharing/water management modelling Resource assessments Water balances/accounting Groundwater modelling Integrated corporate water & ecological databases Asset renewals Surface water assets renewal Groundwater assets renewal Water laboratory assets renewal	These activities directly relate to the assessment, monitoring and reporting of water resource to ensure its sustainability and ensure continued water use. The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services.
Science and evaluation	Included above.	As above.

NOW Functions[#]	NOW activities included as monopoly services	Assessment against the Water Services Order and other guidance
Policy and regulation of local water utilities	Activities such as Country Towns Water Supply and Sewerage Program have been excluded by NOW from its cost base.	NOW's exclusion of urban water and wastewater policy and regulation functions is consistent with the Water Services Order.
Coordination of metropolitan water planning	NOW has included a total of 7 FTEs in its forecast expenditures that are directly attributable to metropolitan water planning. NOW indicated that these activities relate to the development and delivery of the Metropolitan Water Plan for Greater Sydney. Specifically, these activities are undertaken to ensure the long-term sustainable use of water which is extracted by the Sydney Catchment Authority and Sydney Water under their licences.	NOW contends that metropolitan water planning activities are required to ensure the ongoing supply of water to the SCA to meet projected demands within the planning horizon (originally to 2015, new time horizon not defined). Examples include: - planning to make available water for environmental flow purposes, including offsetting the impact of environmental flows on system security; - sourcing and providing expert social and environmental analysis to inform decisions regarding the impacts and sustainability of water supply; and - coordinating researching around the potential impacts of climate change on Sydney's demand/supply balance and thus reliability of supply. It is evident that some of the above metropolitan water planning activities constitute water management activities consistent with the Water Services Order. However, there are a number of activities undertaken in the preparation of the Metropolitan Water Plan that we assess as *not* being water management activities under the Water Services Order, as they do not directly relate to the management of water resources. Instead, these activities ensure the security of supply to urban water users through infrastructure planning and demand management initiatives, including: - researching key initiatives within the Plan e.g. drought water restrictions and personal water use targets; - providing advice and review key findings of the plan e.g. water industry competition, recycling strategy and regulation and water efficiency; and -preparation and review of the plan, and monitoring and reporting of progress.

NOW Functions[#]	NOW activities included as monopoly services	Assessment against the Water Services Order and other guidance
		Based on the description of activities provided by NOW, we **recommend including 50% of the 7 FTEs**
Provision of legal advice on water matters to the government	NOW has included approximately 10 FTEs in its forecast expenditures that are delivering legal services relating to water resource management.	The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services. We understand the allocated 10 FTEs represent only a share of NOW's total legal staffing (just more than half).
Corporate functions	Business administration Financial administration Business development	These activities indirectly support water planning and management functions of the Department. The inclusion of these activities is consistent with the 'making available of water' requirement of the Order for Services. It is also consistent with national guidance which requires an appropriate level of overheads to be included.
Approx 619 FTEs [1]	**256 FTEs** [2]	

Sources: [1] FTEs for NOW are current as at October 2009, see page 38 of NOW's submission. [2] Budgeted FTEs for 2009-10 to deliver NOW's proposed regulated water resource management services, excluding water management consent transactions (as per NOW's submission).
[#] As set out in 'Overview of NSW Office of Water', undated.

Activities excluded by NOW

NOW has excluded a number of activities from its regulated cost base going forward. These were determined in consultation with Directors and include (though are not limited to):

- all externally funded activities;
- management of Snowy environmental flows;
- corporate licensing;
- Ministerial and Executive services;
- Office of the Director General;
- legislative matters;
- Catchment Management Authorities;
- MDBA liaison;
- intergovernmental activities;
- Country Towns Water Supply;
- sewerage program;
- Cap and Pipe the Bores Program; and
- part of the groundwater drilling unit, which is operated on a commercial basis.

The exclusion of these activities is consistent with NWI requirements, including the NWI Draft Pricing Principles.

PwC notes that there is a lack of transparency about the sum total of activities that were excluded from the regulated cost base and the procedures used to filter these activities from NOW's broader suite of activities. This makes it difficult to determine whether NOW has made an appropriate and correct selection of activities for inclusion (exclusion) in its regulated costs.

Treatment of policy activities

The NWI states that the costs attributable to high level policy development do not constitute a water planning and management activity and therefore should not be recovered from water users. NOW has included a number of activities which *contribute* to the achievement of high level planning objectives, or the meeting of requirements of planning instruments (e.g. the MDB IGA). These include:

- development and implementation of operational programs to meet NWI commitments;
- participation in relevant interstate committees progressing NWI commitments;

- development and implementation of NSW commitment to Living Murray Initiative;
- participation in COAG water reform process;
- participation in interstate water trade negotiations; and
- development of interstate water sharing arrangements through MDB IGA and Border Rivers Agreement, Snowy and ACT arrangements.

In our view, these do not constitute the development or achievement of overarching policy frameworks and therefore these activities should be included in the regulatory cost base, consistent with the NWI.

For clarity, policy development activities relating to the development of the Basin Plan are considered to constitute water planning and management activities as these relate to the operationalistion of the Plan and therefore should be included in NOW's cost base.

Treatment of Ministerial activities

The NWI specifically excludes the costs of Ministerial and Parliamentary services such as reporting to Parliament, advising Parliament on issues where the agency has expertise, answering parliamentary questions, briefing Ministers and responding to Ministerial correspondence.

The costs of Ministerial and Executive Services have been maintained as an overhead in the historical costs provided by NOW but have excluded from future forecasts. Their inclusion in the historical costs is inconsistent with the NWI and they should not have been recovered from water users.

Costs of the Office of the Director General

The costs of the Office of the Director General are included in NOW's historical costs but excluded from its proposed forecast expenditures. As of July 2009 the Office of the Director General is 'housed' within the Department of Environment, Climate Change and Water and NOW is a separate Office operating within this Department. It appears that NOW has taken the decision to exclude a share of the costs of the Office of the Director General in its cost base on the basis that this overhead is no longer directly aligned to water resource management functions. If this is the case, then this would be a reasonable approach.

Treatment of metropolitan water planning activities

NOW has included some metropolitan water planning activities in its cost base. While these activities relate to water planning, some are more concerned with ensuring the security of supply to urban users through infrastructure planning and demand management initiatives.

The inclusion of some of these activities is inconsistent with the 'making available of water' requirement of the Water Services Order which is concerned with activities relating directly to the management of water resources. Further, these activities do not directly arise from the need to ensure the supply of water from NOW's facilities.

Consequently, we recommend that a share of these costs be excluded from the definition of monopoly services undertaken by NOW.

4.4 Key findings

- Clause 3 of the Independent Pricing and Regulatory Tribunal (Water Services Order) 2004 outlines those services which are considered government monopoly services. The order does not provide practical guidance as to the types of water management activities which should be included as monopoly services. As such, there is a risk that any interpretation of the water services order may be open to challenge by the regulated entity or other parties.
- For this reason, extensive interpretation of the Water Services Order has not been undertaken. The 'making available of water' has been taken to mean any activities which are required to ensure water resources are managed on a sustainable basis. This includes activities relating to the assessment, allocation, planning, monitoring and reporting of water resources. The remaining requirements have been interpreted simply as activities which are necessary to ensure the supply of water from WAMC's facilities, or have otherwise resulted from the supply of water from these facilities.
- The NWI provides guidance on the means by which cost-recovery approaches for water planning and management activities should be conducted but does not specify the types of activities that should be included within the water planning and management spectrum. The draft pricing principles developed by the COAG Steering Group on Water Charging provide greater clarity as to the activities which should be included.
- These principles have not yet been adopted by jurisdictions, however, NOW was closely involved in the development of these principles and it would be expected that NOW would be cognisant of these principles when determining its monopoly services. A review of the activities identified by NOW as monopoly services shows that there are no inconsistencies between the these activities and those outlined in Appendix B of the principles.
- The ACCC has identified a range of water planning and management activities by governments that are necessary to ensure that surface and groundwater resources are used sustainably. The activities identified by NOW as constituting

monopoly services are consistent with those identified by the ACCC.

- Resource managers and regulators in others jurisdictions have not progressed their water resource management charging frameworks to the same extent as NSW. Queensland and Western Australia have identified water resource management activities and principals for the recovery of costs although these have not been implemented. Consequently, there are no formalised charging frameworks which can be drawn on for comparative purposes. A review of the water resource management activities identified as monopoly services activities by NOW shows that these are broadly consistent with those activities identified in Queensland and Western Australia.
- NOW has deemed a number of activities to not be regulated services for price setting purposes. These include (but are not limited to) the management of Snowy environmental flows, corporate licensing, Minister's office and legislative matters and intergovernmental activities. The exclusion of these activities is consistent with both the Water Services Order and the NWI requirements.
- The NWI states that the costs attributable to high level policy development do not constitute a water planning and management activity and therefore should not be recovered from water users. NOW has included a number of activities which *contribute to*, but do not constitute the *development of* overarching policy frameworks. The focus of NOW's activities is on implementation as opposed to development. Thus, NOW's inclusion of these activities in its cost base is consistent with the NWI.
- For clarity, policy development activities relating to the development of the Basin Plan constitute water planning and management activities as these relate to the implementation of the Plan and should therefore be included as water resource management expenditure.
- The NWI specifically excludes the costs of Ministerial and Parliamentary services. The costs of Ministerial and Executive Services have been maintained as an overhead in the historical costs provided by NOW but have been excluded from future forecasts. Their inclusion in the historical costs is inconsistent with the NWI. The costs of the Office of the Director General are treated in the same way.
- The inclusion of some metropolitan water planning activities is inconsistent with the 'making available of water' requirement of the Water Services Order which is concerned with activities relating directly to the management of water resources.
- With the exception of the metropolitan water planning activities referred to above, a review of NOW's submission shows that the activities identified as monopoly services are consistent with the Water Services Order, as well as NWI requirements and the Draft NWI Pricing Principles.

- PwC accepts that the business of managing water resources is becoming more complex and sophisticated, thus increasing the demands on resource managers. This change has arisen due to the progressive introduction of a range of water reforms over the past decade, with ongoing implementation of these reforms. The business drivers identified by NOW are broadly in line with the various water reform priorities that are being promoted by COAG and agreed to under the NWI.

5 Detailed analysis of selected activities

5.1 Introduction

This chapter contains the results of a detailed analysis of a selection of NOW's activities. The purpose of the analysis is to examine the costs incurred by NOW in undertaking these activities in the four years to 2009-10, assess the efficiency of these costs and to analyse the basis for future changes in the proposed level of service provision (and associated cost) out to 2014-15.

A sampling approach is necessary due to the large number of individual activities performed by NOW and the impracticality of assessing all aspects of NOW's business. Results from the analysis of the sample of activities offer a means of drawing inferences about the likely efficiency of the balance activities that contribute to NOW's cost base.

Selected activities

Four activities are selected, as summarised in Table 5.1. The selections are made on the basis that the activities collectively constitute at least 10 per cent of NOW's forecast cost base and/or 10 per cent by number of activities undertaken. Both these criteria are satisfied as the four activities in Table 5.1 account for 37 per cent of forecast costs (out to 2014-15) and 12 per cent of NOW's water resource management activities (4 out of 33 activities)[13].

The four activities collectively account for 36.8 FTEs out of the 68 additional FTEs requested by NOW to service its core business activities out to 2014-15 (Table 5.1). This represents 54 per cent of the additional resources requested. The activities selected also correspond to those that are reported by NOW to display significant increases or decreases in forecast cost relative to historical costs.

Figure 5.1 shows the change in staff resources that NOW has forecast for each of the four activities over the next five years. The resource shares are expressed in terms of the proportional allocation of direct FTEs to each activity relative to the total number of direct FTEs forecast to be deployed by NOW on all its regulated service activities. The following observations can be drawn from this figure:

- The share of total FTEs assigned to surface water quantity monitoring rises from 8 per cent in 2009-10 to 12 per cent by 2014-15.

[13] The total excludes capital program activities and water consents transactions.

- Similarly, the share of staff resources allocated to compliance activities is forecast to rise from 9.7 per cent to 11.3 per cent over the same period.
- The share of FTEs allocated to Operational Planning is forecast to decline from 14.7 per cent to 12.9 per cent of total FTEs.
- The proportion of effort assigned to Water Sharing Plan Development is approximately constant over the next five year period.

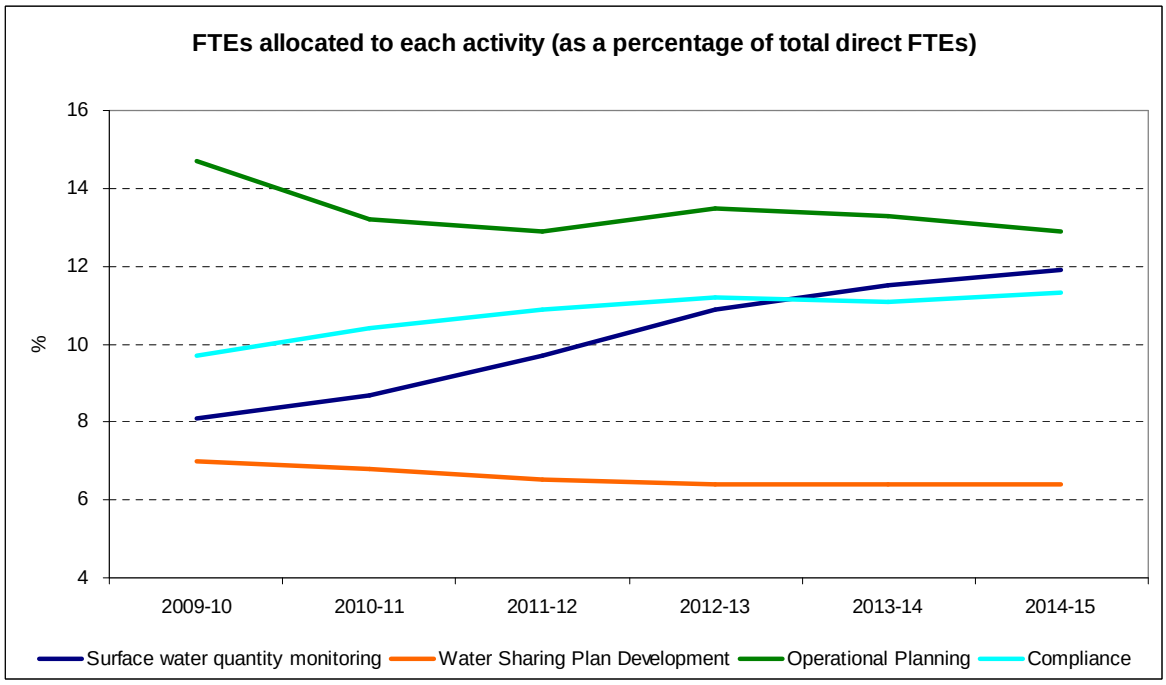
While the *relative* share of effort to an activity may decline, it is possible for the *absolute* level of FTEs assigned to the same activity to increase – which is demonstrated to be the case below for Operational Planning. This indicates that other activities undertaken by NOW are forecast to receive a proportionally greater increase in FTEs than Operational Planning.

Table 5.1: Summary statistics for the activities assessed by PwC

Activity	% of total forecast operating expenditure over 5 years to 2014-15	Current number of direct FTEs (2009-10)	Proposed increase in FTEs by 2014-15 (relative to 2009-10)	% change in expenditure by 2014-15 (relative to 2009-10
Surface water quantity monitoring (C0101)	9.4%	20.8	17.6	82% increase
Water sharing plan development (C07-01)	6.2%	17.8	3.3	19% decrease
Operational planning (C07-02)	12.2%	37.7	4.2	31% increase
Compliance (C09-03)	9.7%	24.8	11.8	37% increase
Total sample	**37.5%**	**101.1**	**36.8**	**30% increase**

Note: Numbers may not add due to rounding

Figure 5.1: Allocation of FTEs to each activity, expressed as a percentage of NOW's total FTEs across all regulated activities.



Water consent transactions

A fifth activity – water consent transactions – is also examined in this chapter. The activity is not included in Table 5.1 because NOW has treated the cost of this activity separately from its other water resource management activities so as to enable the calculation of consent transaction fees.

Actual costs for processing consent transactions over the past four years are reported by NOW as having exceeded the expenditure allowed for in the 2006 Determination by a large margin (2.5 times the cost estimated by NOW in 2005). The reasons for this significant mismatch between estimated cost of servicing consent transactions and actual cost warrant scrutiny – as does the assumptions for forward estimates of cost – and this is contained in section 5.6.

Assessment methods

The analysis includes an assessment of the following, where relevant, for each activity:

- the activity's actual budget and planned outputs;
- the activities outcomes and contribution to the delivery of NOW water management services or objectives;
- NOW's evaluation or justification for the activity (for example, the robustness of its business case, cost benefit analysis or cost effectiveness analysis);

- the extent to which productivity improvements or other efficiency gains are factored into the costs for the activity;
- the extent to which other options for delivery of the service have been considered, including the implications of not proceeding with the activity over the determination period; and
- the extent to which stakeholders were consulted regarding their willingness-to-pay for services levels.

In justifying the expenditure for each activity, specific focus was placed on evidence that business cases had been developed for major activities undertaken by NOW – that is, a more detailed justification of the high level corporate business plan for the agency. These business cases should not be limited to justifying the need for additional funding, but should set out the case for existing levels of funding plus forward estimates. These cases should be developed using a cost-benefit framework which sets out the costs of withdrawing service levels/funding and the marginal benefit of increasing service levels/funding.

5.2 Surface water quantity monitoring

Description

This activity involves monitoring river and estuarine flows and levels, storage levels and climate data. Subsequent to collection of data from the hydrometric network, NOW processes the information, archives it and uses the information for operating the WSPs.

As at 2009-10, a total of 20.8 FTEs are estimated by NOW to be attributed to this activity (equivalent to 8 per cent of all direct FTEs). On page 25 of its submission NOW reports that this level of resourcing is required to monitor 385 river, lake and storage surface water gauging sites that are funded by NOW (a further 429 are externally funded and are therefore not included in the regulatory cost base[14]). On average, 3.5 visits are made to each site over the course of a year.

This activity is clearly core business for NOW as it has an obligation to maintain reliable information on the quantity of surface water resources for the purpose of providing advance warning of floods, providing announcements to regulated river licence holders about when they can pump and informing the operation of water sharing rules contained in the WSPs. NOW sets out a range of instruments, such as service level agreements with State Water, MDBA and BRC that define these obligations.

[14] External funding parties include State Water Corporation, Border Rivers Commission and the Murray Darling Basin Authority. MDBA and BRC funded gauging stations are charged to those entities and are included in the NSW share of MDBA and BRC costs.

Cost trend

The annual operating expenditure associated with this activity has been relatively stable over the past four years, at around $3.5 million to $4.5 million per annum (which includes both direct and indirect costs). The number of direct FTEs has similarly remained stable at about 20 to 22 (Figure 5.2).

Over the next three years to 2012-13, NOW is forecasting that this activity will require an additional 12.2 FTEs, rising to an additional 17.6 FTEs above the 2009-10 base by 2014-15. The reason given for this extra staffing is the imminent requirement for NOW to take on the operation and maintenance of 128 new gauging stations, which are to be constructed with funding from the Bureau of Meteorology (BoM) over the next three years (commencing 2008-09). A further 50 hydrometric river gauging stations are to be upgraded or relocated. A condition of the funding is that the Office takes responsibility for the ongoing operation and maintenance of the expanded/upgraded network. In addition, the BoM requires that the sites be operated to national standards, which will require a doubling of visits per year from three to six.

In response to its water reform commitments, NOW is planning to apply the national monitoring standards (that is, doubling the number of visits) to all its existing sites too. The cost of applying the standards to its existing network is claimed as part of the $10.5 million of additional costs it expects to incur due to Commonwealth reform requirements (refer to page 52 of NOW's submission). An extra 6.1 FTEs are forecast to be required for this task.

Figure 5.2: Actual and forecast annual operational expenditure and FTEs for surface water quantity monitoring. ($2009-10, $million)

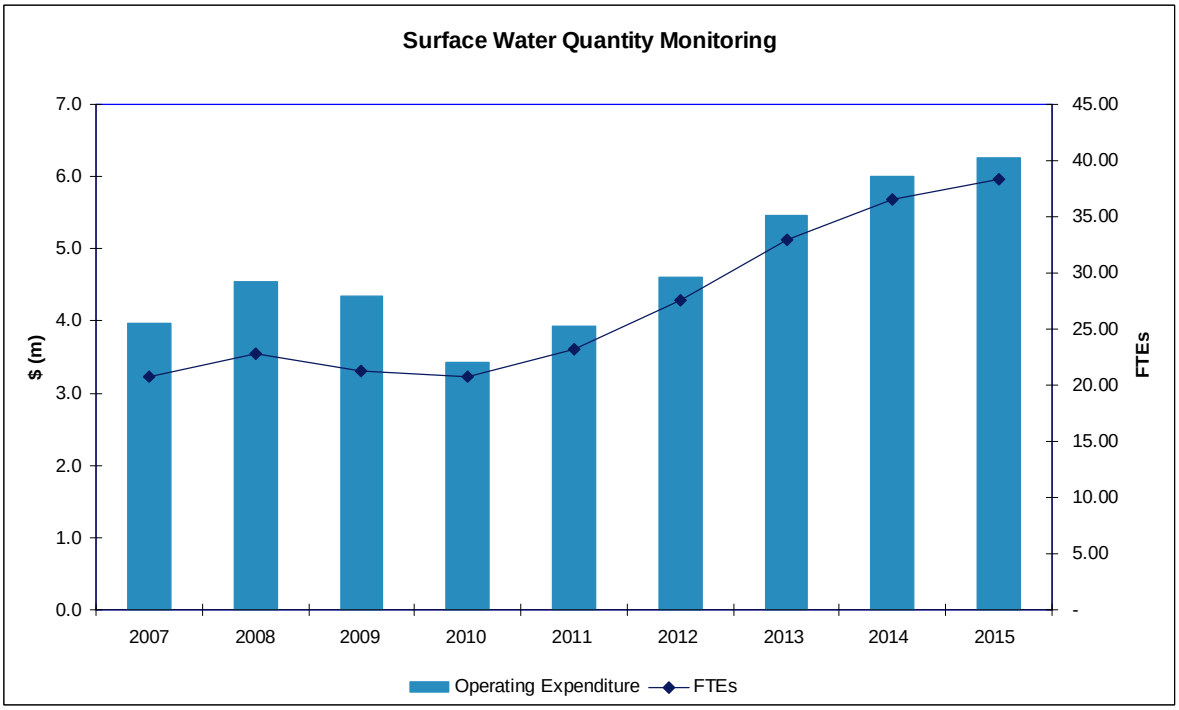


Table 5.2: Proposed additional resources surface water quantity monitoring

	2011	2012	2013	2014	2015
Additional cumulative FTEs	2.44	6.75	12.12	15.80	17.58

Efficiency of costs

The additional 128 new gauging stations give rise to a large proportion of the additional forecast costs. It is therefore pertinent to question whether these stations, and the associated operational expenditures to maintain them, represent an efficient investment. A related question is whether the national monitoring standards (involving a doubling of visits from three to six per annum) represent an efficient investment. While clearly important and relevant to this review, PwC does not have the technical expertise to make a judgement on the benefit-cost of adopting national standards. As NOW has 'signed up' to these national standards, along with other Murray Darling Basin jurisdictions, it does not have discretion on fulfilling its obligations. The economic payoff from lifting monitoring standards is something that needs to be evaluated at a national level.

It is understood that the capital funding for the 128 new stations, from BoM, was underpinned by a business case but this was not examined by PwC as externally-funded capital projects are outside the scope of this review.

NOW is progressively moving to automated data collection, through the installation of telemetry and data loggers on its stations. If this is the case, some efficiency gains would be expected to arise due to the reduced need for manual visits to stations. It is not clear from NOW's submission whether these efficiencies have been built into its future resource needs and whether consideration has been given to the possibility that some of the current 20 FTEs could be redeployed as a result of the increasing automation.

Station monitoring and maintenance activities could be a candidate activity for outsourcing by the Office to a suitable contractor. There is no mention made in the submission about whether investigations have been made, although in discussions with NOW it is understood that the Office of Water has compared its monitoring costs to those of Thiess Services (which has the contract to monitor groundwater bores in Victoria) and have concluded that its costs are competitive (the results of this investigation were not disclosed to PwC).

We conclude that NOW's proposal to increase the number of FTEs dedicated to water quality monitoring by almost 18 FTEs over the next five years is not underpinned by a solid justification for an increase of this magnitude. PwC accepts that the hydrometric network is being expanded and that this will inevitably lead to higher operational costs. But we are not convinced that NOW has explored options for servicing this increase at 'least cost' through the realisation of efficiency gains from automation (telemetry and data loggers) and competitive outsourcing of monitoring and maintenance activities.

5.3 Water sharing plan development

Description

The development of WSPs is a statutory requirement under the *Water Management Act 2000*. The plans define the water available for allocation for consumptive purposes, an environmental share and rules for managing water extraction and trading.

WSPs are fundamental to effective water management and are therefore regarded as core business for NOW. The plans provide security and certainty for water entitlement holders and enable environmental objectives to be met.

Currently, NSW has 45 gazetted WSPs, which collectively cover 90 per cent of water extraction in the State. The first round of 31 WSPs were completed and gazetted in 2004. These plans took four years to develop. A second iteration of planning commenced in 2005, resulting in a further 14 plans being completed by the end of 2009.

As stated in NOW's submission, the development of WSPs involves the following activities:

- interagency and stakeholder negotiations relating to development of water sharing provisions;

- policies specifically related to development of water sharing provisions;
- estuary licensing rules;
- preparation of statutory documentation;
- preparation of initial implementation programs for each water sharing plan, detailing deliverables and associated timetable post commencement;
- scientific and socio-economic studies required to support WSP development; and
- spatial data layer compilations and cartography.

Once a plan is gazetted, licence conversion needs to be undertaken prior to commencement of the plan. The cost of licence conversion and other operational matters are accounted for in a separate activity code and are not part of C07-01.

A total of 17.8 direct FTEs are currently allocated to developing WSPs (as at 2009-10). This represents 7 per cent of NOW's total direct FTEs assigned to water resource management activities.

Timetable for future water sharing plans

In the next three years to 2012-13, NOW is budgeting to complete an additional 38 plans, bringing the total for the State to 83. Of the new plans to be developed, 18 are for the remaining inland valleys that do not currently have a plan in place. NOW's 2005 submission indicated that these outstanding plans would be completed by 2010. The reason given by NOW for the delay in delivery of these plans is that the Office wanted clarification about what arrangements would prevail under the Basin Plan before proceeding with the WSPs.

In 2009 the MDBA announced that the Basin Plan would not replace the need for State WSPs. Therefore, the Office of Water is now giving priority attention to completing the 18 remaining inland NSW WSPs by 2011. A further 20 plans are scheduled for completion by 2013, all of which apply to coastal valleys, bringing the total number of plans scheduled for completion over the next three years to 38.

NOW advised PwC that with existing resources, it would be able to complete 31 of these plans by 2012-13 as per the schedule provided in Table 5.3. An additional 1.66 FTEs have been identified as being needed to complete the other seven plans.

According to NOW's submission, from 2010 all WSPs will have to be revised to conform with the Basin Plan and this will initially apply to NSW's first round of 31 WSPs gazetted in 2004.

Under the *Water Management Act 2000*, the first round of WSPs that were gazetted in 2004 is due for review and renewal by 2014. However, this review process will now need to be brought forward to ensure that the plans are consistent with the Basin Plan (a regulatory requirement under the Commonwealth *Water Act 2007*).

This 'accreditation' of existing plans for consistency with Basin Plan needs to be completed by 2011. In its submission, NOW estimates that this process will trigger the need for an additional 18.5 FTEs. NOW proposes to recover the cost of this work from the Commonwealth (as part of the additional water reform costs) as opposed to water resource charges.

Table 5.3: Timetable for gazettal of WSPs – assuming existing planning resources.

Year ending 31 December	Annual number of WSPs to be completed and gazetted	Cumulative number of WSPs
2008	2	2
2009	13	15
2010	18	33
2011	8	41
2012	5	46

Source: NOW

Cost trends

Over the next three years (to 2012-13), planning activities are forecast to account for 6.2 per cent of NOW's total operating expenditure on regulated activities. Annual expenditure for this activity is budgeted to be $3.2 million in 2010-11, rising to $3.7 million in real terms by 2014-15.

A key observation from Figure 5.3 is the marked decline in annual expenditure and FTEs between the years 2008-09 to 2010-11. Based on information received from NOW, by 2012-13 the amount spent on WSPs is forecast to decrease by 24 per cent relative to 2009-10.

While NOW is requesting an additional 3.28 FTEs over the forecast period out to 2014-15, this is off a base year (2009-10) that had significantly fewer FTEs allocated to planning compared to previous years. This does not appear to be consistent with the case outlined above, in which NOW has identified additional resource needs for the forthcoming regulatory period.

Part of the reason for the apparent reduction in FTEs and costs is the way NOW has reclassified its water planning activities post 2008-09. Prior to the change-over, some of the activities included in the C07-01 code included implementation activities, which under the new classification scheme have been allocated to Operational Planning (C07-02).

Another reason for the apparent decline is due to a higher overhead margin allowed for in the historical costs relative to the forecasts ($46 per FTE relative to $29 per FTE, respectively). After correcting for these accounting inconsistencies between the two regulatory periods, the apparent decline is erased and the trend in FTEs is an approximately constant increase in FTEs from 2006-07.

Figure 5.3: Actual and forecast annual operational expenditure and FTEs for Water Sharing Plan development. ($2009-10, $million)

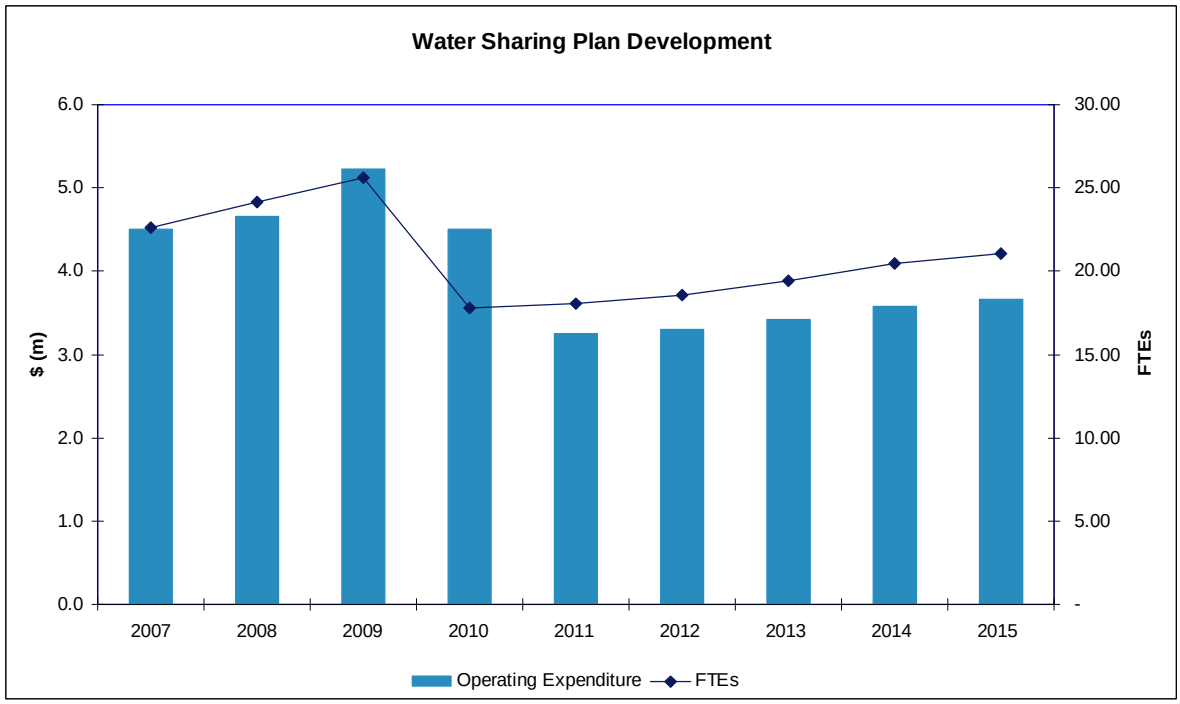


Table 5.4: Proposed additional resources for water sharing plan development

	2011	2012	2013	2014	2015
Additional cumulative FTEs	0.28	0.84	1.66	2.67	3.28

Efficiency of costs

From the information available, it is difficult to make definitive conclusions about whether NOW's planning activities are efficient. However, PwC has some concerns about the forward expenditure forecasts and the lack of detail around the assumptions underpinning these forecasts. Specific concerns are as follows:

- It is not clear why the number of FTEs required for Water Sharing Plan development continue to rise after 2012-13 when most or all of the plans are scheduled for completion in the next three years. Better information is needed about the scale of the future planning task beyond 2013. It is understood that there are no new plans proposed over and above the 83 currently projected. However, the review and re-making of existing plans will need to be undertaken as a statutory requirement.
- To form a solid understanding of the work plan that lies ahead, it would be useful for NOW to publish information on the number of plans scheduled for gazettal each year, the expected complexity of these plans, and the timing of plan reviews.

- NOW has advised that it is aiming to recover the cost of reviewing existing plans (to a standard required by the Basin Plan) directly from the Commonwealth. If this is the case, NOW should disclose how much additional review cost is being incurred as a result of the Basin Plan relative to what resources it would have expended under the *Water Management Act 2000*. If the costs being sought for recovery through regulated pricing include some of these review costs, then there is potential for double-counting of costs through the cost claim being put to the Commonwealth.
- NOW has reported that there was an unavoidable delay in starting work on 18 plans during the 2005-2010 period due to uncertainties about the nature of the Basin Plan (and thus causing a deferred completion date of 2013). If this is true, NOW should demonstrate how the resources that were initially assigned to work on these plans were reallocated to other activities. In effect, the deferral of the plans should equate to a cost saving that could be deployed elsewhere.
- PwC expects that some efficiencies should be realised over time with developing WSPs. NOW has acknowledged that the first round of plans took a long time and were overly complex because it was the first time the process had been undertaken. With the benefit of this experience, it should be possible to streamline the planning process to some extent. NOW's adoption of a macro-planning process illustrates this, however this and other potential improvements leading to efficiency gains have not been explicitly quantified or demonstrated by NOW in its cost forecasts.

5.4 Operational planning

Description

In its submission NOW has identified a number of operational planning issues that will need to be addressed over the next three to five years[15]:

- the licensing and management of floodplain harvesting extractions;
- application of measures to address unconstrained extractions through basic landholder rights (i.e. stock and domestic rights);
- development of guidelines and licensing and approvals for aquifer interference activities;
- licensing and management of water return flows;

[15] See pages 15 to 17 of NOWs submission.

- development of planning rules to enable the use of harvested urban stormwater to meet water requirements in urban areas, primarily by local government;
- derivation and application of numerical daily extraction rights for regulated rivers;
- develop rules and processes for controlled allocation of unassigned water to licensed users;
- planning rules for surface and groundwater interception and extraction; and
- planning rules for groundwater trading in embargoed water sources.

The principal outputs of these activities are planning guidelines, policies and manuals.

NOW has indicated that work to date on these planning issues is generally still in the early developmental phase. NOW reports that only 1 out of the 10 required guidelines have been completed to date with a number of other guidelines in the progress of being drafted or at a 'draft guidelines' stage.[16]

Since 2005, annual expenditure on this activity has been $4 million to $5 million. Over the three years from 2006-07 to 2008-09, approximately 20 to 25 FTEs have been applied to Operational Planning, with a gradual increase over this period. In 2009-10, the number of budgeted FTEs increased to 38.

Cost trends

Costs for this activity have risen from $4 million in 2006-07 to $5.5 million in 2009-10 (in real 2009-10 dollars). The rising cost trend is forecast to continue over the next three years before stabilising at $7.2 million in 2013-14.

The rising costs are commensurate with the additional resources proposed by NOW as being necessary to produce nine policy guidelines on the various issues noted above.

[16] Page 101 of submission.

Figure 5.4: Actual and forecast annual operational expenditure and FTEs for Operational Planning. ($2009-10, $million)

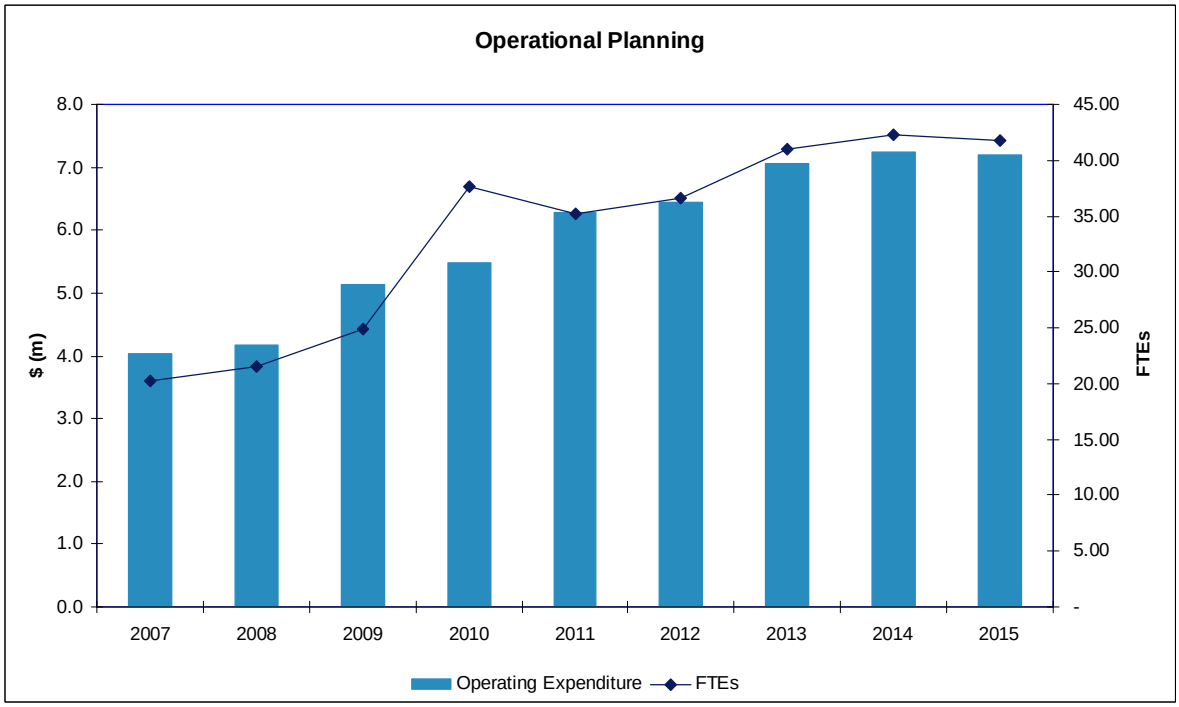


Table 5.5: Proposed additional resources for operational planning

	2011	2012	2013	2014	2015
Additional cumulative FTEs	-2.54	-1.11	3.26	4.59	4.15

Efficiency of costs

The issues identified by NOW are consistent with NWI requirements and therefore are important core business for NOW.

Our main concern is whether the existing resources dedicated to this task are being effectively utilised. NOW's target for its operational planning is to complete 9 out of 10 required guidelines by 2012-13, a significant increase on the one completed guideline that is in place from the current period. While we acknowledge that it takes time to complete guidelines, as stakeholder consultation is often required, we are of the view that four years appears to be an inordinately long time to complete policy guidance, particularly given the staff complement of 20 to 25 FTEs. During the course of this review, there has been difficulty in understanding the size of the task for this activity and we are not convinced that there are no efficiencies to be gained in this area.

5.5 Compliance

Description

Effective compliance, monitoring and enforcement is critical to the success and integrity of a rights-based system of water resource management. Without adequate compliance, the value of water entitlements is undermined and the twin objectives of water security and environmental quality are put at risk. Compliance is therefore core business for NOW.

NOW summarises compliance activities to include:[17]

- administration of monitoring activities and surveillance to check compliance with consent conditions, including audits, fieldwork, inspections and compliance checking;
- enforcement, including prosecution for non-compliance with consent conditions for all licence holders;
- litigation against licence holders and other water users for non-compliance; and
- dissemination of information on rights, responsibilities and consequences for non-compliance with consent conditions.

NOW has advised PwC that it is currently auditing about 0.5 per cent of licences, by number. And it is actioning about 50 per cent of alleged breach reports. NOW reports that approximately 70 per cent of licences audited are in compliance with licence requirements.

Budgeted FTEs for compliance in 2009-10 are 24.8 FTEs, with an annual operating budget of $4.4 million. However, in the previous two years, the actual number of FTEs assigned to compliance was 15.5 for 2008-09 and 12.6 for 2007-08.[18] It is not clear from NOW's submission whether the performance figures cited above relate to the historical (low) level of staffing allocated to compliance or whether the figures correspond to the (higher) 2009-10 level of staffing.

In the four year period to 2009-10, NOW report the following achievements in compliance:

- Completed 451 compliance inspections and audits, including an audit of structures within the Macquarie Marshes to determine their impact on delivery and effectiveness of environmental flows and whether they are authorised and operating within their licence conditions;

[17] Page 105 of NOW's submission.

[18] These historical numbers of FTEs have been subsequently provided by NOW as the compliance costs had not been correctly allocated within NOW's internal system.

- Issued 81 directions and orders to cease unlawful activities such as unauthorised excavations, works or extraction of water which impact on the rights of legitimate water users;
- Issued 23 penalty notices and completed seven successful prosecutions for illegal activities; and
- Completed the reviews of the work approvals for all State Water's dams and regulatory structures in five river valleys.

Cost trends

Figure 5.5 summarises NOW's actual and forecast costs and staffing levels for compliance activities out to 2014-15. The immediate and most striking observation is the marked increase in forecast FTEs, commencing in the 2009-10 budget year.

Over the next three years out to 2012-13, NOW is forecasting that an additional 9.2 FTEs will be required to undertake compliance activities. This level of staffing would increase expenditure to 9.6 per cent of NOW's total forecast regulated operating costs over the next three years.

The increased effort being dedicated to compliance is even more apparent if measured relative to 2008-09, when 12.6 FTEs were reported to be working on compliance activities. Relative to this baseline, an additional 21 FTEs are being assigned to compliance by 2012-13. Beyond this date, the forecast staffing needs continue to rise but at a more gradual rate, with total FTEs rising by 12 by 2014-15.

NOW provide a number of reasons for the increased level of compliance effort, the most important of which are as follows:[19]

- the ongoing drought conditions and intense competition for water has highlighted that current compliance staffing levels are seriously inadequate;
- NOW wants to ensure that there are at least two compliance officers located in strategic locations around NSW so that alleged activities can be investigated in a timely manner; and
- NOW is aiming to increase its auditing level from 0.5 per cent of total licences audited to 1 per cent. It has a target to increase the actioning of alleged breaches from 50 to 100 per cent.

[19] Pages 41 and 42 of submission.

Figure 5.5: Actual and forecast annual operational expenditure and FTEs for compliance activities. ($2009-10, $million)

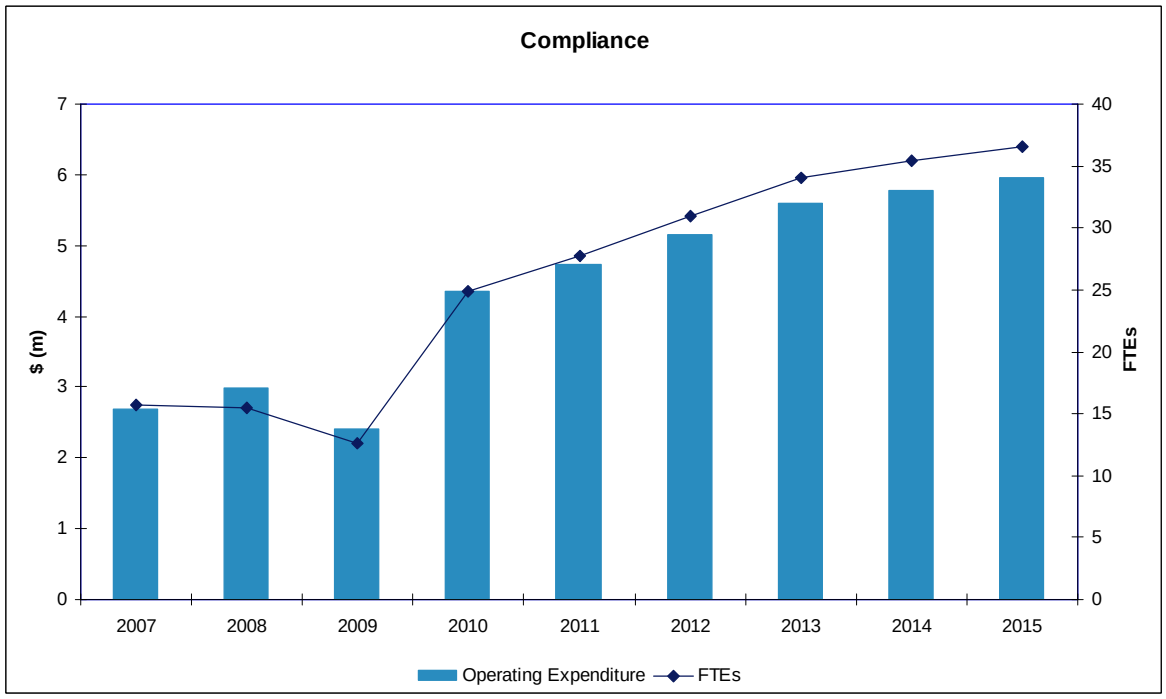


Table 5.6 Proposed additional resources for compliance activities

	2011	2012	2013	2014	2015
Additional cumulative FTEs	2.90	6.12	9.19	10.56	11.76

Efficiency of costs

The rapid increase in forecast compliance effort indicates that NOW has identified a real and pressing need for greater monitoring and enforcement of licence conditions.

The results of a benchmarking analysis presented in Chapter 8 show that NOW is middle of the range in terms of compliance cost per licence (based on 2009-10 costs), when its costs are compared to two other Australian water management agencies. This would suggest that NOW is currently applying a level of compliance effort that is commensurate with what other agencies are applying, but tells us nothing about whether the expenditure is achieving the desired outcomes (i.e. cost effective).

The increased resources earmarked for compliance in NSW are consistent with recommendations made by the National Water Commission in its 2009 Biennial Assessment of Water Reform, in which calls are made for greater levels of enforcement at the national level.

Increased effort on compliance is also consistent with the reform agenda being pursued through COAG. From discussions with NOW it is understood that the Commonwealth is soon to release a

compliance framework for the Murray Darling Basin that recommends 10 per cent of licenses to be audited – which is considerably higher than NOW's current level of 0.5 to 1.0 per cent. It is noted that NOW is seeking funding for an additional 2.0 FTEs directly from the Commonwealth through its cost claim for 'additional reform costs'.

While PwC accepts the case for increased attention to compliance, we are concerned about the lack of a demonstrable strategy underpinning the forecasts for additional staff. It is difficult to assess whether the extra resources represent a good investment without a robust business case. Compliance is an area where it will never be efficient to achieve full compliance and cost prohibitive to undertake an annual audit of all licences. Therefore, it is important to define an economic optimum level of monitoring and enforcement and to acknowledge that above a certain level of effort, there will be diminishing returns (or payoffs) from additional effort.

What is needed is a clear and robust investment strategy that contains details on following matters, each of which would affect the cost and likely success of a compliance regime:

- the extent to which NOW's compliance strategy aligns to the Commonwealth's draft compliance framework and whether NOW has plans to migrate to the higher audit levels being proposed by the Commonwealth, and if so, over what timeframe;
- realistic targets for the proportion of audited licences that are found to be in compliance with licence requirements (NOW has a target of 100 per cent, which would appear to be an aspiration target as opposed to a real target);
- expected timeframes for meeting the targets;
- any factors that may influence, positively or negatively, the achievement of the targets;
- the extent to which increased metering of extractions from unregulated rivers and groundwater would reduce future compliance costs; and
- water sources and valleys to be prioritised for compliance activities.

5.6 Water consent transactions

Description

For 2009-10, a total of 52.5 FTEs are estimated by NOW to be assigned to processing water consent transactions pertaining to provisions under the *Water Management Act 2000* and the *Water Act 1912.* The total operating budget for the direct costs of this activity is $5.76 million in 2009-10. This excludes overheads and indirect costs, as these are recovered through water resource management charges as opposed to transaction fees.

The fees for consent transactions pertaining to the *Water Act 1912* are set by regulation and are not determined by IPART. Thus, the revenue from these fees has been netted off the regulatory cost base in each of the years prior to, and including 2009-10. It is planned that the *Water Act 1912* will be repealed in 2010, so NOW expects that all licences and approvals will be administered under the *Water Management Act 2000* for the 2010 Determination.

A variety of transactions are handled by NOW, some of which are more labour-intensive than others to process. The main types of transactions include:

- the assessing and issuing of new water licences for domestic and stock purposes, town water supply and for controlled allocations;
- works and use approvals;
- approvals for water access licence trades, where the trades involves a change of location; and
- assessment of the impacts of annual allocation trades in groundwater and unregulated rivers.

Assessment effort is greatest for those application types where there could potentially be environmental or third-party impacts. At the most basic level, administrative activities include:

- receipt and register of application and application fee;
- checking applications for completeness and verifying applicant's right to apply;
- checking against water sharing plan rules, embargo orders, controlled allocation orders, etc. as to whether application should be accepted; and
- placing information on file and entering data into the information system.

Cost trend

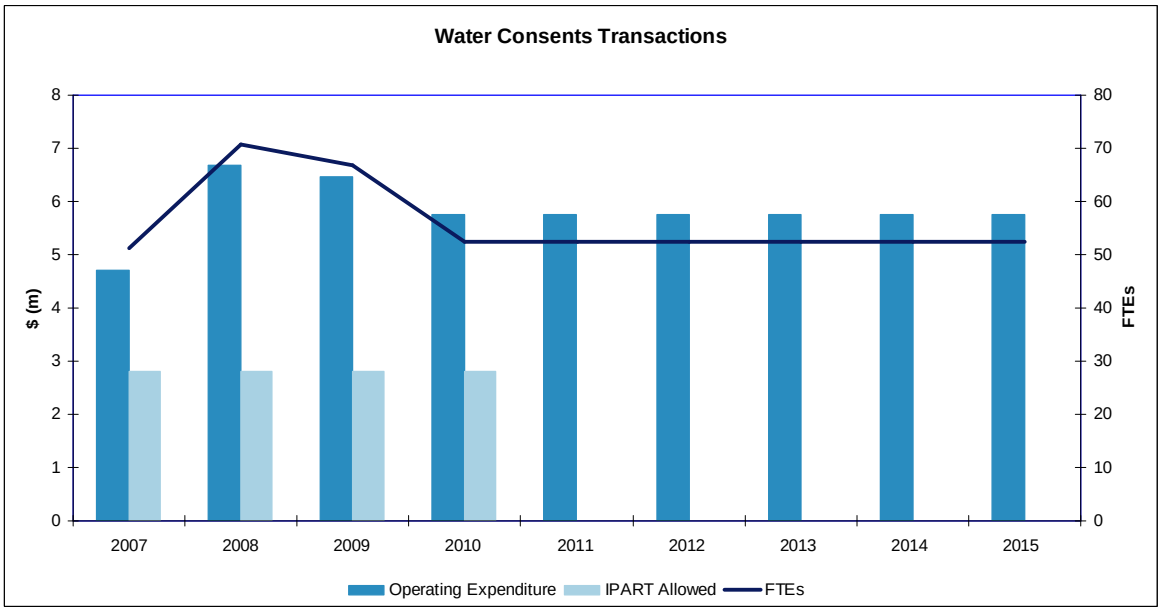
In the 2006 Determination, IPART allowed $2.8 million each year for consent transactions, however NOW has subsequently incurred costs of $4.7 million (2006-07), $6.7 million (2007-08) and $6.5 million (2008-09) resulting in a considerable variation between actual and allowed expenditure (Figure 5.6).

The principal driver of costs over the last four years has been the amount of time and effort required to process transactions, as opposed to higher than expected transaction numbers. Examination of NOW's submission reveals that, with the exception of 2006-07, the annual number of transactions recorded are just under those forecast in the 2006 Determination. In 2006-07, transaction numbers exceeded the forecast number by 2000, equating to 14.9 per cent above forecast. .

While the actual costs appear large relative to allowed costs of $2.8 million, the actual costs incurred approximately equate to those that were incurred by the then Department of Natural Resources over the preceding regulatory period (2001-02 – 2004-05). In the Department's 2005 submission it was reported that it had incurred costs of between $6.7 million and $8.6 million (in 2004-05 dollars) for each year of the preceding regulatory period (2001-02 to 2004-05). Going forward, the Department proposed that it would incur costs in excess of $12 million (in 2004-05 dollars) for each year of the regulatory period (2006-07 to 2009-10). The increase in revenue requirement (to $12 million) was stated, at the time, to be needed for hiring additional staff so that processing times could be reduced.

IPART subsequently reviewed the costs associated with the tasks required to process the transactions and determined that the total costs to be recovered from transaction fees to be $2.8 million per annum.

Figure 5.6: Actual and forecast annual operating expenditure and FTEs for water consent transactions ($2009-10, $million)



NOW's forecast consent transaction expenditure

NOW has forecast an annual cost of $5.8 million and 52 FTEs for water consent transactions.

NOW has forecast hourly labour costs to complete the various types of consent transactions based on historical actual times and historical costs. It has assumed that a number of transaction types require the same administration time, such as all new water access licences and water access dealings, regardless of the type of access licence (Tables 5.7 and 5.8).

Once these estimates of time are established, NOW has applied an hourly unit rate of $61.60, which excludes overheads, in order to

determine the estimated direct costs per transaction and the subsequent proposed tariffs.

NOW has developed forecasts of consent transactions for 2009-10 and onwards primarily based on the average of the previous three years actual number of transactions. The resultant overall number of forecast transactions is relatively similar to the previous years.

NOW has assumed these forecasts of transactions and costs for 2009-10 are to remain constant over the following years with no changes to FTE levels, no adjustment for efficiency gains and no variation in forecast transaction numbers (Figure 5.6).

Based on the forecast time required for each transaction and the forecast number of transactions NOW determined that 52.5 FTEs were required for consent transactions each year.

Table 5.7: NOW's estimated hours per standard transactions for forecast regulatory period

	Admin (hours)	Advertising (hours)	Basic Assessment (hours)
New water access licences			
Zero Share	4.8		0.0
Specific Purpose	4.8		4.8
Other	4.8		4.8
Water access licence dealings			
Dealings – regulated rivers	4.8		1.9
Dealings – unregulated rivers and groundwater	4.8		7.6
New or amended approvals			
Works only	4.8	2.9	9.5
Use only	4.8	2.9	9.5
Works and use	4.8	2.9	9.5
Basic rights work approval	4.3		
Approval extensions			
Extension	3.8		

Table 5.8: NOW's estimated hours per special assessment transaction for forecast regulatory period

	Entitlement (>20 units per unit) - hours	Pump (>50L/sper L/s) - hours	Use (>10ha per ha) - hours	Dam (hours)
New water access licences				
Zero Share				
Specific Purpose	0.38			
Other	0.38			
Water access licence dealings				
Dealings – regulated rivers				
Dealings – unregulated rivers and groundwater	0.38			
New or amended approvals				
Works only		0.1615		9.5
Use only			0.3325	
Works and use		0.1615	0.3325	9.5
Basic rights work approval				
Approval extensions				
Extension				

Efficiency of costs

NOW has not forecast any changes in costs throughout the forthcoming regulatory period. This reflects the fact that NOW has not incorporated any efficiency gains in processing these consent transactions and also has not forecast any changes in the number of transactions throughout the regulatory period.

It would be expected that efficiencies could be realised over time in certain aspects of these transactions, especially the administration component, thereby reducing costs and staffing requirements – all else being equal. This is alluded to in NOW's submission on page 79, where it is stated that 'the Office recently initiated on-line lodgement of some types of applications and this service will be expanded over the next two years to incorporate most transactions'. These efficiencies may have contributed to NOW's decision to reduce future staff levels by a 'one-off' 18 FTE reduction relative to the peak of 2007-08. However, no allowance is made for potential, additional efficiency gains going forward.

The implications of information system upgrades, improvements to registers, staff training and general streamlining of administrative tasks as a consequence of the approvals system becoming bedded down (now that the *Water Management Act* has been operational for a decade) have not been explicitly factored into the forward forecasts. Based on this information and NOW's reduction in 2009-10 FTE levels, an on-going efficiency gain of 0.5 per cent per annum would seem reasonable and aligns with the 'general' efficiency parameter proposed for other operating activities.

The following table provides our recommended operating expenditure for water consent transactions over the forecast regulatory period. This uses NOW's proposed operating expenditure and adjusting this to incorporate a recurring efficiency gain of 0.5 per cent per annum.

Table 5.9: Adjustments to consent transaction expenditure for recommended efficiency gains ($2009-10, '000s)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Proposed expenditure	5,762	5,762	5,762	5,762	5,762	5,762
Adjustment for efficiency gains (0.5% p.a.)		-29	-57	-86	-114	-143
Recommended expenditure	5,762	5,733	5,704	5,676	5,647	5,619

Note: Numbers may not add due to rounding

6 Historical operating expenditure

Key Findings

- There is not a significant variation between the actual and allowed operating expenditure for the whole regulatory period, however there are variations at a more detailed level of expenditure.
- At the activity code level, there was some considerable variation between what NOW actually spent and what was allowed by IPART in the previous determination. While some differences can be explained through timing issues, it is difficult to provide a blanket explanation for the difference, as some variations are counter to the timing argument.
- In allocating corporate overheads and indirect costs to its IPART-related activities, NOW has calculated an hourly unit rate based on the 2007-08 year and applied it across each of the years with actual operating expenditure. The use of this one year of information means that it is not possible to determine the efficiency, or identify any efficiency gains or losses.
- There appears to have been some overhead costs included that may have inflated the unit rate, and subsequently inflated historical operating expenditure. These costs were subsequently removed by NOW from the forecast approach to calculating the corporate overheads and indirect cost unit rate.
- Several adjustments are recommended to the proposed number of FTEs for 2009-10, the base year against which NOW has developed its expenditure forecasts. Collectively, these adjustments result in a reduction of 23 FTEs and bring the total number of FTEs down to 233 (24 more than what existed in 2008-09). The adjustments result in a revised base level of expenditure of $45.4 million, which is a 6.9% reduction on NOW's proposal.

6.1 Introduction

For the purposes of this review, NOW's historical operating expenditure spans the current regulatory period of 2006-07 to 2009-10. This period incorporates the actual expenditure incurred for the three years between 2006-07 and 2008-09 and forecast expenditure for 2009-10 as this year is yet to be completed.

This chapter looks at the operating costs incurred by NOW during the current regulatory period and how this compares with what was allowed for from the previous determination. This assessment is aimed at determining how efficient NOW's historical costs were over the period.

6.2 Variations between actual and allowed operating expenditure

NOW's submission and information return calculate that NOW incurred $220,990 of operating expenditure in excess of that allowed for in the previous IPART determination.

While this shows that NOW did not incur significant operating expenditure above that allowed by IPART, there are considerable differences in the pattern of expenditure across activities, valleys and water sources. This also results in an increase in the proportion of costs that were recoverable from users.

Variations – breakdown by activity

Considering the allocation ratios for operating costs to valleys are fixed over the period and are therefore dependent on the operating expenditure for each activity code, we initially sought to assess the variations in expenditure by activity codes as the variations across valley expenditure is an outworking of the variations across activity codes.

Figure 6.1 shows the activity codes that had more than $1 million variance between the actual and allowed costs for the regulatory period. (A description of each of these activity codes is outlined in Appendix F).

One of the outcomes from this assessment is that there appears to be a timing issue from what was assumed in the previous determination. This can be seen from the activity codes at the extremity of each end of the graph. The activity code with the greatest over-expenditure was C07-01 which relates to water sharing plan development, while the two activity codes with the greatest under-expenditure were C06-01 (environmental water provisions) and C05-01 (water sharing/accounting projects) respectively. This indicates that NOW has spent more time developing the WSPs than was envisaged for when establishing the allowable expenditure for the previous determination, and has therefore subsequently spent less time actually implementing these WSPs.

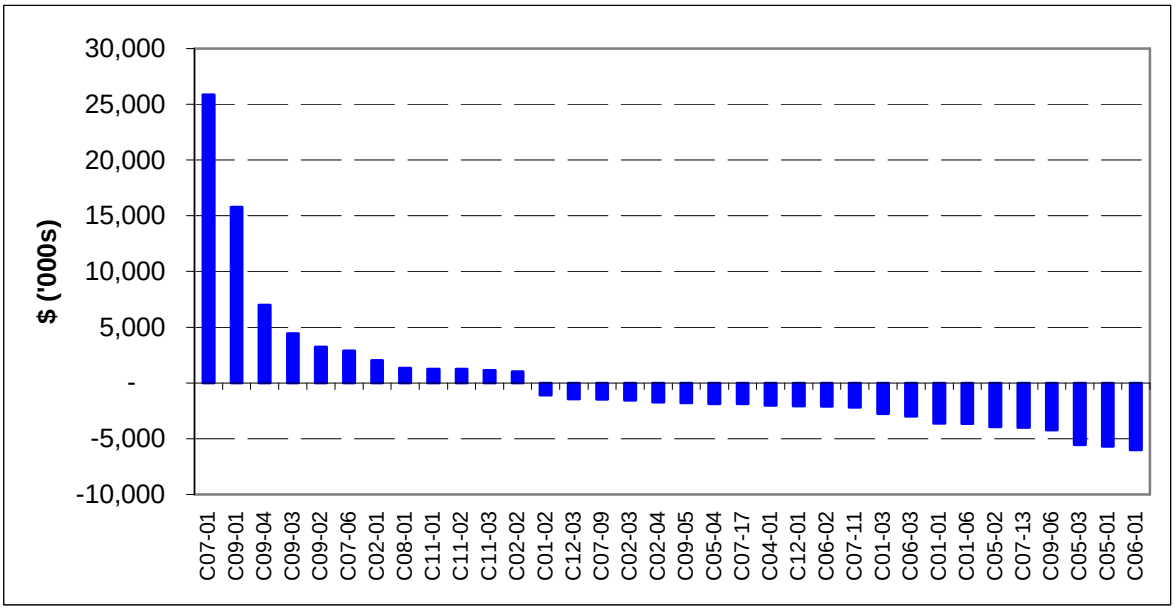
However there are also some expenditure items that went against this trend, thereby indicating that it is difficult to 'tell an overall story' of what has happened with NOW's expenditure.

The significant increase in HO systems administration (C09-01) relates to the overheads for consent transactions (C10). These overheads are not allowed to be recovered through the prices for consent transactions; however it was deemed appropriate in the previous determination to recover these costs through water resource management charges. The overheads were not incorporated within the previous determination and NOW

subsequently allocated all of the consent transaction overhead costs to this activity code, thereby resulting in a significant increase.

Compliance (C09-06) had a considerable underspend during the period. This could partly be explained by an expected increase in self-compliance within communities (i.e. neighbours notifying NOW of misuse or illegal conduct), and therefore a subsequent drop-off in formal compliance undertaken by NOW.

Figure 6.1: Variations between actual and allowed over the current regulatory period which exceed $1 million ($2009-10, '000s)



Variations – breakdown by water source

There was considerable variation between actual operating expenditure by water source compared to that allowed in the previous determination. The following table provides an overview of the quantum of these variations.

It can be seen from the table that the regulated water source incurred significantly higher costs than allowed for, while both unregulated and groundwater incurred less.

Table 6.1: Variations in allowed and actual operating expenditure by water source ($2009-10, millions)

		2006-07	2007-08	2008-09	2009-10	Total
Regulated	Allowed	18.5	19.0	18.7	18.2	74.3
	Actual	17.2	19.8	20.1	21.4	78.5
	Variance	*-1.3*	*0.8*	*1.5*	*3.2*	*4.2*
Unregulated	Allowed	15.5	15.3	16.5	15.6	62.8
	Actual	15.3	14.1	15.9	14.7	59.9
	Variance	*-0.3*	*-1.2*	*-0.6*	*-0.9*	*-2.9*
Groundwater	Allowed	12.2	12.0	11.7	11.5	47.3
	Actual	9.7	9.8	13.5	12.7	45.8
	Variance	*-2.5*	*-2.1*	*1.9*	*1.3*	*-1.5*
Total	Allowed	46.2	46.3	46.8	45.3	184.5
	Actual	42.2	43.7	49.6	48.8	184.3
	Variance	*-4.0*	*-2.5*	*2.8*	*3.6*	*-0.2*

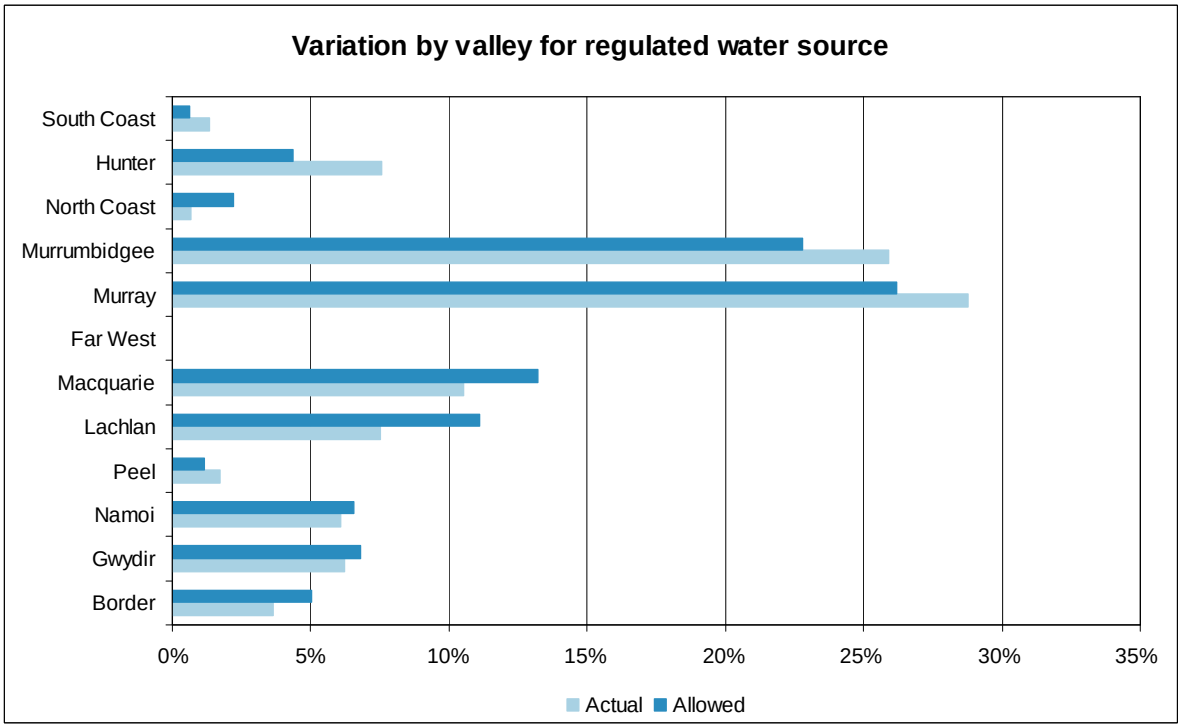
Note: Numbers may not add due to rounding; These figures exclude costs relating to MDBA and BRC.

Variations – breakdown by valley

In some cases there has been considerable variation across valleys between expenditure allowed in the previous determination and expenditure NOW has actually incurred. As outlined in section 3.4, for historical purposes NOW has allocated costs to valleys and water sources based on an internal survey undertaken in 2002-03.

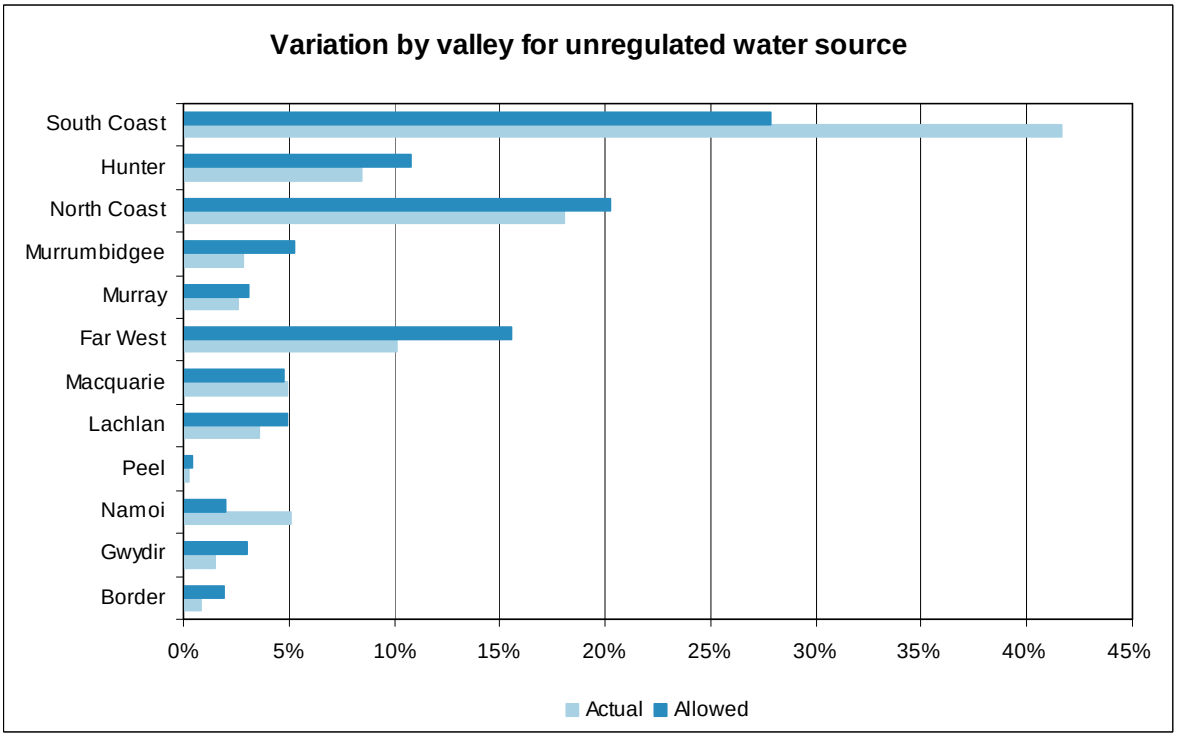
The following graphs show the variations across the valleys for each of the water sources. There are some considerable differences in the actual and allowed expenditure for some of the valleys, however based on the approach adopted by NOW, it is not possible to determine whether any increase in expenditure allocated to a specific valley is the result of additional work undertaken for the valley, or simply an outworking of the allocation approach that had been adopted.

Figure 6.2: Variation of actual and allowed expenditure for all water sources by valley



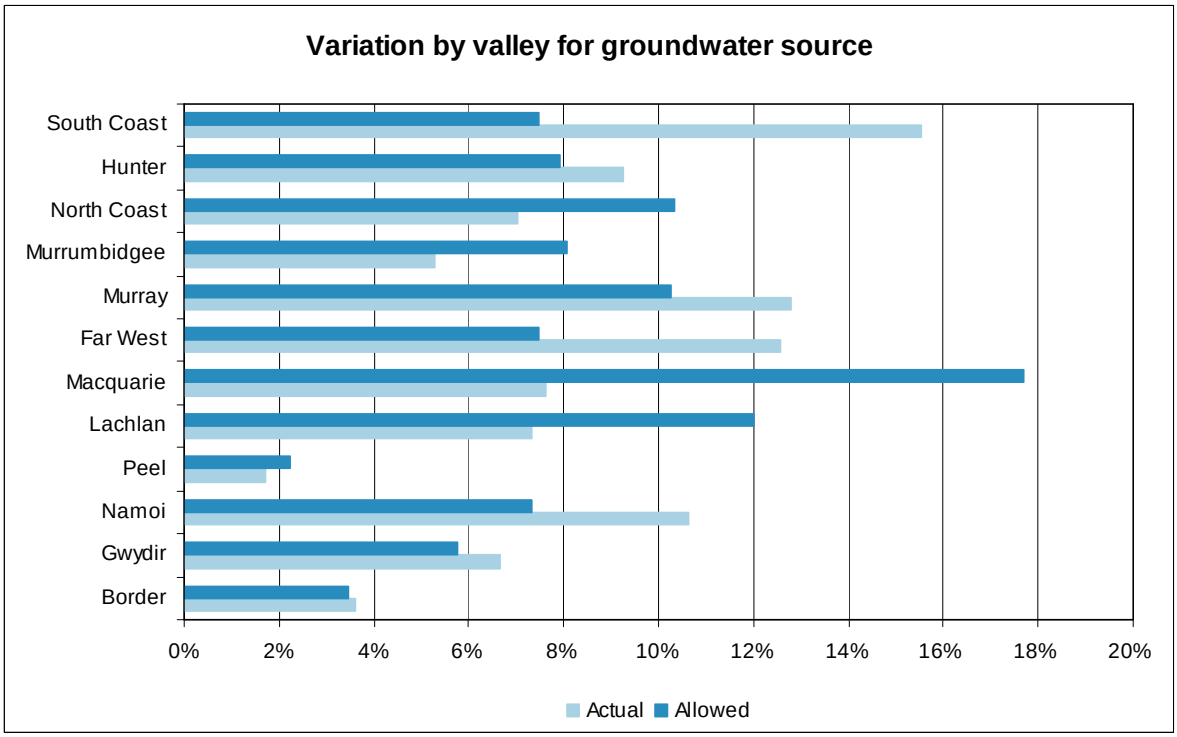
Note: Historical 2009-10 expenditure has been excluded as this was allocated based on the forecast approach

Figure 6.3: Variation of actual and allowed expenditure for all water sources by valley



Note: Historical 2009-10 expenditure has been excluded as this was allocated based on the forecast approach

Figure 6.4: Variation of actual and allowed expenditure for all water sources by valley



Note: Historical 2009-10 expenditure has been excluded as this was allocated based on the forecast approach

Variation in User-Share recovery

NOW's operating costs for the regulatory period were recovered on a shared basis from both users and government. Each of NOW's activity codes was assigned a user-share percentage recovery in the previous determination based on the type of activities NOW would be undertaking for each code.

The following is a breakdown of the percentage of total costs each year that was allowed to be recovered through users and the percentage that actually was recovered. The table also incorporates a comparison based on the total costs recovered through users. It shows that NOW incurred a greater amount of costs through activities which were to be recovered through user charges.

Table 6.2: Percentage and total costs recovered through users ($2009-10)

	2006-07	2007-08	2008-09	2009-10	Total
Allowed recovery	66%	67%	66%	67%	66%
Actual recovery	73%	74%	75%	77%	75%
Allowed user share($m)	30.5	30.8	30.9	30.3	122.5
Actual user share ($m)	30.7	32.6	37.0	37.6	138.0
Variance in user share ($m)	**0.2**	**1.7**	**6.2**	**7.4**	**15.5**

Note: Numbers may not add due to rounding

This variation could be the result of entitlement volumes and/or billable water extractions being higher than expected over the regulatory period.

6.3 Efficiency of overhead costs

Our review was unable to determine any efficiencies gained in overheads over the historical period as NOW has used overhead cost information for one year (2007-08) and determined an overhead unit rate per hour (or FTE) that has subsequently been applied to each of the years with actual expenditure.

NOW advises that the reason for the use of 2007-08 as a proxy for all years is due to the regular restructuring the Department has undertaken in recent years. It advised that it is difficult to determine what corporate overhead costs should be incorporated during the times of these restructures. NOW therefore has used 2007-08 as this was considered the most stable year, where it did not undergo any restructuring (NOW is assuming no further restructure in the near future).

The following table outlines the corporate overheads and indirect costs as a proportion of total operating expenditure for historical period. It can be seen that there is a significant difference in corporate overheads and indirect costs in 2009-10 due to NOW calculating the operating costs for this year on a different basis to the preceding years of the regulatory period.

Table 6.3: Corporate overheads and indirect costs as a proportion of historical operating costs

	2006-07	2007-08	2008-09	2009-10
Overheads and indirect costs ('000s)	17,911	19,427	20,407	13,696
Operating expenditure ('000s)	38,517	41,286	48,373	48,809
Overheads proportion	46.5%	47.1%	42.2%	28.0%

As outlined earlier in the accounting methods chapter, the allocation of corporate overheads and indirect costs for the first three years of the regulatory period is inconsistent with the approach for forecast costs and incorporates additional costs that were not incorporated for the forecast approach.

6.4 Overall efficiency of historical expenditure

Owing to the different accounting conventions used by NOW to produce the historical cost accounts and the 2009-10 base year, it is difficult to present a specific series of recommended 'efficient' levels of expenditure for each of the historical years. Instead, we have focused on the efficient level of expenditure for the 2009-10 base year. This year is directly comparable with the out-years to 2014-15 because consistent accounting methods have been largely applied for these years.

Several adjustments are recommended to the proposed number of FTEs for 2009-10, the base year against which NOW has developed its expenditure forecasts. Collectively, these adjustments result in a reduction of 23 FTEs and bring the total number of direct FTEs down to 233 (24 more than what existed in 2008-09). The adjustments result in a revised base level of expenditure of $45.4 million, which is a 6.9 per cent reduction on NOW's proposal (Table 6.4).

Table 6.4: Recommended base level 2009-10 FTEs and operating expenditure ($2009-10)

	FTE	Operating expenditure ($m)	% Reduction in expenditure
NOW Submission	256	48.809	
Adjustment for overhead calculation		-0.245	-0.5%
Less Metro Water	-3.5	-0.475	-0.97%
Reduction in Business Admin to 2007-08 levels	-1.3	-0.176	-0.36%
Removal of FTEs not allocated to activities	-18.3	-2.481	-5.08%
Total adjustment	-23.1	-3.377	-6.92%
Recommended base	**232.9**	**45.432**	

Note: These adjustments are based on remuneration costs of $102,973 per FTE, and overheads of $32,625 per FTE.

The basis for our recommended adjustments is as follows.

PwC investigated NOW's proposed requirement of 256 FTEs to deliver water management and planning services in 2009-10. This represents 47 more than the actual number of direct FTEs reported by NOW for 2008-09. Because of the magnitude of the difference, we sought to investigate to determine the reason for the increase.

NOW advises that the increase is partly due to the fact that an estimated 24 FTEs are not completing cost allocation sheets. NOW

has incorporated these FTEs into its historical costs (including the 2008-09 year) as an overhead, as opposed to accounting for the FTEs as direct resources. In 2009-10, these resources are reported as direct FTEs spread across a number of activities, thus appearing in the accounts as an apparent increase in staff.[20]

In particular, Business Administration is shown to have an increase of 7 FTEs on the previous year. In the course of our inquiries, NOW indicated that 5.7 of these FTEs have been assigned out of the indirect resources pool of 24 FTEs, thus leaving 18.3 FTEs with no direct attribution to a particular activity.

Other observed increases for 2009-10 are 7 FTEs for metropolitan water planning activities and 10 FTEs for legal services. These resources have not been accounted for in the historical years.

On the basis of the above information, we make the following recommendations:

Efficiency adjustment

- Based on the findings from a detailed audit of several activities, PwC is concerned that there are inefficiencies in NOW's existing deployment and allocation of staff resources across activities. For example, in the case of Operational Planning, the reported outputs for this activity (one completed policy guideline identified on page 101 of NOW's submission, though progress in the drafting of others is acknowledged) does not appear to be commensurate with the 20 to 25 FTEs that have been working in this area over the past four years.
- Another example is the absence of a clear and transparent strategic framework for guiding compliance activities over the past four years.
- A further example is that the delay in water sharing plan development over the last four years (in part due to NOW waiting for greater clarity about the Basin Plan requirements) should have freed up staff resources that could be deployed on other activities — but there is no evidence of this or of alternative outcomes achieved.
- In recognition of the above inefficiencies, we recommend removing from the cost base the 18.3 FTEs whose time is 'unallocated' to any specific water management activity. While we accept that these FTEs exist (based on evidence provided by NOW), it is difficult to determine whether these resources represent an efficient component of NOW's service, given the lack of transparency around what these FTEs are delivering. Furthermore, if the cost of these FTEs were to be retained in the cost base as an indirect cost, it would contribute to the pool of overheads that are already at the upper end of what is

[20] By email from NOW, 8 February 2010.

considered acceptable for an organisation of NOW's size (refer to section 7.3).

Other recommended FTE adjustments

- A proportion of NOW's metropolitan water planning activities should be removed from the cost base, as at least some of the activities are inconsistent with the Water Services Order. This accounts for 3.5 FTEs (refer to Chapter 4).
- NOW's forecast requirement of 7 FTEs for Business Administration should be reduced to 5.7 FTEs, the latter being the level of resources identified by NOW that it has allocated out of the indirect pool of 24 FTEs. This represents a reduction of 1.3 FTEs.
- No adjustment has been made to the 10 FTEs that have been identified as being required for providing legal services. NOW advises that these 10 FTEs represent a share of the total legal resources existing in NOW (numbering 19 FTEs in total).

7 Forecast operating expenditure

Key Findings

- Due to NOW's change in accounting methodologies for historical and forecast expenditure, it is difficult to undertake a meaningful comparison between the two periods other than at an aggregate level.
- The largest increase in forecast expenditure is for water management implementation activities.
- NOW has applied unit rates per FTE to allocate corporate overheads and indirect costs, however in the calculation of these unit rates, NOW has not taken into account the fixed nature of some of these costs. With the introduction of additional resources, it would be expected that the unit rate for these additional resources would be less than the unit rate for existing resources.
- NOW has not provided clear linkages between the additional resources proposed and the additional obligations and/or requirements it must meet for the upcoming regulatory period.
- Corporate overheads currently form about 14 per cent of total operating costs (and with the addition of indirect costs, this increases to 27 per cent). Based on available guidelines, and other benchmarks, an acceptable level of corporate overheads for a medium sized government agency range from 10 per cent to 12 per cent.
- NOW has assumed an annual efficiency gain of 4 per cent for 2010-11 and 2011-12 in its corporate overheads. However there has been no consideration of potential productivity gains for the other activities NOW is to undertake for the period.
- PwC recommends a number of adjustments to NOW's forecast revenue requirements to take account of the above factors. The combined impact of the adjustments is to reduce NOW's total forecast expenditure by 13.1 per cent by the year 2014-15.

7.1 Introduction

This chapter contains the results of a strategic review and assessment of NOW's forecast revenue requirement to cover operating expenses in the five year period 2010-11 to 2014-15.

The review commences with a description of NOW's operating expenditure over the upcoming determination period, with particular focus on the assumptions applied by NOW including:

- drivers of and justification for this expenditure, activities to be carried out and outcomes to be achieved and explanation of

how NOW's forecast expenditure relates to these activities/service levels;

- variations in forecast expenditures relative to actual expenditures over the last regulatory period;
- relationship between any trend in NOW's forecast operating expenditure from 2010-11 to 2014-15 and the trends identified for the previous determination period;
- extent to which NOW may have considered alternative options for delivery of the monopoly services or associated service levels (e.g. testing contestability of tasks and services provided and conducting cost benefit or business case analysis);
- description of NOW's current and forecast efficiency programs and the potential for other efficiency gains (e.g. from investing in capital) and how these have been factored into forecast expenditures; and
- forecast MDBA and BRC expenditures to be recovered from NOW and water users from 2010-11 to 2014-15, and the basis for this forecast.

The analysis covers the entire cost base, spaning all activities nominated by NOW as being monopoly services. Chapter 5 provides a more detailed assessment of four activities, with the aim of providing deeper insights to the efficiency of NOW's forecast costs.

Two cost base scenarios

NOW has put forward two different cost base scenarios. This report focuses on Scenario 1.

Scenario 1: Standard cost base, excluding the cost of complying with the *Water Act 2007* and IGA. (The Commonwealth has agreed to fund any real net additional costs directly attributable to complying with the *Water Act 2007* and the agreed reforms in the IGA, but any requested cost increases by the Basin States are subject to due diligence by the Commonwealth. There is currently uncertainty about the proportion of additional costs identified by NOW that will be funded by the Commonwealth).

Scenario 2: Cost base to include net additional costs of complying with the *Water Act 2007* and IGA, should the Commonwealth Government not fund those additional costs.

7.2 Forecast expenditure by high-level activity

NOW forecasts its water management planning activities to make up the largest portion of its forecast expenditure for the upcoming regulation period with licensing administration being the second largest. While licensing administration expenditure incorporates

activities such as compliance and consents administration, it also incorporates the corporate overheads and indirect costs allocated to consent transactions as these are to be recovered through water management charges. These additional overhead costs amount to $10.8 million of the $62.2 million licensing administration expenditure over the period.

According to NOW's submission (page 104), licensing administration (C09-01) includes the following:

- Licensing Administration System administration, including maintenance of surface water and groundwater consents integrity consistent with the Office's statutory responsibilities in regulating water extraction. Excludes processing of transactions on consents.
- Administration of access licence, approvals, trading and environmental water registers.
- Systems development and maintenance of procedures and guidelines for access licence dealings, approvals transactions, monitoring of systems performance and information dissemination.
- Licensing Administration Systems maintenance and upgrade.

Figure 7.1: Breakdown of total forecast expenditure by high level activity codes for period 2010-11 to 2014-15 ($2009-10, $million)

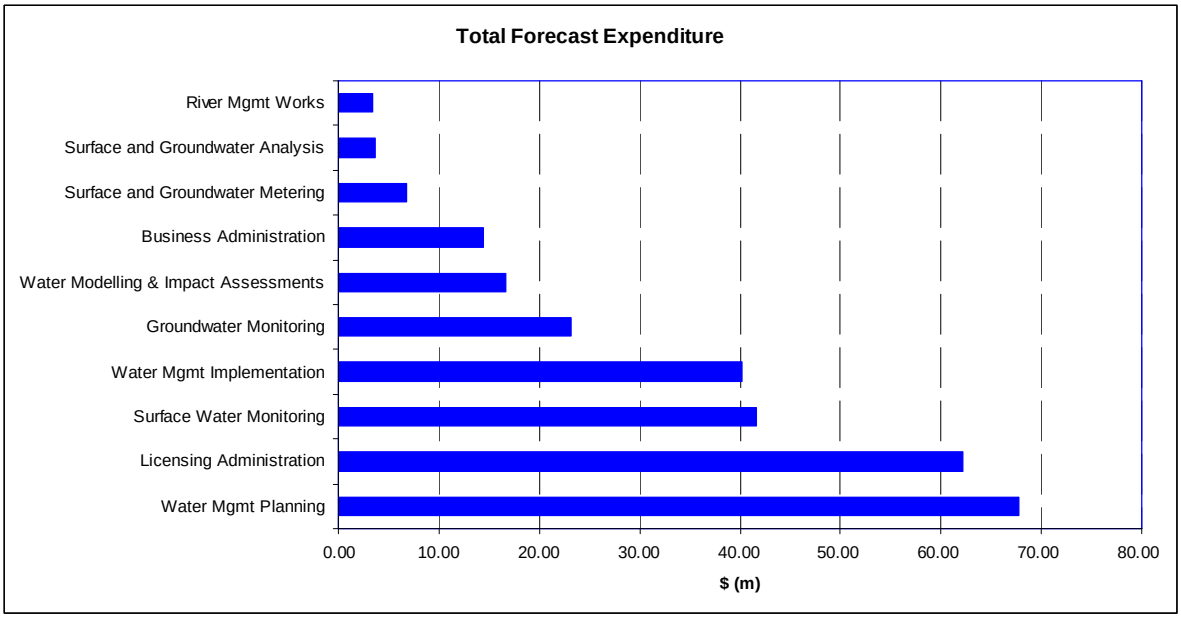


Figure 7.2: Comparison of average annual expenditure by high level activity codes ($2009-10, $million)

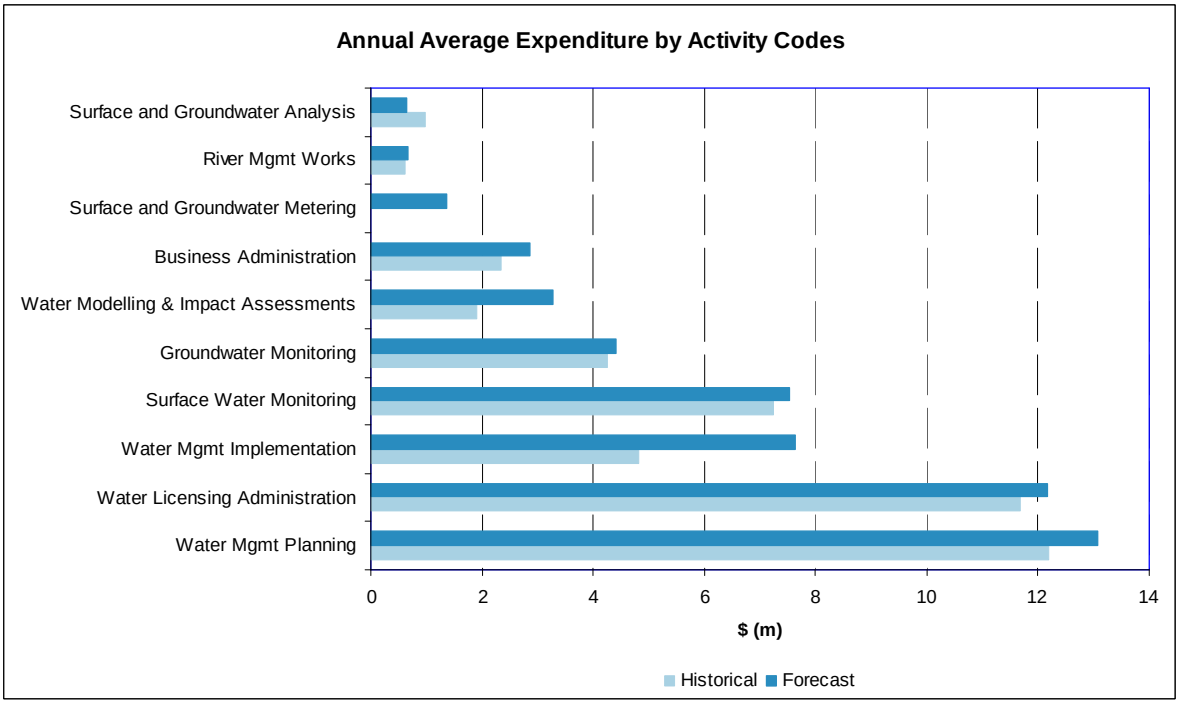


Figure 7.2 provides a comparison of the average annual expenditure by high level activity codes for both historical and forecast periods. The forecasts refer to 2009-10 to 2014-15. The historical information has been converted from old activity codes to new codes in order to ensure a reasonable comparison. Notable increases in costs are as follows:

The largest increase is for water management implementation expenditure. This type of expenditure would be expected to increase as more water management plans are set in place. NOW has incorporated a portion of its legal services team into the forecasts, which account for 10 new FTEs (out of a total of 19 which were formerly housed elsewhere in the former Department of Water and Energy).

Average annual expenditure on water management planning and operations is forecast to increase by about $1 million per annum due to NOW's forecast need to complete an additional 38 plans by 2012-13, review a number of existing plans as per statutory requirements and complete nine policy guidelines, most of which are currently in draft form.

Average annual expenditure on water modelling and impact assessment is forecast to increase by just over $1 million per annum. NOW has built this forecast on the need for additional modelling of groundwater-surface water interactions and the upgrading of hydrological models in response to reduced water availability.

7.3 Comparison of forecast expenditure with adjusted actuals

It was not possible to do a straight-forward comparison of NOW's forecast operating expenditure and its actual expenditure for the current regulatory period. This was primarily because NOW, as outlined earlier, has developed new activity codes that are not always consistent with the previous activity codes and has applied a different approach to allocating costs across these activity codes.

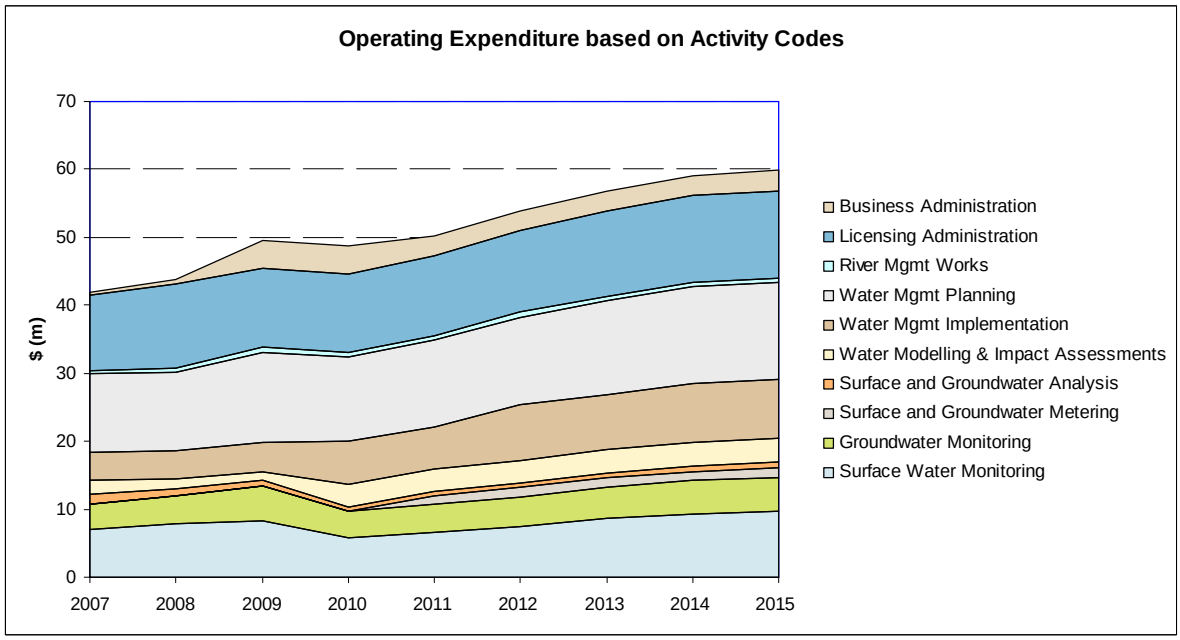
Therefore in order to undertake any meaningful comparison between NOW's actual expenditure and its forecast expenditure, an adjustment must be made to convert the different activity codes.

For this review, an adjustment was made to the historical activity codes to convert these costs into the new activity codes. This adjustment was undertaken consistent with information provided by NOW in its submission.

In some cases there were inconsistencies between NOW's submission, information return and the additional information provided for this review. In ensuring that the adjustments were undertaken consistent with NOW's understanding of the different codes, further information was sought from NOW to clarify these inconsistencies.

Figure 7.3 provides a breakdown of the costs for the high level activity codes for each year of both the historical and forecast regulatory periods.

Figure 7.3: Operating expenditure based on activity codes ($2009-10, $million)



The figure above suggests that operating costs decrease from 2008-09 to 2009-10, even though there is an increase in FTE numbers. The reason for this is the allocation of corporate overheads and indirect costs. As outlined in Chapter 3, there were some inconsistencies in the approaches used for historical and forecast purposes for allocating corporate overheads. These inconsistencies account for the fact that 2008-09 has a higher total operating cost than 2009-10.

Comparison across valleys and water source

The proposed allocation of operating costs across valleys, for regulated and unregulated rivers, is shown in Figures 7.4 and 7.5. An immediate observation is that the greatest share of costs attributable to managing regulated rivers is allocated to the Murrumbidgee and Murray valleys. This is explained by the large holdings of water entitlement in these valleys and the large number of licence holders relative to other valleys. The collective demands of these licensees for water management and planning services accounts for the large share of costs that are attributed to these two valleys.

The same is not true for costs associated with servicing users of unregulated rivers. The incidence of unregulated water systems is more predominant in northern NSW and coastal valleys. Thus, the distribution of costs pertaining to unregulated rivers is skewed to the northern and coastal valleys.

The charts also show how historical costs and forecast costs have been allocated across valleys. Recall that NOW uses different methods of the historical and forecast costs. From the change in

approach, it would be expected that there would be some variation in the proportion of costs attributed to valleys and water sources between historical and forecast. The following figures highlight these variations between the historical and forecast allocation methods. The comparisons highlight the fact that even though significant changes have occurred in the allocation process across valleys, the majority of valleys do not appear to be materially affected.

While there are some noticeable increases across valleys, such as the Lachlan (regulated) and Murrumbidgee (unregulated), there are also some noticeable decreases, such as South Coast (unregulated).

Figure 7.4: Variation between historical and forecast proportion of operating expenditure attributable to regulated water sources

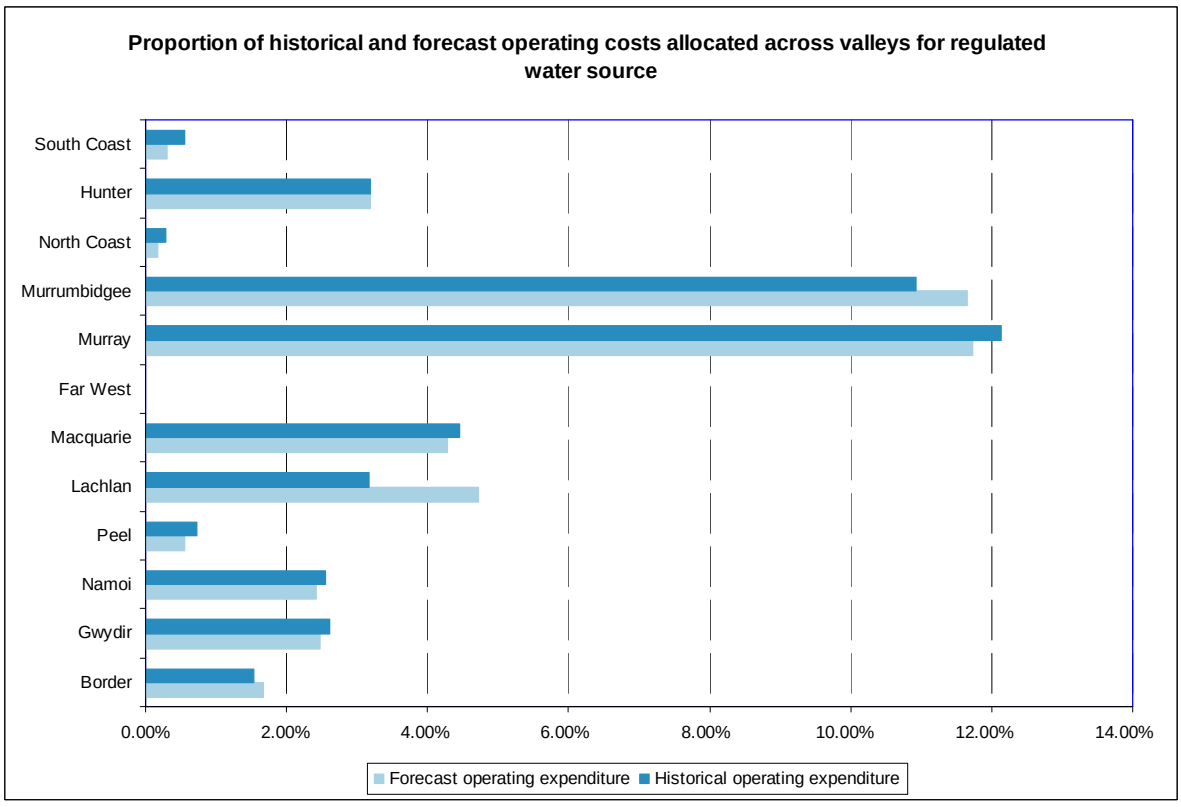
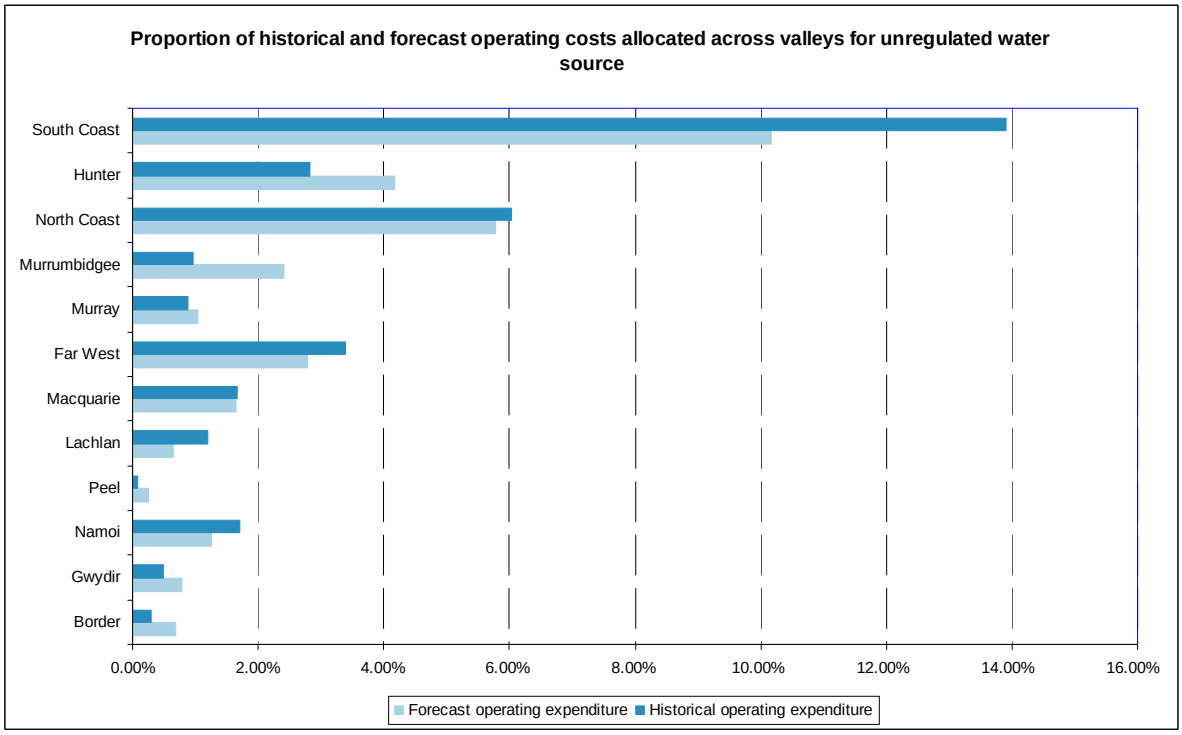


Figure 7.5: Variation between historical and forecast proportion of operating expenditure attributable to unregulated water sources



While there is not a significant movement of costs from one water source to another resulting from NOW's new (cost driver) approach, there does appear to be some shift in costs from unregulated rivers to regulated rivers and groundwater, although this does not appear to be material.

NOW stated that the allocation of groundwater costs across valleys was not appropriate, and it has subsequently changed this approach to allocate costs across basins (inland and coastal). This change means that a comparison by valley between the forecast and actual operating expenditure is unable to be undertaken.

From the change in the allocation methods across valleys, it has resulted in changes in the allocation of costs across water sources. The following table outlines the difference in the proportions of total expenditure allocated to each water source under the different approaches. While there has been some variation, the change in approach does not appear to have a significant impact across water sources.

Table 7.1: Variation in the average annual expenditure by water source

	Historical (% of total)	Forecast (% of total)
Regulated rivers	42	43
Unregulated rivers	33	31
Groundwater	24	25

Note: Totals may not add due to rounding

7.4 Overhead expenditure

Table 7.2 outlines the proportion of total operating costs that result from corporate overheads and indirect costs throughout the forecast regulatory period. Over the forecast period, the combined sum of these costs represent approximately one quarter of NOW's total operating costs. However, when considered separately, corporate overheads are 14.5 per cent of total operating costs (in 2010-11) and indirect costs represent 13.5 per cent.[21]

Table 7.2: Corporate overheads and indirect costs as a proportion of total operating costs

	2010-11	2011-12	2012-13	2013-14	2014-15
Corporate overheads	14.5%	14.0%	13.2%	13.2%	13.3%
Indirect costs	13.5%	13.1%	12.3%	12.4%	12.4%
Total	27.1%	25.5%	25.6%	25.7%	25.7%

When examining the percentage of corporate overheads and indirect costs as a percentage of average remuneration costs (shown in table 7.3 below), it can be seen that the percentage declines in line with NOW's assumed corporate efficiency gains of 4 per cent in 2010-11 (relative to 2009-10) and another 4 per cent in 2011-12.

Table 7.3: Corporate overheads and indirect costs per FTE as a percentage of average remuneration costs ($2009-10)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
FTE unit rate	$44,457	$42,679	$40,829	$40,829	$40,829	$40,829
Average remuneration (including on-costs)	$102,973	$102,973	$102,973	$102,973	$102,973	$102,973
Percentage of remuneration costs	43.2%	41.4%	39.7%	39.7%	39.7%	39.7%

Note: This average remuneration figure was not used to determine 2009-10 costs, it is used here as a guide only; On-costs refer to ensuring costs related to superannuation, long-service leave etc are accounted for.

Efficiency of overhead costs

Benchmarking information is readily available to guide an assessment of what would be regarded as an efficient level of corporate overhead costs (but not indirect costs). Indirect costs are support services that provide specific support to business units delivering core services. These indirect costs/activities are agency-specific and less amenable to benchmarking, as distinct to more generic IT, human resources and finance functions.

Specifically, we assessed the level of NOW's submitted corporate overheads against public benchmarks on efficient overhead costs.

[21] These splits are based on the information contained in Table 3.4. Estimated corporate overheads for NOW are $15.3 million for 2009-10, and indirect costs amount to $14.3 million. This gives a relative share for overheads of 52 per cent and for indirect costs 48 per cent.

Amongst these reference points[22] the NSW Government's *Council on the Cost and Quality of Government* has reported overhead cost benchmarks for agencies of different sizes, as measured by FTEs. The Council identified an overhead cost range between 8-16 per cent of total agency operating expenditure, as shown in Table 7.4 below.

Table 7.4: Corporate overhead benchmarks, as a percentage of total operating expenditures

Agency size	Low	High
Large (>1,000 FTEs)	8%	10%
Medium (351 to <1,000 FTEs)	10%	12%
Small (100 to <350 FTEs)	12%	14%
Very small (<100 FTEs)	14%	16%

Source: Council on the Cost and Quality of Government (2006), *Annual Report*, cited in Greater Taree Council, Governance Report to Council, May 2009.

Looking only at NOW's activities directly related to delivery of IPART-regulated water management functions, NOW would be a 'small' agency using the categorisation above. NOW's overhead cost share, of approximately 14 per cent, is therefore at the high end of the cost range for similar 'small' agencies.

However, NOW's regulated water management activities are actually delivered as part of a much larger Agency, with a total headcount of nearly 800 FTEs. Many corporate services are delivered at the Departmental level, suggesting that a lower benchmark overhead cost range – 10 per cent to 12 per cent - is more appropriate.

Based on these benchmarks we propose a further adjustment to NOW's submitted operating costs to bring the corporate overhead cost component down to 12 per cent, the lower end of the range for a 'small' agency and the upper end of the range for a 'medium' sized agency. Recognising other proposed adjustments (including NOW's own 4 per cent efficiency factor), we recommend that this reduction be phased in over a four year period, commencing in 2010-11.

Overhead allowance for additional resources

NOW has applied an overhead rate of $29 per FTE hour to all existing and additional FTEs. This means that total overhead costs (corporate plus indirect costs) are assumed to increase linearly with every additional FTE. This assumption is unlikely to be realistic because we expect that a proportion of overheads would be fixed over the range of staff growth forecast by NOW. Under this scenario, the assumption of a constant unit overhead rate would result in over-estimation of overhead costs.

[22] The review also had regard to a range of other published data on corporate overheads, which broadly suggested that corporate overheads were in the order of 10 per cent - 15 per cent of total operating budgets for various public sector agencies.

NOW acknowledged that, in concept, a proportion of overhead costs are generally fixed. NOW stated, however, that given the size of the increase and the short time period, this assumption of fixed costs is not accurate. In NOW's opinion there will be a number of additional overhead costs relating to these additional resources, such as:

- office space and associated support – NOW advised that it does not currently have such available space;
- IT hardware, support and software will need to be provided – the IT support service level agreement with Services First adopts an FTE basis for charging;
- motor vehicles may need to be provided to some additional FTEs;
- HR support resources will need to be increased; and
- indirect support resources will need to increase to manage the outputs from the additional FTEs.

NOW is of the view that only the costs of finance will not be materially impacted by the additional resources, and it states that this is a small component of the current overhead costs.

While NOW considered that there would be a relatively small amount of fixed costs incorporated in the calculation, in undertaking our review, we consider that a greater proportion of overhead costs are likely to be fixed – at least for the scale of proposed increase in staff.

Thus, in allocating corporate overhead costs based on an hourly unit rate, this unit rate would be expected to decline at the margin with additional staff. For example, the forecast increase in FTEs over the next five years should result in an incremental reduction in the overhead unit rate.

The data available to us does not allow for a detailed analysis of the specific variable to fixed ratio of NOW's overhead costs. Further, while there are benchmarks on corporate overhead costs (as discussed above) these are not instructive as to the proportion of overheads which are fixed with respect to a change in scale of operations, within a given organisation.

Data on benchmark overhead costs shows that corporate overheads, as a proportion of total operating expenditures, vary only slightly in percentage terms, between agencies of different sizes. This implies that a significant proportion of overhead cost is variable with respect to scale – as organisations grow in size corporate overhead costs increase almost in proportion - but this is not definitive enough to provide guidance on the exact proportion of fixed/variable overhead costs within a given entity, nor where organisational scale is changing over a relatively short period of time, as is the case with NOW's proposed increase in resourcing.

Acknowledging this, in making an assessment of the level of corporate overheads and indirect costs to be recovered from future *additional* resources, we have made a conservative assumption that

25 per cent of corporate overheads and indirect costs are fixed. Therefore for additional FTEs in the forecast period, we have applied an adjusted unit rate of $21.75 per FTE hour – which equates to just the variable component of overheads (that is, $29 x 0.75). The following table shows the resultant unit rate per FTE from this adjusted hourly unit rate.

Table 7.5: Adjusted corporate overhead and indirect cost unit rate for additional resources ($2009-10)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Hourly unit rate	$29	$21.75	$21.75	$21.75	$21.75	$21.75
Hours per FTE	1,500	1,500	1,500	1,500	1,500	1,500
Efficiency gains		4.00%	8.16%	8.16%	8.16%	8.16%
FTE unit rate	$43,500	$31,320	$29,963	$29,963	$29,963	$29,963

Note: NOW has calculated the efficiency gains for 2011-12 onwards in a compounding fashion - (1+.04)*(1+.04).

It is recommended that for future purposes, NOW should develop a better understanding of the nature of its corporate overheads and indirect costs in order to determine the amount of fixed and variable costs involved. In undertaking this, it will provide NOW with greater flexibility when incorporating its corporate overheads and indirect costs into its internal costing models.

7.5 Review of forecast additional FTEs

The most significant component of NOW's forecast expenditure relates to the cost of FTEs, with the increase in expenditure related to NOW's request for additional FTEs over the forecast regulatory period.

Proposed increase in FTEs

The following table provides details of NOW's proposed number of additional FTEs over the forecast regulatory period, as well as the total number of FTEs.

Table 7.6: NOW's proposed additional and total number of FTEs for forecast regulatory period

	Base	**Additional (Cumulative)**				
	2009-10	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*2014-15*
Number of additional FTEs to base level		11	28.5	47.5	63	68
Total FTEs	256	267	285	304	319	324

In determining the additional FTEs required, NOW was required to firstly establish the base level of FTEs from which the additional FTEs would apply. The methods used by NOW in determining this base level of FTEs are discussed in Chapter 3.

In determining whether the additional number of FTEs requested by NOW is efficient, we sought to:

- assess the basis used in NOW's decision-making process for these additional FTEs.
- draw on insights gained from our detailed analysis of five activities in Chapter 5 – which examined a range of criteria to assess whether NOW is using least-cost methods to deliver services and whether it is providing a level of service that is efficient; and
- assess the degree to which NOW has made explicit provision for productivity gains within its organisation.

Basis of decision making around the need for additional FTEs

Chapter 3 highlighted the processes undertaken by NOW in determining the level of FTEs to be proposed through this IPART review process. Primarily this centred around reducing the NOW Directors' requested/forecast resources by 20 per cent, and then smoothing out the increase in FTEs over the regulatory period.

NOW advised that it reviewed the increase in resources requested by Directors and accepted the reasons provided by Directors for the requested increases, however it deemed the overall increase unacceptable from a pricing perspective. This led to the reduction in overall additional FTE requests.

During the process of the review, there has been no clear evidence of any business cases undertaken to determine whether the initial requested FTE increases were efficient and required.

No evidence was provided to us demonstrating the reasoning behind the number of additional FTEs each year, nor does there appear to be any consideration to whether these additional levels of resourcing are efficient. Rather, the additional resources requested by each Director have been rationalised in order to fit into these 'caps' of additional FTEs each year.

Generally, we would expect that within a large organisation with a portfolio of responsibilities, some areas would have cyclical or "once-off" obligations that would result in a reduction in the required FTEs within those divisions following the completion of these obligations. However, apart from an example of redeployment of staff from water plan implementation to water sharing plan development, there was no other clear evidence presented of reallocation of resources across existing activities, and netting of savings in some areas to reallocate FTEs to new activities (whereas for historical activities it was clear that the actual distribution of FTEs to activities has shifted over time from that originally proposed by NOW and approved by IPART).

NOW appears to be of the view that no (or at least very few) obligations will 'fall away' over the regulatory period, potentially freeing-up resources to be redeployed within NOW.

7.6 Consideration of potential productivity gains

NOW has not explicitly factored in any potential productivity gains throughout the proposed regulatory period, or become less resource-intensive, for its direct costs associated with its activities.

The only explicit productivity gains that have been assumed by NOW relate to the assumed 4 per cent efficiency gains in 2010-11 and 2012-13 for corporate overheads. In additional information, NOW outlined that the costs of labour had been rising by more than inflation over the current period, and by not adopting a real increase in labour costs NOW was applying an implied efficiency gain.

NOW states that labour wages have been increasing faster than inflation, however an assessment of the average remuneration costs actually incurred by NOW shows these costs per FTE have been increasing at a rate lower than inflation. This assessment was based on internal models provided by NOW that outlined the total remuneration costs for each year. The following shows the actual increase in average remuneration costs per FTE incurred by NOW.

Table 7.7: Actual increase in NOW's remuneration costs per FTE

Period	Percentage annual increase
2007-08	1.7%
2008-09	2.5%

In considering any potential productivity gains to be factored into NOW's forecast operating expenditure, consideration has been given to the potential upward pressure on NOW's remuneration costs.

The application of an on-going efficiency gain (or target) for future operating expenditure is a practice adopted by regulators to imply competitive pressures on a regulated business' operations to seek efficiencies. It reflects an expectation of continuing realisation of efficiencies in across industries, such as through the adaption of new technologies or process innovation.

As there is no competitive market for water resource management in NSW, NOW has no competitive pressures to reduce costs or improve the efficiency or effectiveness of its operations. Therefore the imposition of these efficiency pressures through the regulatory framework could be seen as a method of 're-creating' this type of competitive environment.

In the parallel cost review for State Water, IPART's expenditure review consultants derived an annual efficiency parameter based on

an analysis of efficiency benchmarks from other regulated (urban/bulk) water services providers.

The efficiency parameter for State Water was set at 0.8 per cent per annum, on top of which a ‘catch up’ element of 1.2 per cent was added (though recommended to be phased in over 2 years).

By 2014-15, IPART’s expenditure review consultants proposed for State Water a cumulative efficiency adjustment of 7.2 per cent over four years, reflecting the additive effect of the ongoing and catch-up efficiency parameters. However, after netting-off State Water’s proposed and accepted efficiency initiatives, this translated to a net reduction of 1.3 per cent from the operating expenditure proposed by State Water to IPART for that year.

Consideration of this benchmark for NOW needs to have regard to the different business environment and basis on which NOW’s cost submission has been developed and reviewed. We consider an ongoing efficiency parameter of 0.5 per cent per annum is a reasonable benchmark for NOW. It reflects the different operating environment and business functions of NOW as compared to State Water, and acknowledges also the additional specific adjustments proposed in our review.

7.7 Recommended adjustments to forecast expenditure

On the basis of our assessment of NOW's proposed activities and service levels, a number of adjustments are recommended to the forecast expenditure levels for the five year period to 2014-15. These adjustments are made relative to the recommended revised costs for the base year (2009-10).

- An ongoing, annual efficiency improvement of 0.5 per cent is recommended — which reflects an expectation that NOW should be able to make continuous improvements to its service delivery based on its current FTE resources (including, but not limited to, staff productivity improvements, streamlining of administrative tasks and reallocating resources from under-performing parts of the business).
- An adjustment to the corporate overhead and indirect cost unit rate to remove inconsistencies between the historical accounts and forecasts with respect to the assumed annual number of hours per FTE. The correction of this inconsistency results in a $1,000 reduction in the unit overhead rate per FTE.
- With the introduction of additional resources throughout the upcoming regulatory period, the use of a constant unit rate of $29 per FTE to recover corporate overhead and indirect costs could lead to an over-recovery of these costs (given that some overheads are relatively fixed). Therefore we recommend a reduction of the unit rate by 25 per cent to be applied to all additional resources through the five year period to 2014-15.
- A further reduction of approximately $800,000 in NOW's corporate overhead costs (by 2014-15), to bring the overhead cost proportion into line with the NSW Government's *Council on the Cost and Quality of Government* benchmarks for corporate overheads.
- We further recommend that the additional staff resources sought by NOW be reduced by 20 per cent across the board to account for:
  - The scope for efficiency and productivity gains to be achieved in delivering the additional services;
  - The expectation that some resources should be freed up from existing activities to service new and emerging areas of core business (for example, the transition from Water Sharing Plan development to operational aspects of these plans); and
  - Concerns about the lack of clear business cases to support the proposals for additional resources and the absence of documented strategic decision making processes.
- In making the 20 per cent reduction to additional FTEs, we have also removed the variable component of corporate

overheads (75 per cent) for each FTE. The additional FTE profile proposed by NOW has been retained (see Table 7.8).

Table 7.9 contains a summary of these adjustments and how they affect expenditure. The combined impact of the adjustments is to reduce NOW's total forecast expenditure by 13.1% by the year 2014-15.

It is the aggregate of these operating cost adjustments which is most relevant when comparing operating cost adjustments across agencies, and on this our proposed cost adjustments are similar, if not slightly more aggressive, than those for State Water.

Table 7.8: Adjusted additional resources (FTEs)

(FTEs)	2010-11	2011-12	2012-13	2013-14	2014-15
NOW's proposed additional resources	11	28.5	47.5	63	68
Adjusted additional resources	8.8	22.8	38.0	50.4	54.4

Table 7.9: Recommended operating expenditure for 2010-11 to 2014-15 ($2009-10, '000s)

($'000)	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Proposed operating expenditure ('000s)	48,809	50,180	53,913	56,807	59,036	59,797
Reduction for inconsistencies in overhead unit rate	-245	-245	-250	-267	-280	-285
Reduction due to business administration	-176	-175	-173	-173	-173	-173
Reduction due to Metro Water	-475	-470	-465	-465	-465	-465
Reduction of unallocated FTEs	-2,481	-2,458	-2,433	-2,433	-2,433	-2,433
Reduction due to 20% reduction in new FTEs		-295	-758	-1,263	-1,675	-1,808
Reduction due to fixed overhead costs for additional FTEs		-92	-228	-380	-503	-543
Reduction in corporate overheads to meet benchmark target of 12% of total operating costs by 2014-15		-205	-410	-615	-820	-820
Total reduction in operating expenditure	-3,377	-3,940	-4,716	-5,595	-6,350	-6,527
Adjusted operating expenditure	45,432	46,240	49,197	51,212	52,687	53,270
Reduction due to efficiency adjustment of 0.5% p.a. for forecast period		-231	-491	-764	-1,046	-1,319
Recommended operating expenditure	45,432	46,009	48,706	50,448	51,641	51,952
Percentage reduction in total operating expenditure	-6.9%	-8.3%	-9.7%	-11.2%	-12.5%	-13.1%

8 Insights from benchmarking analysis

8.1 Introduction

A key principle adopted by IPART in regulating bulk water prices is that water charges should be based on the efficient economic costs of providing the relevant services. In determining NOW's revenue requirement for setting prices, IPART must establish efficient operating and capital costs that NOW will incur in carrying out its water management functions. These costs may be determined by reference to actual costs previously incurred by NOW, or a review of forecast costs for the regulatory period.

Generally, governments deliver services without the competitive pressures of 'private sector' markets. For this reason, there may be fewer market-based incentives and disciplines for governments to deliver services efficiently. Efficiency in the delivery of government services – such as water management activities – has two key dimensions:

- allocative efficiency – that the right 'mix' and level of activities are undertaken, and that there are no gains to be achieved in refocusing effort/resources across different areas; and
- technical efficiency – that those activities undertaken are delivered at 'least cost', and with the most efficient combination of input resources (labour and capital etc). This includes considerations about whether the right level, intensity and sophistication of inputs are being applied to deliver a particular outcome or service.

Allocative efficiency

The capacity to optimise the allocative efficiency of NOW's activities is somewhat limited as its water management responsibilities and obligations are largely prescribed by legislation and other regulatory obligations. Improvements to allocative efficiency of activities could be brought about by the adoption of different approaches to achieving outcomes and legislative requirements, changes to the scope of any 'discretionary' activities and changes to associated services levels associated with activities (provided these do not compromise achievement of outcomes and legislative requirements).

The extent to which NOW's water management activities are 'appropriate' (rather than necessarily achieving allocative efficiency') is largely considered in Chapter 4.

Technical efficiency

There are two common ways to assess how 'efficiently' a given activity is being delivered.

The first is to use a theoretical or ground-up approach, which involves an examination of what should be possible in terms of the minimum level of resourcing/inputs required to deliver a given level of service. Such assessments are generally not performed as part of regulatory price setting processes. Rather, regulators will consider whether the regulated business has employed sufficient resources in assessing and improving service delivery (and the level of cost savings achieved).

A second method is to compare actual performance statistically against practice observed elsewhere in comparable services, markets or activities (also know as benchmarking).

In regulatory processes, a benchmarking approach is typically used to assess the technical efficiency of a regulated business' activities. It is generally assumed that the regulated businesses will employ ground-up or performance improvement assessments to improve the efficiency of service delivery. These assessments consider not only the costs of inputs, but the way in which activities are undertaken and the potential to improve their delivery (e.g. by changes to businesses processes or the adoption of technology).

The benchmarking approach

Benchmarking is used in this chapter to ascertain whether NOW has comparable input costs to other water resource management agencies for like activities. Benchmarking of water management activities/costs might be undertaken at various levels:

- at an aggregate level, for instance, by comparing NOW's total costs in undertaking water planning and management activities with the costs incurred by other jurisdictions in undertaking similar activities;
- at a functional or output level, such as comparing the costs involved in preparing an 'typical' Water Sharing Plan with the costs incurred by another jurisdiction in the preparation of water management plans; or
- at an activity level, by breaking down functions/outputs into more generic sub-activities, and then comparing NOW's costs against those of comparable activities. These may be completely unrelated to water planning and management activities, but have other general similarities to the specific sub-activity in question.

PwC explored possibilities for adopting each of the above approaches, however, a range of practical difficulties were encountered.

Primarily, finding reasonable and relevant comparator organisations, functions and activities has been difficult. While all state and territory governments and some water businesses undertake water resource management activities, the type and mix of activities undertaken to deliver services can vary. This reflects the unique water resource management issues in each state, as well as the varying legislative/regulatory requirements and policy responses adopted and subsequently the planning and management processes in place.

These variations are most apparent at the aggregate/functional level. For example, in water resource planning processes where the types of activities, level of effort and types of outputs can vary significantly between jurisdictions. Such variations persist down to the more detailed functional and activity levels, although there are some activities which can be considered to be 'uniform' (e.g. licence administration).

Many jurisdictions do not collect and report water resource management activity cost data in a form which can be used for a benchmarking analysis (often reflecting system limitations). Where this data is collected, some jurisdictions will not allow it to be used in a benchmarking analysis. Where data is available, it is often specified differently (e.g. activity codes vary, different levels of aggregation/disaggregation occurs) which makes the comparison of the costs of activities between jurisdictions difficult.

Activity cost data can also vary from year-to-year reflecting the priorities of the Department (and broader whole-of-government budgets), planning cycles (i.e. review of water resource plans) and the provision of special and external funding for specific projects. This makes the estimation of 'typical' benchmark costs difficult.

This benchmarking analysis has focused on the identification of costs for discrete 'like' activities undertaken by comparator entities where sufficient and robust information is available.

Benchmarking analysis was performed for the following activities:

- groundwater quantity monitoring (bore observation and maintenance);
- licence compliance; and
- licence administration and water consents transactions.

A number of other activities were also examined, however, benchmarking analysis could not be performed due to differences in the activities being performed (aggregation/disaggregation of activities) and inadequate cost data. While some aggregate cost information was collated and examined, it could not be analysed in such a way as to produce meaningful results as to the efficiency of government agencies in undertaking these activities. The other activities examined included:

- surface water quantity monitoring;

- water sharing plan development; and
- operational planning.

8.2 Groundwater quantity monitoring

Groundwater quantity monitoring activities in NSW involve systems design, data collection, data archiving, data analysis, information provision and knowledge transfer, as well as maintenance and operation of structures, vehicles and equipment installed at bore monitoring sites and testing and calibration of hardware and software.

For this analysis, it has been necessary to use the costs for activities C02-01 (groundwater quantity monitoring) and C02-04 (groundwater monitoring assets management) to allow the comparison with activities of other comparator entities.

Two comparators entities were found for groundwater monitoring/maintenance costs –Thiess Services was awarded a service contract for the monitoring and maintenance of the Victorian State Observation Bore Network in South West Victoria, and an 'other resource manager' (this is a comparable water resource manager that is unable to be identified for confidentiality purposes). Benchmarking has been undertaken against the two main cost drivers identified by NOW for this activity: observation bore numbers and FTEs. The results of this analysis are presented in table 8.1, below.

Table 8.1: Comparison of groundwater quantity monitoring costs ($2009-10)

	NOW	Thiess (Victoria)	Other
Bore monitoring and maintenance cost	$2,736,396	$259,621	Confidential
Number of bores	3,448	517	Confidential
Cost per observation bore	$794	$502	$209
Cost per FTE	$112,147	n/a	$166,586

Source: Thiess Contract Information - http://www.old.tenders.vic.gov.au/domino/Web_Notes/eTenders/etdrPublishing.nsf/ContractsByAgency/040A71592A7062F1CA25731000039E7F?OpenDocument. Observation bores numbers - http://www.ourwater.vic.gov.au/monitoring/groundwater/sobn/location-reports?result_14356_result_page=59&root_node_selection=20633&page_asset_listing_14356_submit_button=Go

The results of this analysis show:

- The *aggregate* monitoring and maintenance cost incurred by NOW is larger than either of the comparator entities. This could reflect that:
  - there is 'greater effort' by NOW in groundwater monitoring/maintenance activities (as seen by the inclusion of more 'activity types' in each of the activity

codes), and NOW has a very extensive bore network relative to the number of Victorian bores covered by the Thiess contract;

  - the Thiess contract is possibly for delivery of a smaller set of services relative to the NOW activities,
  - the 'other resource manager' indicated that, to date, it has not placed as much emphasis on groundwater monitoring/maintenance activities.

- NOW has the highest unit cost per bore. This possibly reflects inter-agency differences in the level of service applied to each bore (discussed above). In the case of the 'other resource manager', costs may be lower because this agency has a more extensive network of bores than the other two agencies – thus possibly leading to some economies of scale with respect to fixed costs.
- The Thiess contract was won via a competitive tendering process, hence there were likely to be competitive pressures to reduce price (cost to the agency).
- The cost per FTE for NOW is lower than the 'other resource manager' though this difference cannot be easily explained.

8.3 Licence administration and water consents transactions

Each jurisdiction charges fees for licence transactions. While this information was collated in the course of the benchmarking analysis, a comparison of the fees is not particularly informative because each jurisdiction uses a different method of setting the fees. In some cases, the fees are not designed to recover 100 per cent of direct costs. In other cases, all direct costs may be recovered but not overheads. Therefore, differences in fees between jurisdictions do not necessarily provide a measure of the comparative efficiency of each water agency at administering licence transactions.

This being the case, an alternative approach was used for benchmarking NOW's licence administration and transaction costs. Licence administration (C09-01) includes the maintenance of surface water and groundwater consents integrity, administration of access licence, approvals, trading and environmental water registers and systems development and maintenance of procedures. Water consents transactions (C10-01) involves the processing of dealings, assessments, change of conditions and new applications for water licences and approvals undertaken on a fee for service basis.

The costs for these activities are separated by NOW for the purpose of calculating transaction fees. Licence transaction fees are based on the direct costs of administering water consent transactions (C10-01), while the mostly indirect and overhead costs of license administration (i.e. C09-01) are recovered through water resource management charges. Separate cost estimates of direct and indirect costs/overheads were not available for the other jurisdictions, so in

order to allow the costs of all three jurisdictions to be compared on a like-for-like basis, NOW's costs for C10-01 and C09-01 were combined to form an aggregate 'administration cost'.

In this analysis, benchmarking has undertaken against the Department of Water (Western Australia) and an 'other resource manager'. Total licensing costs of each agency are expressed in terms of $/licence on issue and $/FTE. The results are presented in Table 8.2, below.

Table 8.2: Comparison of licence administration and water consent transaction costs ($2009-10)

	NOW	DoW	Other
Administration cost	$8,228,163	$6,590,594	Confidential
Number of licences	36,969	11,466	Confidential
Cost per licence	$223	$575	$366
Cost per FTE	$109,958	$86,332	$88,769

Source: DoW cost and FTE information: DoW Submission to the ERA Inquiry (June 2009), DoW licence numbers: National Water Markets Report 2008-2009 prepared by the National Water Commission. Licence numbers for all jurisdictions exclude stock and domestic licences. For NOW, the licences included in the analysis are regulated, unregulated and groundwater licences in 'highly managed' areas.

The results of this analysis shows:

- The *aggregate* administration cost incurred by NOW is approximately in the middle of the cost range, based on the other two comparator entities. It should be noted that the costs for the 'other resource manager' incorporate the costs of some additional activities related to approvals activities for water planning purposes. As such, this will have inflated the cost per licence and cost per FTE indicators.
- The unit administration cost per licence incurred by NOW is below the values for the comparator entities. As discussed above, it is likely that the cost per licence for the 'other resource manager' is lower than that reported in the table due to the inclusion of some additional activities. The comparatively high cost per licence for DoW may be due to the inclusion of a disproportionately higher level of fixed costs related to system development and maintenance activities, both of which are not directly dependent on the number of licences being administered.
- The cost per FTE for NOW is higher than the comparator entities although not significantly so.

8.4 Compliance

Compliance activities in NSW (C09-03) involve the administration of monitoring activities and surveillance to check compliance with consent transactions, enforcement and prosecution activities, litigation against licence holders and dissemination of information on

rights, responsibilities and consequences for non-compliance with consent conditions.

In NSW there was a significant decline in compliance costs during the regulatory period ending 2009-10. NOW has indicated that it will increase effort in future years as greater incidence of non-compliance is occurring due to the drought (i.e. water theft). Consequently, it has been difficult to find a 'typical' compliance cost spend for NOW. The approach adopted for this indicator has been to use 2006-07 costs indexed to 2009-10, and using licence numbers for the same year.

Two comparator entities were found for compliance costs – the Department of Water (Western Australia) and an 'other resource manager'. In this analysis, benchmarking has undertaken against the two main cost drivers identified by NOW for this activity: licence numbers and full time equivalents. The results of this analysis are presented in Table 8.3, below.

Table 8.3: Comparison of compliance costs ($2009-10)

	NOW	DoW	Other
Total compliance cost	$2,672,454	$1,172,607	Confidential
Number of licences	36,969	11,466	Confidential
Cost per licence	$72.29	$102.27	$57.07
Cost per FTE	$170,437	$234,521	$91,256

Source: DoW cost information: DoW Annual Budget figures pro-rated by FTE's for compliance and enforcement activities. Note that some underestimation may occur due to these activities being included in multiple codes. DoW FTE's information: DoW Submission to the ERA Inquiry (June 2009), DoW licence numbers: National Water Markets Report 2008-2009 prepared by the National Water Commission. Licence numbers for all jurisdictions exclude stock and domestic licences. For NOW, the licences included in the analysis are regulated, unregulated and groundwater licences in 'highly managed' areas.

The results of this analysis show:

- The *aggregate* compliance cost incurred by NOW is larger than either of the comparator entities although this differential is generally in proportion to the number of licences managed and FTE's employed to undertake compliance activities.
- Unit compliance cost per licence incurred by NOW is towards the middle of the range relative to the other comparator entities. From available information it is not possible to explain the large variation in costs, however a contributing factor is likely to be the mix of licences which make up the total number of licences used in this calculation. Specifically, the 'other resource manager' includes a high number of licences for which there is low overall compliance effort. The inclusion of these licences is likely to have brought the cost per licence figure down for this comparator. Furthermore, the unit cost comparisons do not allow for differences in the rigour and quality of compliance outcomes.
- NOW's compliance cost per licence is likely to increase significantly as NOW increases its compliance effort

(assuming licence numbers do not change). Based on future cost projections, there may be as much of a doubling of the cost per licence.

- The cost per FTE for NOW falls within the upper and lower range set by the comparator entities. The variation between NOW and the Department of Water is likely to reflect the differences in the complexity and level of effort required for compliance activities or the allocation of staff to these activities.

8.5 Conclusion

The construction of costs benchmarks has been problematic due to difficulties in finding appropriate and relevant comparator organisations, functions and activities. This benchmarking analysis has focused on the identification of costs for discrete 'like' activities undertaken by comparator entities where sufficient and robust information is available. It should be noted that there are a number of factors impacting upon the robustness of the analysis. These relate to the use of:

- a limited number of comparator entities;
- actual versus budget cost data;
- cost data from different years;
- point estimates of cost data (i.e. single years versus averages across years); and
- estimates of costs (e.g. derived from aggregate costs using a proportion of total FTEs engaged in an activity).

Despite these limitations, it has been possible to construct some reasonable benchmarks for the costs of selected NOW activities. However, care needs to be taken in interpreting the benchmarking results. The benchmarks presented above are comparisons of unit input costs as opposed to cost per unit of outcome delivered. Therefore, no allowance is made for differences in the standard of outcomes delivered. For example, the effectiveness of the compliance system at reducing water theft, the turn around time for processing transactions or the quality standard to which bores are maintained. Notwithstanding this, if one agency has a comparatively high unit input cost for an activity, this would signal the possibility that the agency is performing the activity inefficiently – all else being equal. Further investigation would then be needed to determine the cause of the high unit costs and to check whether higher quality outcomes are responsible for the higher costs.

Another limitation of the benchmarks presented above is the possibility that all agencies are performing equally poorly. That is, if unit costs are approximately the same for all agencies, this does not necessarily mean that NOW is efficient. The comparison of these

benchmarks against external benchmarks (for example, non-water agencies) and the results of ground-up cost efficiency assessments are required to examine the overall efficiency of NOW's activities.

It must also be remembered that the benchmarks represent 'point in time' estimates of input costs. Thus, for example, in the case of the inter-agency comparison of compliance costs, while NOW may be proposing to increase its spend per licence, we do not know whether the other agencies are following a similar trend. A longitudinal assessment of benchmarks over time would therefore be more instructive to understand how NOW ranks against other agencies. Unfortunately time series data could not be obtained for this analysis.

9 Review of performance indicators

9.1 Overview

In regulating prices, it is necessary to ensure that the NOW is accountable for its activities and expenditures. That is, there needs to be a mechanism to assess the degree to which NOW delivers the services identified, at the service levels agreed and within given determined expenditures levels. It is generally accepted that performance indicators provide a suitable mechanism for this purpose.

To this effect, in its 2006 price determination, IPART stated that, '*both State Water and DNR need to develop and publish performance indicators and measures so that stakeholders can monitor delivery against forecast outputs and outcomes. Output performance indicators and measures will help ensure that the agencies are more accountable for their expenditure. As a starting point, the Tribunal has included in this determination a schedule of reporting obligations in response to the proposal by the NSW Irrigators' Council. The Tribunal expects State Water and DNR to report this information to the Tribunal for publication on its website*.'

Despite the above requirement, NOW has failed to comply with the reporting requirements of the 2006 Determination in that its 2006-07 and 2007-08 reports to IPART were submitted late; and then revised reports for both years, and also 2008-09, were not submitted until January 2010 rather than annually as requested. We understand that over the Determination period, IPART and stakeholders have written to NOW and the Minister for Water to express disappointment in the timeliness and completeness of NOW's compliance with the reporting obligations included in the Determination.

In its current submission to IPART, NOW has proposed a suite of performance indicators and measures which it intends to report on over the course of the coming pricing period, to enable IPART and other stakeholders to monitor its performance in delivery of forecast outputs and outcomes.

This section provides a high-level summary on the purpose of performance indicators and best practice characteristics of performance indicators, and then seeks to discuss the relative strengths and weaknesses of NOW's proposed performance indicators and output measures in relation to the 'SMART criteria' adopted by the ANAO. An overview of what comparative service providers are reporting on is also provided. Lastly, we recommend some performance indicators and measures that will enable quantifiable assessment of NOW's efficiency and performance in delivery of its monopoly services by IPART and NOW's other stakeholders over the period 2010-11 to 2014-15.

9.2 What is the purpose of performance indicators?

In many developed jurisdictions there has been a recent increase in focus on reporting on and measuring the performance of public organisations. Indeed, a 2005 survey published by the Organisation for Economic Co-operation and Development (OECD) reported that:

'Over the past fifteen years, the majority of OECD governments have sought to shift emphasis of budgeting and management away from inputs towards a focus on results, measured in the form of outputs and/or outcomes. While the content, pace, and method of implementation of these reforms varies across countries and over time, they share a renewed focus on measurable results. Today, nearly three-quarters of OECD countries report having non-financial performance data in their budget documents.'[23]

Consequently, it is widely recognised that there is a need to develop performance indicators that provide a balanced, appropriate and accurate measure of an organisation's performance through the accurate and timely measure of activities and outcomes of these activities.

The main aim of performance indicators is to assist an organisation's strategic and management decision-making and to provide relevant and appropriate information to stakeholders. This is supported by the ANAO, which defines the purpose of performance indicators as '*to provide information (either qualitative or quantitative) on the extent to which a policy, programme, initiative or output is achieving its objective*.'[24]

Performance indicators are measures that allow users to assess the extent of progress toward, and achievement of, organisational objectives. Whether indicators are qualitative or quantitative, they must be capable of reliable measurement in order to be useful.[25] 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, store and manage to provide a comprehensive and balanced coverage of outcomes and outputs.[26]

Performance indicators can relate to any aspect of an organisation's operations, from its inputs such as staff resources, through to its outputs such as the services it provides. Performance indicators can

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[23] Curristine, T., Performance Information in the Budget Process: Results of the OECD 2005 Questionnaire, OECD Journal of Budgeting Volume 5 No.2, OECD 2005 p2.

[24] Australian National Audit Office Audit Report No. 23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p. 11.

[25] Victorian Auditor-General Office, Performance Reporting in Local Government, June 2008, p. 10

[26] Australian National Audit Office Audit Report No. 23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p. 56.

also be developed to measure achievement against intended outcomes, such as improved river health or development of groundwater modelling.

It should be recognised that measuring performance, particularly in the public sector, can be challenging and developing an appropriate mix of performance indicators to provide stakeholders with balanced coverage of performance can be difficult. A recent audit on Annual Performance Reporting undertaken by the ANAO identified some important challenges facing agencies. These include:[27] integrating annual reporting into broader agency performance management; providing concise, but sufficient, information in reports; establishing appropriate measures and targets; and, addressing particular sensitivities in the presentation of information.

9.3 Best practice

There is much to gain for an organisation striving for better performance reporting, built on robust frameworks that are directly linked to organisational plans, budgets and strategies. When an organisation is able to draw on sound, accurate and reliable information, decision-makers have a powerful tool to motivate their teams and to help communicate their vision to stakeholders. They can also monitor progress; steer the agency more effectively; and, promote their achievements more convincingly.[28]

When establishing performance indicators, it is critical that an agency develops a balanced set of performance indicators that address all key aspects of its performance.[29] In addition to this, performance indicators should be a combination of quantitative and qualitative measures, incorporate a range of better practice characteristics, and be cost-effective to collect, analyse and report against. Table 9.1 outlines the better practice characteristics for performance indicators developed by ANAO.

[27] Department of Communications, Information Technology and the Arts, Better Practice in Annual Performance Reporting, 2004, p. 3.

[28] Department of Communications, Information Technology and the Arts, Better Practice in Annual Performance Reporting, 2004, p. 3.

[29] Australian National Audit Office Audit Report No. 23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p. 25.

Table 9.1: Better practice characteristics for performance indicators

Specific	Clear and concise to avoid misinterpretation of what is to be achieved.	*These five characteristics are collectively known as the 'SMART criteria'*
Measurable	Can be quantified and results can be compared to other data and able to show trends if measured over time.	
Achievable	Practical, reasonable and credible given available resources and expected conditions.	
Relevant	Informative and useful to stakeholders having regard to the context in which the agency operates.	
Timed	Specifies a timeframe for achievement and measurement.	
Benchmarks	Reference to appropriate standards for comparison where possible.	
Targets	Includes an indication of the desired level of achievement.	

Source: ANAO, ANAO Audit Report No23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p57.

The better practice characteristics for performance indicators adopted by the ANAO, referred to here as the 'SMART criteria', are designed to ensure that performance indicators developed by organisations are specific, measurable, achievable, relevant, timed, refer to appropriate benchmarks where possible and include a desired level of achievement. By considering the above elements, an organisation can assist strategic and management decision-making, and provide relevant and appropriate information to stakeholders.

Whether performance indicators are financial or non-financial, it is important that they are all designed to provide the agency with information of sufficient quality that can be relied on by both agency management and stakeholders in making judgements about the organisation's performance. The ANAO states that where relevant, indicators should also assist in comparing performance across organisations.[30] This last point of comparing performance across agencies is particularly pertinent in the water sector.

In circumstances where external factors impact on organisational performance, such as reduced revenue from water users as a result of restricted water availability, explanatory and contextual information should be provided to assist stakeholders' understanding of the performance information reported.

Information is also more likely to be useful and informative for decision-makers when performance information used to meet external reporting obligations is based on the same information used to meet agency management performance reporting requirements.[31]

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[30] Australian National Audit Office Audit Report No. 23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p. 57.

31 Ibid, p 57-8.

For good governance, it is also important that performance information used for external reporting requirements is consistent with internal planning, budgets, analysis, and other internal performance reporting.[32]

Consideration should also be given to the cost of collecting and analysing performance information, and establishing a systematic approach to reviewing indicators to ensure they remain relevant and informative to stakeholders (both external and internal).

In addition to the 'SMART criteria' outlined above, an organisation should also try to balance lead and lag indicators when developing performance indicators. A lead indicator can encourage organisational behaviour or processes that enhance the probability of a positive outcome. A lag indicator measures the actual outcome after it has occurred, providing an indication on how the organisation has performed against a stated target.

9.4 Performance indicators and measures proposed by NOW

The Activity Description framework (the framework) developed by NOW and outlined in Appendix 1 of NOW's submission to IPART describes NOW's eleven water management activities. The framework provides a description for each activity undertaken by NOW, and includes the identification of specific outputs, output measures, performance measures and outcomes for each activity. The framework was developed by NOW, and has been revised to take account of comments made by IPART as part of the 2006 Bulk Water Price Review.

While the framework does provide stakeholders with a high degree of detail relating to the activities being undertaken by NOW, we have identified some areas of concern relating to the framework's ability to allow stakeholders to assess the extent of progress toward, and achievement of, organisational objectives. This is particularly evident in relation to the efficiency and performance in delivery of monopoly services. Where reasonable, using the 'SMART criteria' for performance indicators as outlined by the ANAO[33], we have identified a number of deficiencies relating to the performance indicators and output measures proposed by NOW.

Specific

In most instances, the performance indicators and output measures proposed by NOW are clear in communicating what is to be achieved. This was particularly the case where percentage-based

[32] Australian National Audit Office Better Practice Guide, Public Sector Governance, Volume 1, July 2003.

33 Australian National Audit Office Audit Report No. 23 2006-07: Application of the Outcomes and Outputs Framework, February 2007, p. 57.

targets are used, for example the targets proposed when discussing plan performance monitoring and reporting (activity C06-03).

However, there are a number of activities where it is not clear what, exactly, is to be achieved. For example, for resource assessments (activity C05-02), the target performance indicator is stated as 'surface water models robust enough to test the range of scenarios that might be investigated'. It is not clear to the external reader how many surface water models are required, how many scenarios might be investigated, what is the meaning of 'robust' in this instance, or how the scenarios might differ. While the proposed indicator may be relevant and clear to the internal project team within NOW, it is not clear to an external stakeholder what NOW is proposing to achieve. Given the broad audience of NOW's proposed performance indicators, it is crucial that external stakeholders are clear on what NOW is proposing to achieve.

Another example relates to water sharing plan development (activity C07-01), where the stated target performance indicator is "100 per cent of Basin WSP". It may be inferred that this means that the development of all WSPs is to be completed; however, this is not clear. Other examples where the clarity of proposed performance indicators could be improved include those for surface water quality monitoring (activity C01-03), water sharing/water management modelling (activity C05-01), groundwater modelling (activity C05-04), and environmental water planning (activity C07-03).

In many instances there is no mention of the cost, quantity or quality to which activities or output measures will be completed. Without this information, it is impossible to accurately track and assess NOW's efficiency and performance in delivering its monopoly services and the proposed water management activities.

The framework developed by NOW allows for multiple outputs to be listed against each water management sub-activity. However, in most instances only one output has been chosen to be measured. For example, for financial administration (activity C11-01) three outputs are listed (water billing and payment processing; customer account queries; and annual compliance returns to IPART). However, the output measure selected by NOW relates to the number of licences billed. There is no mention of customer satisfaction, how long it takes to process water payments, or the efficiency in preparing annual compliance returns. This example is indicative of many of water management activities proposed by NOW.

This approach creates a large degree of confusion for the external reader in terms of what is being measured, and why. This also relates to the relevance of output measures and performance indicators, discussed below.

In relation to performance measures related to customer satisfaction, NOW has acknowledged that it has not proposed any measures, stating that '*There is currently no obligation to provide this information and no on-going system within the Office* [NOW] *to*

provide complaints monitoring across all offices and aspects of the Office business. The Office is subject to the potential complaints processes under the Energy & Water Ombudsman NSW'.[34]

Measurable

In many instances, performance indicators proposed by NOW are based on the completion of an activity, such as monitoring or metering a site, or completing a water sharing plan. In the case of quantifiable performance indicators/targets, this has often involved simply increasing the target beyond the current rate. For example, in relation to environmental water management (activity C06-05) the percentage-based target performance indicators have all been increased from the current rate.

The weakness of this approach is that the measure provides no indication of the impact of the activity, meaning the relationship between the activity and its relevant strategic objective can only be inferred, and its effectiveness cannot be determined. It is therefore not possible to determine the extent of progress toward, or achievement of, the NOW objective to which the activity relates from a measure.

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. As such, many of the performance indicators and output measures proposed by NOW do not provide an indication of the performance of an activity in meeting its objectives.

Achievable

In relation to the collection of individual performance data, and ignoring the issue of cost, the proposed performance indicators and output measures appear to be practical, reasonable and credible. There is no reason why, given NOW's available resources and expected operating conditions going forward, that the proposed performance indicators and output measures are not achievable.

However, NOW has proposed a total number of 35 water management sub-activities with related output measures and performance indicators. This is a large number of sub-activities requiring regular monitoring and reporting that would require a significant financial and human resource cost. As noted above, the issue of cost does not seem to have been considered by NOW in developing the proposed performance indicators and output measures. Furthermore, at present NOW only reports externally on nine of these measures and indicators.

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[34] NOW, Response to Draft PwC/Halcrow Review of Office of Water's Water Management Expenditure, undated, p20.

The measures that NOW currently reports are shown in the following table:

Table 9.2: Externally reported performance indicators

Activity Code	Measure/Indicator	Where reported
C01	Surface water gauging sites and management	Annual Report
C02	Groundwater gauging sites and management	Annual Report
C06-01	Water management implementation – Implementation Plans (IPs)	Annual Report
C06-01	Available Water Determinations - timeliness	Reported quarterly to NOW Executive. AWD communiqués are available on the internet and circulated to a mailing list of external customers.
C07-01	WSPs – number gazetted	Reported quarterly to NOW Executive. Reported in quarterly State Plan reports Annual Report
C07-04	Cross border /national commitments – % compliance with MDB cap	Annual Report
C09-02	Licence conversion etc – access licences recorded on public registers	Annual Report
C09-03	Compliance – audits and ABNs actioned	Reported quarterly to NOW Executive Annual Report
C10-01	Water consents transactions	Annual Report

In addition, NOW reports on a number of other measures through the State Plan and its annual report that have not been included in the measures and indicators it has proposed for the purposes of monitoring its efficiency and performance in the delivery of its monopoly services.

The large number of proposed performance indicators and output measures, combined with the not insignificant cost of monitoring and reporting, may impact on NOW's ability to achieve the stated performance indicators.

Relevant

A key test of relevance is the extent to which performance indicators and output measures used for each activity relate back to the strategic objectives of an organisation.

The framework developed by NOW is grouped according to the eleven costing groups which cover NOW's water management activities. NOW has linked each sub-activity with outputs, output

measures and performance indicators. However, from the information provided for our review, there is no obvious link between the water management activities, the output measures and performance indicators with the organisational strategic objectives of NOW.

Another test of relevance is to ensure that performance indicators and output measures relate logically to an organisation's proposed core activities. In its submission to IPART, NOW claims that for the 2010 to 2013 period 'the Office requires an additional 47.5 direct operational FTEs by 2013 to undertake the core new activities that will arise.'[35] However, there is often little clear link between the proposed sub-activities and performance indicators, and the proposed new core activities requiring additional expenditure as claimed by NOW. This is of particular concern to the review.

For example, in relation to the water management activity 'surface water monitoring' NOW claims that an additional 16.8 FTEs are required by 2013. NOW states that the additional FTEs are required to support and undertake a range of activities, including:

- operating and maintaining the expanded hydrometrics network;
- meeting new national gauging standards;
- supporting the upgrade and transfer of data to the BoM's national database;
- undertaking additional surface water monitoring;
- developing regionally-based water quality targets; and
- upgrading the surface water quality database.

As the framework currently stands, there is often little direct links between the proposed new sub-activities requiring additional funding and the suggested performance indicators and output measures. For example, there is no explicit reference to the operation and maintenance of the expanded hydrometrics network, the development of regionally-based water quality targets, the meeting of new national gauging standards, and upgrading the surface water quality database in the outputs, output measures or performance indicators. At best, these can only be inferred by the reader. The lack of direct links between the new core activities and the proposed performance measures and output measures also makes it difficult to determine the extent of progress toward their achievement.

The water management activity of water modelling and impact assessment provides another example of where the relevance of proposed performance indicators and output measures as they relate to new core activities claimed by NOW is not immediately

[35] Review of Bulk Water Prices, New South Wales Office of Water Submission to IPART, December 2009, p. 39.

clear. New core activities claimed under the water modelling and impact assessment activity include (among others):

- developing climatic modelling applications to assess risk to water users of reduced water availability; and
- developing coastal groundwater models to assess impacts of urban expansion.

However, there is no clear output, output measure or performance indicator relating back to the climatic modelling applications or the groundwater models to assess the impacts of urban expansion. This is also the case for a significant number of NOW's proposed new core activities. Given the potential impacts on future operating costs and bulk water prices as a result of the proposed new core activities, it is essential that the new activities are accurately, reliably and clearly reflected in NOW's proposed performance indicators and output measures.

As noted above, most water management sub-activities have multiple outputs listed. However, in most instances only one output measure has been developed resulting in an unclear relationship between the output measure and the outputs. The weakness of this approach is that the relevance of the output measures and performance indicators as they relate back to the water management sub-activity is not immediately clear to the reader, and in some instances can only be inferred.

In addition, we note that there are no proposed performance indicators relating to the delivery of capital works. The proposed performance indicators and output measures make it impossible to accurately track and assess NOW's efficiency and performance in delivering its proposed capital works program. Furthermore, as identified in Chapter 10, NOW's current asset management and capital planning frameworks currently fall below best practice. We recommend that additional performance indicators be adopted to track the development and implementation of NOW's capital planning and asset management frameworks.

There is a need to improve the relevance of the performance measures and indicators proposed by NOW, in particular when demonstrating the need for additional expenditure.

Timed

In many instances, the timeframe for the achievement of the proposed activity is at the end of the price determination period. The weakness of such an approach is that it provides no indication of performance during the determination period. For large organisations there will invariably be instances where activities and sub-activities will be underperforming and over performing against targets.

The current approach does not seem to provide management with an opportunity to address any such issues, thereby reprioritising

resources between activities to ensure performance targets are met. While we note that in some instances annual targets have been adopted, the use of more annual and cumulative targets (for example in the delivery of WSPs) would provide management and external stakeholders with a more meaningful appreciation of actual performance against targets and a clear basis for planning and implementing performance improvements.

Conclusion

Overall, we are of the opinion that the proposed performance indicators should be modified to better enable the quantifiable assessment of NOW's efficiency and performance in the delivery of its monopoly services. We have identified areas of concern relating to the framework's ability to allow stakeholders to assess the extent of progress toward, and achievement of, organisational objectives.

9.5 What are comparative service providers reporting on?

As outlined in NOW's submission to IPART, NOW's services relate to water management within regulated rivers, unregulated rivers and groundwater sources, and transaction consents for water access, works and water dealings. NOW is responsible for:

- determining how water available during a year is allocated to towns, industry, irrigators, farmers and the environment;
- developing statutory WSPs which set the broader rules for water sharing on a longer-term basis;
- negotiating inter-state and national water agreements and representing NSW interests at water forums;
- approving the extraction and use of water, and setting the policies and procedures for the permanent trade of water entitlements and the annual trade of available water; and
- monitoring water extractions and the quantity, quality, and health of our aquatic ecosystems and evaluating the effectiveness of management strategies.

Due to differences in jurisdictional arrangements and priorities, and organisational structures and responsibilities, it is difficult to directly benchmark the performance indicators of NOW against comparable service providers. In Australia, while there can be a number of similarities between jurisdictions regarding reporting requirements, no two leading state water agencies share the same priorities, responsibilities, governance arrangements or cost structures. However, for the purposes of this review, a brief comparison has been undertaken of a relevant sample of performance indicators from other 'water departments' in Australia with those proposed by NOW. The sample of performance indicators have been sourced from the following State departments:

- Victorian Department of Sustainability and Environment;
- Queensland Department of Environment and Resource Management;
- Tasmanian Department of Primary Industries, Parks, Water and Environment; and
- Western Australian Department of Water.

Table 9.3: Provides a summary of relevant and comparable performance indicators from Victoria, Queensland, Tasmania and Western Australia.

Organisation	Performance Indicator	Unit of Measure
Victorian Department of Sustainability and Environment[36]	Length of rivers where works have been undertaken to improve instream health.	Kilometres per annum
	Length of rivers where works have been undertaken to stabilise bank erosion.	Kilometres per annum
	Upgrade or construction of additional bore sites.	Number per annum
	Percentage of unconfirmed water shares on the water register.	Per cent
	Water information products delivered to support Government's priorities for sustainable water management.	Number per annum
	Compliance with the MDB IGA to maintain a balance in the Salinity Register such that the total of salinity credits is in excess of, or equal to, the total of salinity debits.	Balance
Queensland Department of Environment and Resource Management[37]	Number of meter project areas completed.	Number per annum
	Cumulative number of tradeable water allocations established under WRPs and ROPs.	Cumulative number
	Number of applications/dealings processed regarding water licences.	Number per annum
	Percentage of investigations completed for very high priority notifications of alleged non-compliance with water legislations.	Per cent
	Progress with WRPs and amended WRPs: annual number progressed; cumulative number completed.	Number per annum Cumulative
	Progress with ROPs and amended ROPs: annual number progressed; cumulative number completed.	Number per annum Cumulative
	Number of WRP reviews progressed.	Number per annum
	Percentage of new water licence application/dealings completed in 90 business days.	Per cent
	Percentage of new water licence application/dealings completed in 30 business days.	Per cent

[36] Department of Sustainability and Environment, *Annual Report 2009*, p. 187-8.

[37] Department of Environment and Resource Management, *Annual Report 27 March – 30 June 2009*, p. 20.

Organisation	Performance Indicator	Unit of Measure
Tasmanian Department of Primary Industries, Parks, Water and Environment[38]	Catchments with water management plans in place.	Number per annum
	Total water meters installed.	Cumulative
	Allocations with water meters.	Cumulative
Western Australian Department of Water[39]	Proportion of water resource management areas that are planned appropriate to their water resource category.	Per cent
	Proportion of water resources with licensed allocations that are within the allocation limit.	Per cent
	Percentage of water reform reporting obligations completed within agreed time frames.	Per cent
	Unit cost per regional plan delivered against agreed time frames.	$ million
	Average cost per water resource assessment.	$
	Average cost per water allocation plan completed.	$
	Average time taken (days) to process a licence by water category: category 1; category 2; category 3; category 4.	Days
	Average cost per water licence (all categories)	$
	Total number of licences processed by category group: category 1; category 2. category 3 category 4	Number per annum

A brief review of the performance measures outlined above indicates that, for the most part, they meet the basic principles of the 'SMART criteria'. The performance indicators are clear and quantifiable, appear to be practical and reasonable, and specify a timeframe for achievement and measurement. However, it is difficult to comment on the relevance and the link to strategic objectives of the above performance measures without undertaking a more detailed review of the respective organisations.

Overall, the above performance measures provide the reader with an indication as to the organisations' efficiency and effectiveness (cost, quantity and quality) to in delivering 'water' services. Indeed, it was noted that the Western Australian Department of Water group performance indicators into 'effectiveness indicators' and 'efficiency indicators'. Such as approach assists in providing an indication of the performance of the organisation for the reader.

[38] Department of Primary Industries, Parks, Water and Environment, *Annual Report 2008-09*, p. 28-9.

[39] Department of Water, Annual Report 2008-09, p. 11-3.

While the above performance measures appear to be adequate for their respective owners, it is not appropriate for an organisation to simply 'adopt' the performance indicators and measures used by other organisations. As noted above, 'water departments' across Australia invariably share some similarities regarding roles and responsibilities. However, due to the differences in priorities, responsibilities, governance arrangements or cost structures between organisations, performance indicators and output measures are required to be developed to the specific needs of the organisation in question.

9.6 Recommended performance measures

Based on a review of NOW's proposed future water management costs as outlined in the Chapter 5 of NOW's submission to IPART, and NOW's forecast expenditure by water management sub-activity, we have identified a range of recommended performance indicators for NOW. The recommended performance indicators have been developed to enable the quantifiable assessment of NOW's efficiency and effectiveness in delivery of its monopoly services by IPART. The recommended performance indicators also reflect future management costs and forecast expenditure priorities of NOW.

Given that NOW did not comply with the reporting requirements set by the 2006 Determination, we are aware that it may be difficult for NOW to effectively measure and report its performance against all of our recommended indicators. To this effect, we have highlighted the indicators which we consider to be critical to the assessment of NOW's delivery performance.

Table 9.4 provides a summary of our recommended performance indicators.

Table 9.4: Recommended performance indicators

Activity Code	Recommended Performance Indicator
C01 Surface Water Monitoring	Annual number of new hydrometric network stations installed.
	Cumulative number of new hydrometric network stations installed.
	Proportion of gauging stations monitored 6 times per year in accordance with the new national gauging standards.[40]*
	Proportion of hydrometric station visited for maintenance each year.
	Average cost of operating and maintaining hydrometric stations each year (measured as the total operations and maintenance expenditure on hydrometric stations by NOW divided by the total number of hydrometric stations operated and maintained with NOW funds) *

[40] This requirement is identified in Section 5.3 of NOW's submission (*Review of 2010 Bulk Water Prices*) as a key reason for the increase in FTEs involved in Surface Water Monitoring (C01).

Activity Code	Recommended Performance Indicator
	Number of regionally-based water quality targets developed.
C02 Groundwater monitoring	Proportion of groundwater sources that are actively monitored.*
	Proportion of high extraction aquifers with real-time monitoring.
	Proportion of bore sites visited for maintenance each year.
	Average cost of operating and maintaining groundwater monitoring installations each year (measured as the total operations and maintenance expenditure on groundwater monitoring installations divided by the total number of groundwater installations) *
C03 Surface and groundwater metering	Percentage of Groundwater Entitlement that is metered using a meter which is compliant with national standards (to be measured for each Basin and Coast Areas).*
	Proportion of metered groundwater sites monitored.
	Proportion of surface water extraction sites monitored.
	Percentage of Unregulated Entitlement metered using a meter which is compliant with national standards.*
	Number of metered licences under government management.
C04 Water quality analysis	Number of algal and water chemistry tests completed.
	Average time taken to complete algal and water chemistry tests.
	Average cost of completing algal and water chemistry tests.
C05 Water modelling and impact assessment	Annual number of surface water and groundwater models integrated to improve the assessment of connectivity.
	Average cost of integrating surface water and groundwater models.
	Average time to integrate surface water and groundwater models.
	Average cost of developing and updating models for use in WSP development.
	Number of groundwater models developed for remaining groundwater sharing plans.
C06 Water management implementation	Proportion of Water Management Implementation Plans in place to WSPs gazetted.*
	Proportion of regulated water sources with a monitoring plan.
	Proportion of regulated water sources with an ecological monitoring program in place.
	Average time taken to respond to blue-green algal blooms across NSW.
	Number of Regional Algal Contingency Plans updated.
	Average time taken to update Regional Algal Contingency Plans.
C07 Water management planning[41]	Annual number of WSPs completed and gazetted.*
	Cumulative number of WSPs completed and gazetted.*
	Average cost in developing WSPs.*
	Average time taken to develop WSPs.
	Annual number of existing WSPs reviewed and updated.*

[41] In NOW's *Response to Draft PwC/Halcrow Review of Office of Water's Water Management Expenditure,* it has proposed two additional indicators designed to provide stakeholders with a better understanding of the volume of work undertaken in this activity. The indicators are (1) Operational Planning Instruments Delivered Annually, and (2) Cumulative Operational Planning Instruments Delivered. There may be some value in reporting on these indicators in addition to the critical indicators identified in Table 9.4.

Activity Code	Recommended Performance Indicator
	Cumulative number of existing WSPs reviewed and updated.*
	Proportion of Reasonable Use guidelines published.
	Proportion of Floodplain Harvesting rules published.
	Percentage of valleys that comply with the Murray Darling Basin Cap
C08 River management works	Length of rivers where works have been undertaken to maintain integrity and flow capacity.
	Length of irrigation channels where works have been undertaken to maintain integrity and flow capacity.
	Length of rivers where works have been undertaken to stabilise bank erosions.
C09 Licensing administration	Number of water access licence's recorded on public registers
	Percentage of water access licence's recorded on public register
	Average number of days to review a licence application and make a decision.
	Number of complaints received relating to licensing transactions annually.
	Number of complaints resolved to the satisfaction of the licence holder/applier.
	Number of licence compliance audits undertaken annually.*
	Percentage of licences audited that are compliant with licence requirements.*
	Alleged Breach Reports actioned as a percentage of total Alleged Breach Reports. *
C10 Water consents transactions	Number of water consents applications processed annually.*
	Average number of days to review water consent and make a decision (reported for each different category/type of consent).*
	Average cost per water consent processed. *
	Number of complaints received relating to water consent applications annually.
	Number of complaints resolved to the satisfaction of the consent holder/applier.
C11 Business administration	Number of licences billed annually.*
	Average time taken to process licence bill.
	Average cost per to process licence bill.
	Number of complaints received relating to licence bills annually.
	Number of complaints resolved to the satisfaction of the licence holder/applier.
Capital Expenditure Program	Percentage of capital works completed within the capital plan
	Percentage of capital works completed within time and budget*
Capital Planning and Asset Maintenance Framework	Development and implementation of robust business case preparation guidelines which are consistent with NSW Treasury guidelines for Capital Business Cases
	Proportion of projects with a business case that is compliant with business case preparation guidelines*
	Development and implementation of a robust asset management framework in accordance with NSW Treasury Total Asset Management Guideline.
	Proportion of maintenance expenditure allocated in accordance with

Activity Code	Recommended Performance Indicator
	asset management framework and guidelines.*

Note (*): Indicates those performance indicators that we consider as critical to effective measurement of NOW's delivery performance.

In addition to the above performance indicators, a number of NOW's stakeholders have suggested that NOW also report on its performance in relation to consultation with customers, the annual reporting of financial information, and against targets for transaction processing and annual reporting. NOW has indicated that it is seeking feedback from its stakeholders on their preferred measures for reporting performance of water management activities.[42]

9.7 Conclusions

Many of the performance indicators and output measures proposed by NOW in its submission to IPART do not enable the quantifiable assessment of its performance in efficiently and effectively delivering monopoly services. As such, many of the proposed performance indicators and output measures are of limited value to external stakeholders.

The link between performance information and timelines, cost, quantity, quality, and the achievement of strategic objectives, is in many instances not clear or even provided. In many instances the performance indicators and output measures fail to provide information (either qualitative or quantitative) on the extent to which an activity is achieving its objective.

NOW has not proposed performance indicators relating to the delivery of capital works, which means that it is not possible to accurately track and assess NOW's efficiency and performance in delivering proposed capital works.

We have recommended a range of performance indicators to enable the quantifiable assessment of NOW's efficiency and effectiveness in delivery of its monopoly services by IPART. The recommended performance indicators also reflect future management costs and forecast expenditure priorities of NOW.

[42] NSW Office of Water, *Response to Draft PwC/Halcrow Review of Office of Water's Water Management Expenditure*, undated, p20.

10 Review of capital expenditure

10.1 Overview

In this section of the report we outline our review of the efficiency and prudence of NOW's capital expenditure over the period from 2006-07 to 2014-15.

Our assessment of capital expenditure is based on NOW's 2009 Submission and supporting cost models, together with additional supporting information provided by NOW. In undertaking our assessment of capital expenditure, we have sought to understand NOW's asset management and capital planning framework, and the key drivers of expenditure.

Due to the small size of NOW's capital expenditure program, we have reviewed all of the capital projects from the 2006 Determination and all of the proposed capital projects for the period 2010-11 to 2014-15. We have reviewed these projects in order to gain an understanding of the prudence and efficiency of NOW's historical and proposed expenditure.

A summary of the projects we have reviewed is included in sections 10.5 and 10.6, and more detailed project summaries are included in Appendix D.

Consistent with the terms of reference for this review, our assessment of efficiency has examined 'whether [NOW's] actual and proposed expenditure represents the best way of meeting the community's need for the relevant services'. It involves examining whether the expenditure represents the least cost way of achieving a given outcome.

Our assessment of prudence involves assessing whether, 'in the circumstances that existed at the time, the decision to invest in the asset is one that [NOW], acting prudently, would be expected to make. The prudence test must assess both: the prudence of how the decision was made to invest; and the prudency of how the investment was executed (ie, the construction or delivery and operation of the asset), having regard to information available at the time'.

10.2 Capital projects

NOW is currently undertaking six capital projects with a total value of $26 million (Table 10.1). A seventh project is scheduled to commence in 2011-12 with a value of $8.2 million in the period to 2014-15 (hydrometric network renewals) – which will bring the total to $34.2 million. However, not all these projects are funded (or proposed to be funded) by water charges, as some are funded by third parties. Of the $26 million program, $12.4 million is funded by external sources of funding (from the BoM, for example).

In addition to the projects listed in Table 10.1, the Commonwealth Government has given the NSW State Government in principle approval (subject to due diligence) for up to $408 million of funding to pay for four major infrastructure projects – referred to as State Priority Projects. The projects are:

- Piping domestic and stock supplies;
- Upgrade the accuracy of water metering of regulated rivers;
- Install and upgrade the accuracy of water metering of unregulated rivers and groundwater; and
- Improved management of water on the floodplains through modifications to floodplain structures and extractions.

While these projects would not form part of NOW's regulated asset base for the purposes of pricing, should the projects go ahead, NOW will have a significantly larger capital program than it does today, which heightens the need for effective asset management plans and processes.

Table 10.1: NOW's capital projects

Project	Year commenced	Total budget for project ($ nominal)	Portion funded via water charges ($ nominal)	Non-water charged funded (includes funding by third parties) ($ nominal)	Forecast Expenditure in 2010-11 to 2014-15 ($2009-10)
Groundwater Monitoring	2004-05	9,600	9,600	-	-
Water Extraction Monitoring - Metering and Data Systems	2004-05	2,930	2,930	-	1,096
Corporate Water databases	2004-05	1,500	1,000	500	72
Hydrometric Network Expansion (HNE Project)	2008-09	6,000	-	6,000	2,000
Hydrometric Network Renewals (BOM Backlog Program)	2008-09	3,000	-	3,000	-
Hydrometric Network Renewals (Proposed Future Program)	2011-12	8,280	8,280	-	8,280
Integrated monitoring of Environmental Flows (IMEF)	2004-05	2,930	-	2,930	837
TOTAL		**34,240**	**21,810**	**12,430**	**12,286**

Source: NOW supporting information, and NOW's 2009 submission to IPART.

10.3 Asset management and capital planning framework

Overview

To aid our assessment of the efficiency and prudence of its historical and forecast capital expenditure program we have sought to develop

an understanding of NOW's existing asset management and capital planning framework.

An effective capital planning framework will provide the context and strategic direction for capital planning/investment decision making. It should provide detail on how an organisation aims to achieve its strategic objectives and manage its key risks. The capital planning framework should define the process, principles and accountabilities for developing the capital plan, and it should provide transparent and robust principles to ensure alignment between strategic objectives and investment priorities, incorporating customer and stakeholder requirements (eg. as identified in willingness to pay surveys). In addition, it should provide a reasoned method of allocating capital and prioritising programs/projects, thereby optimising the selection and delivery of the capital program.

An effective asset management framework provides a key input to the capital planning process. Sound asset management practices are critical for maintaining effective and efficient long-term system performance standards. Key characteristics of effective asset management frameworks include clear linkages between an organisation's asset management strategy, its capital investment framework, its approach to asset planning, maintenance, condition assessment and the disposal of assets.

We have sought to understand the planning that has been undertaken in relation to NOW's capital program in order to determine the need for new infrastructure, based on the identified drivers. We have used our industry expertise in asset management planning to assess NOW's asset management framework and the rigour of its approach to managing the whole life of assets and the resultant inputs to the capital planning process.

Key drivers and activity codes

The key driver of forecast expenditure is asset renewals, associated with the upgrade, replacement and refurbishment of NOW's hydrometric network ($8.2 million).

NOW's capital expenditure is split between a number of activity codes including, 'surface water monitoring assets management' (C01-06); 'surface water quantity monitoring' (C01-01), 'groundwater quantity monitoring' (C02-01), 'surface water quantity data management and reporting' (C01-02), and 'groundwater quality monitoring' (C02-02)[43].

[43] NOW's submission contains a list of five "C12" activity codes for classifying the agency's capital program costs. However, in the information return and capital cost model provided for the review, capital costs are classified using the aforementioned codes.

Review of asset management framework

In this section we provide an overview of NOW's current asset base and its approach to asset management.

NOW's Asset Base

Water quality and quantity monitoring are key tools used by NOW to achieve its objectives in respect of water management. NOW is Australia's largest water monitoring agency with over 5,000 monitoring stations measuring water quality and quantity across NSW. NOW's monitoring network is currently expanding in response to various state legislative requirements (e.g. requirements in respect to WSPs) and funding from the Commonwealth.

Assets making up its groundwater and surface water monitoring networks include electronic monitoring and sensing equipment, physical monitoring structures (civil infrastructure), telemetry, motor vehicles and other support equipment. In addition, its asset portfolio includes corporate information systems.

Table 10.2 provides a breakdown of NOW's monitoring inventory. The sites include assets which form part of NOW's regulated asset base, as well as those assets forming part of its non regulated asset base.

Table 10.2: NOW's monitoring inventory

	Surface Water	Groundwater	Water Quality	Meteoro-logical	Total
Monitoring Inventory	990	9,043	1,887	161	12,081

Source: NOW, NSW strategic water information and monitoring plan: water inventory and observation networks in New South Wales, December 2009, Table 8, page 50.

At present, NOW's corporate asset register does not hold records of its water quality and quantity monitoring assets. As a result, these assets are not currently depreciated.

Asset Management Framework

While NOW is not a capital intensive business, its capital assets, such as its hydrometric network, are critical in enabling it to perform its key functions, and to its role of ensuring compliance with relevant water legislation. Furthermore, the considerable investment in water infrastructure by the Commonwealth, particularly in the Murray-Darling Basin, will result in a significant increase in NOW's asset base. Effective asset management practices will be essential to ensuring that NOW is able to efficiently and effectively undertake its operations, and will become increasingly important with the delivery of current water reforms and programs within NSW.

During interviews with NOW, it indicated that it does not currently have a formal asset management plan in place. As a result, the management of assets is not consistent across the network, and

activities to maintain assets are not generally prioritised. Routine maintenance activities such cleaning out monitoring bores, relining/repairing casings, maintaining paintwork for rust protection, or clearing vegetation can extend the lives of assets, thereby deferring expenditure on asset renewals. NOW indicated that maintenance tends to be undertaken on an ad-hoc basis, only when and if sufficient budget and resources are available. This is contrary to best practice asset management, and is unlikely to result in optimum and efficient outcomes across its network of assets.

In addition, NOW does not currently have a planned asset renewals program. As such, asset renewals have typically been undertaken when assets fail, subject to the availability of funding. In some instances, assets have not been replaced. Again, this is unlikely to result in optimum outcomes across the network as asset replacement has not been based on an assessment of need, but on availability of funds. NOW has sought to address this issue in its 2009 submission, and has included an allowance for asset renewals of its hydrometric network. We consider this to be prudent, particularly given NOW's growing asset base and the increasing need to provide reliable and robust hydrometric data.

NOW's 2009 submission does not, however, include any allowance for developing and implementing a structured asset management framework. This is something which is critical for effective planning and optimisation of the asset base. The lack of a robust and effective asset management framework makes justifying expenditure proposals difficult, as it is not possible to easily demonstrate the need for the proposed investments.

We recommend that NOW develop and implement an asset management framework, consistent with best practice. As part of this, we recommend that it collects information on the age and condition of its assets to better enable it to demonstrate that its expenditure proposals are justified.

Review of capital planning framework

As part of our review we sought to understand the processes and systems NOW has in place to develop its capital plan, to assess whether they are transparent and robust, and to confirm whether there is alignment between strategic objectives and investment priorities, incorporating customer and stakeholder requirements. In addition, we sought to understand the method adopted for allocating capital and prioritising projects, to assess whether the selection and delivery of the capital program had been optimised.

Based on our review of individual capital projects, it appears that there are a number of weaknesses with NOW's capital planning framework. In the following discussion we provide an overview of some key aspects of NOW's capital planning framework as gleaned from our review.

Investment Appraisal and Prioritisation of Expenditure

For the majority of projects that we reviewed, no business cases exist. Hence, there is little information to demonstrate the evaluation and justification of these projects. In addition, expected deliverables and outcomes have not always been defined. In the absence of a business case, it is not easily possible to demonstrate or assess the prudence of investment decisions. Furthermore, without any baseline by which to measure and track outcomes, it is difficult to assess with any certainty the efficiency and effectiveness of project implementation.

Where business cases have been provided, the information included falls short of best practice. For example, little information was available to demonstrate that NOW had undertaken any form of cost benefit analysis or cost effectiveness analysis when evaluating project proposals.

Of the projects that we reviewed, it appears that no analysis on stakeholder willingness to pay for discretionary items of capital expenditure has been undertaken. However, given the small size of the capital program in relation to NOW's operating expenditure requirement, the impact of its capital investment decisions on prices is not material.

While project Steering Committees have responsibility for prioritisation of capital expenditure at a project level, we have been unable to develop an understanding of how capital expenditure is prioritised at program level. For example, it is not clear how NOW assesses and prioritises its capital expenditure to ensure that it is targeted to achieve the most beneficial outcomes, or whether the prioritisation is based on any form of risk assessment.

Project Planning and Delivery

None of the historical capital projects that we have reviewed have been delivered within the original delivery timeframe. Reasons for delays to the delivery have included the lack of available resources (internal and external), organisational restructures and changing departmental priorities. While some of these factors are beyond the control of NOW, others (such as insufficient resourcing) might have been reasonably foreseen. In these instances, more robust project planning may have resulted in more realistic delivery timeframes. In addition, a requirement to develop project plans at the outset of each project may have assisted in the delivery of projects within time, cost and quality constraints.

Delays in the delivery of its capital projects has meant that NOW has been unable, or is unlikely to deliver all of the planned project outputs within the approved project budget for a number of projects.

In some instances, project outcomes or deliverables have been modified since funding was first secured. However, little documentation appears to exist on the reasons for and approval of

such changes. For example, the metering and data systems project (discussed in more detail in section 10.5), has undergone significant change since 2004-05. In such cases we would expect that a revised (new) business case be prepared to confirm that the project still represents the most efficient and effective way of achieving the required outcomes. From the information provided for our review, it is not clear what procedures NOW currently has in place to manage such project changes.

Cost Estimates

The capital cost estimates developed by NOW for its 2009 submission are based on current budgeted estimates for ongoing projects, and an early planning estimate for its proposed hydrometrical renewals program.

For the water extraction monitoring and corporate water databases projects, both of which are currently ongoing and forecast for completion in 2010-11, the expenditure forecast is based on the premise that projects will continue until the Treasury approved funding has been spent. While the remaining project deliverables from the corporate water databases project have been defined, there is currently uncertainty surrounding what remaining outputs are likely to be delivered, or whether additional work programs will be required to ensure project outcomes are achieved. The result is that there is some uncertainty as to what deliverables will be achieved with the remaining funding.

The cost estimate for the proposed hydrometrical renewals program is reflective of the very early planning phase at which the program is currently in. NOW has not applied any contingency allowances to the project cost estimates, nor undertaken a detailed assessment of proposed project deliverables.

Project and Program Management

Based on discussion with NOW we understand that it does not currently have a standard, agency-wide approach to project or program management. Nor does it have any standardised Project Management tools (such as a project management module in SAP). The result is that Project Managers must rely on their own tools and project management methodologies to deliver capital projects and programs.

In some instances, NOW was unable to provide a detailed breakdown of historical project expenditure. It indicated that due to the way expenditure is reported in SAP, project expenditure is not readily visible.

An organisation-wide standard approach to program and project management, together with associated tools, processes and procedures may benefit NOW by establishing a baseline of project controls and reporting requirements. Post implementation reviews of

projects with budgets above a predetermined level (e.g. $1 million) would enable any lessons learnt to be captured and disseminated.

Conclusions

Based on our review of NOW's historical and proposed capital expenditure, we are of the opinion that there are a number of weaknesses in NOW's capital planning framework. We recommend that NOW review its capital planning framework to identify those areas where it currently falls short of best practice. A more robust capital planning framework will provide confidence that its capital expenditure is appropriately targeted and prioritised, and that capital investment is both prudent and efficient.

10.4 Overview of capital expenditure

Much of NOW's historical expenditure over the period 2006-07 to 2009-10 has involved upgrading and increasing its existing groundwater and metering networks. These projects, which have been funded by NOW, have delivered assets which form part of NOW's regulatory asset base.

NOW's proposed capital expenditure over the period 2010-11 to 2014-15 primarily relates to one project - the renewal of hydrometric network assets. In addition to this project NOW will also be responsible for implementing a number of NSW State Priority Projects. These projects include metering across the Murray-Darling Basin for groundwater and unregulated river users, acceleration of the licensing of floodplain harvesting and construction of pipeline projects to create water delivery efficiencies. These projects, which will attract funding of up to $408 million, will be funded by the Commonwealth (with contributions by the State), and hence the resultant assets will be excluded from NOW's regulatory asset base. However, NOW will be responsible for ongoing operation and maintenance of these assets; consequentially, the operation and maintenance costs in future years will be recovered (in part) via water management charges and transaction fees.

NOW's approach to allocating indirect costs

NOW's forecast capital expenditure includes allowances for indirect costs. The method for applying indirect costs to capital schemes is the same as that for operating expenditure. The allocation is based on the time booked to capital schemes and takes the form of a 'timesheet overhead'. The overhead, charged at $30 per hour, includes allowances for overhead functions, finance, accounting, human resources, information technology, office facilities and governance. More detailed information on the indirect allocation is included within Chapter 3.

Our review of the indirect costs allocated to the proposed capital expenditure indicates an allowance of 5 to 10 per cent of direct project costs, which we consider to be reasonable.

Split of expenditure between activity codes

NOW's forecast capital expenditure is split between relevant activity codes based on the nature of the work to be undertaken. The activity codes, which are the same as for operating expenditure, are identified in Appendix 1 of NOW's 2009 Submission.

For historical costs the activities adopted were those used (and accepted by IPART) in the 2006 pricing determination.

NOW indicated that it accounts for capital expenditure in the same way as for operation expenditure, i.e. when a job/project is established attributes associated with the activity, water source and valley are recorded against the job/project. These attributes are added by the staff member responsible for the job.

Split of capital expenditure across valleys and water sources

Capital expenditure has been split across valleys and water sources using activity codes. For projects which were commenced during the current determination period, the allocation of capital expenditure across water source and valleys has been undertaken on the same basis as was forecast (and accepted by IPART) for the 2006 pricing determination.

For new capital projects, the split across valleys and water sources adopts the same logic as for operating expenditure (i.e. the split of expenditure is determined by cost drivers). This is discussed in greater detail in Chapter 3.

10.5 Historical capital expenditure

This section provides an overview of NOW's capital expenditure throughout the 2006 Determination price path period, and our review of the prudence and efficiency of this expenditure.

Overview of historical expenditure

In the 2006 Determination, IPART approved capital expenditure totalling $9.9 million ($2009-10 real) for NOW for the four years to 2009-10. This compares to NOW's actual expenditure of $10.1 million over the 2006 Determination period. A breakdown of this is provided in the table below.

Table 10.3: Actual capital expenditure and variance to 2006 Determination ($2009-10, $million)

Financial Year Ending	2007	2008	2009	2010	Total
2006 Determination	4.7	4.3	0.9	-	9.9
Actual	1.3	2.4	3.4	2.9	10.1
Difference	-3.4	-1.8	2.5	2.9	0.2

Source: IPART 2006 Determination, and NOW's 2009 submission to IPART – Totals may not add due to rounding

The 2006 Determination included expenditure for two capital programs; 'Groundwater monitoring' and 'Metering and data systems'. In addition to these two capital programs, NOW also incurred capital expenditure on the development of its 'Corporate water databases'. This expenditure was not included within the 2006 IPART Determination as the project was to have been completed by the end of 2005-06. The following table provides a breakdown of expenditure by project.

Table 10.4: Actual capital expenditure ($2009-10, $million)

Financial Year Ending	2006-07	2007-08	2008-09	2009-10[1]	Total
Groundwater monitoring	0.8	2.1	3.1	1.7	7.8
Metering and data systems	0.1	0.2	0.3	0.9	1.4
Corporate water database	0.4	0.1	0.1	0.3	0.9
Total	1.3	2.4	3.4	2.9	10.1

Note (1) Budget figures. Source: NOW supporting documentation. Totals may not add due to rounding

Review of capital projects

We have undertaken a review of the three capital schemes with expenditure during the period 2006-07 to 2009-10 included in NOW's submission to understand the scope, key drivers, links to strategic objectives, reasons for variances between forecast and actual costs, and the efficiency and prudence of the investment. The results of our review are included in Appendix D, and are summarised in the following paragraphs.

Groundwater monitoring

The objective of this program has been to enhance NOW's groundwater monitoring network across the state to meet the requirements of existing WSPs. The program has included construction of new State-owned bores, the purchase of metering instruments (data loggers and salinity probes), and an allowance for 'asset management' (expenditure to commission the assets).

NOW has been unable to provide the business case for this program of work. Hence, it has not been possible to review the evaluation and justification of the groundwater monitoring program, or details of intended project outputs. However, NOW has indicated that it was

originally intended that the project would deliver 464 new groundwater bores across approximately 40 of its groundwater management areas in NSW.

Funding approval for $9.6 million (nominal) was granted by Treasury in 2004-05, with delivery of the program planned over the period 2004-05 to 2007-08. Ongoing delays to the project have resulted in the re-phasing of program expenditure, and the project is now planned for completion by the end of 2009-10. NOW has attributed the delays principally to the lack of driller availability. Other factors have included the lack of staff availability and staff time, departmental priorities and departmental restructures.

The forecast expenditure reported in NOW's 2009 submission assumes that the program will continue until the Treasury approved budget is expended. As at 3rd September 2009, 283 bores of the 464 planned bores had been completed. NOW has indicated that while the project still aims to deliver 464 bores, this may be impacted by escalating costs of fuel, labour and drilling. Given that approximately 80 per cent of the budget has been spent to deliver 283 bores (61 per cent of the intended outputs), it is unlikely that NOW will deliver 464 bores within the project budget.

In the absence of a project business case, it has not been possible to make a detailed assessment on the efficiency or prudence of this project. However, the project does appear to be aligned with NOW's strategic objectives of monitoring water extractions, and developing statutory WSPs. On this basis, and given that it was included within the 2006 Determination, the project appears prudent. However, while the project has enhanced NOW's groundwater monitoring network across the state, it has not, and is unlikely to, deliver all of the planned borehole installations. While NOW indicated that it has sought to obtain value for money in procurement of services, any efficiencies obtained are likely to have been eroded by the impact of delays to the program.

Given the history of project delays, it is very likely that this project will continue to slip into 2010-11. We have adjusted NOW's forecast expenditure to account for this anticipated slippage.

Water Extraction Monitoring (Metering and Data Systems)

This project has undergone significant change since funding was first secured from Treasury in 2004-05.

The project was originally intended to deliver metering and site reconnaissance to quantify the magnitude and timing of water extractions from unregulated rivers and groundwater systems. This information is required to implement NOW's water extraction monitoring policy and WSPs. The project also involved development of an internet based water accounting system to record meter readings for critical catchments that are not under a WSP.

As part of the original project, unregulated and groundwater licence holders would be required to buy and install meters, while NOW

would undertake meter installation audits/calibration, enhanced communication and data collection/archiving systems, and audit and compliance work. While NOW has undertaken site reconnaissance in a number of areas, the requirement for irrigators to install meters was never enforced, and to date no meters have been installed.

NOW has indicated that the Commonwealth's agreement in-principle to fund metering in the Murray-Darling Basin led to a change in metering direction. Following the July 2008 announcement, the project was realigned to carry out site assessments within the Murray Darling Basin, with the Murray catchment identified as a priority catchment. However, continued uncertainty surrounding NOW's metering policy has meant that the project is currently on hold. The future direction of the project, including definition of outcomes and outputs, is currently under review and expected to be determined at the next project Steering Committee meeting in February 2010.

NOW advised that a business case for this project was not developed; consequently, we are unable to comment in detail on the proposed outputs of this project (in terms of number of licenses to be metered or the coverage of monitoring), or whether NOW undertook any cost benefit, cost effectiveness, or customer 'willingness to pay' analysis. Furthermore, no documentation surrounding the review and approval of changes to the program since 2004-05 has been provided, which may indicate the absence of robust change control processes. For example, no documentation outlining the justification and approval of the decision to realign the project to carry out site assessments within the Murray Darling Basin has been provided.

Given the current uncertainty surrounding the project, and the significant delays historically, we have some concern that NOW will deliver the remaining part of the project within its proposed timeframes. This is further compounded by the current uncertainty surrounding the scope of the project.

We have been unable to gain assurance that the deliverables achieved to date are prudent and efficient. We recommend that the expenditure on this scheme be excluded from NOW's Regulatory Asset Base until such time as it is able to demonstrate that the expenditure has contributed to the delivery of its monopoly services and water management objectives.

Corporate Water Database

This project has involved the development of corporate water databases to store water management data and to improve public assess to the data. The project is comprised of two key elements: a telemetry system, and development of a groundwater database and water quality database.

Funding approval of $1 million (nominal) for development of NOW's databases was granted by Treasury in May 2004. The expenditure was allocated under a broad heading of 'integrated databases' and was to be expended in two years. The 2006 Determination did not

allow any expenditure for this project as it was to have been completed by the end of 2005-06. These funds have continued to be rolled over and the final expenditure is now forecast for 2010-11.

The upgrade of NOW's telemetry system involved replacing five data acquisition systems with a single system. Implementation of this project was completed in 2006-07.

In respect of the groundwater and water quality databases, NOW indicated that it is taking advantage of funding from BOM to upgrade its water quality and groundwater databases. NOW has pooled the remaining funds approved by Treasury in 2004-05 ($400,000 nominal) with the funding provided by BOM ($500,000 nominal). The new database will enable delivery of relevant data to BOM as required by Commonwealth legislation whilst providing NOW with more integrated water database systems to meet specific NOW business needs. The NOW funding will be used to deliver NOW specific system enhancements and system testing. It also includes an allowance for project management.

As noted above, the development and rollout of these corporate water database projects has been delayed significantly. Initial delays were the result of additional time spent investigating possible solutions (products) for the telemetry system. Delays in delivery of the groundwater and water quality databases arose due to the decision to combine the remaining project funds with the funding from BOM, which led to the project being put on hold until funds were secured.

The expenditure on the telemetry system and the groundwater and water quality databases will better enable NOW to meet its obligations to provide real time data, and will increase the efficiency with which data is collected and reported. We consider streamlining its corporate databases in this way to be prudent. Combining the remaining project budget with the funding obtained from BOM should result in greater value for money.

Findings

With the exception of the metering and data system project, we are generally satisfied that the projects undertaken have been necessary to enable NOW to meet its strategic objectives and legislative requirements. However, the absence of detailed business cases for most of the projects has meant that we have been unable to confirm with certainty that all of the decisions to invest have been prudent and have contributed to delivery of NOW's monopoly services and water management objectives.

While the metering and data system project has delivered some outputs, it is unclear whether the expenditure incurred to date will actually contribute to planned project outcomes. We recommend that the expenditure on this scheme be excluded from NOW's Regulatory Asset Base until such time as it is able to demonstrate

that the expenditure has contributed to its monopoly services and water management objectives.

For ongoing schemes, NOW's expenditure forecasts assume spend up to the level of funding approved by Treasury. NOW has not undertaken any reassessment of these projects to confirm that planned outcomes will be delivered, or to examine where efficiencies might be achieved.

The significant delay in delivery of projects has, and will no doubt continue to, have an impact on NOW's ability to deliver all of the proposed project outputs. Given NOW's delivery track-record, we have some doubt that it will deliver the full expenditure forecast for 2009-10. We recommend that the capital expenditure forecast be re-profiled to account for the likely slippage.

On the basis of our review, we recommend the following adjustments to NOW's historical expenditure before it is rolled into NOW's Regulatory Asset Base.

Table 10.5: Recommended capital expenditure ($2009-10, $million)

Financial Year Ending	2006-07	2007-08	2008-09	2009-10
NOW's 2009 Submission	1.34	2.42	3.41	2.94
Adjustments for likely program delays				
Groundwater Monitoring				-0.86
Adjustment for non prudent expenditure				
Metering and data systems	-0.05	-0.21	-0.25	-0.92
Halcrow Recommended	1.28	2.21	3.16	1.16

10.6 Forecast capital expenditure

Overview of proposed expenditure

NOWs proposed capital expenditure program is minor when compared to its forecast operating expenditure requirement. The forecast capital expenditure for the period 2010-11 to 2014-15 is $9.4 million (2009-10 real). This is shown in Table 10.6.

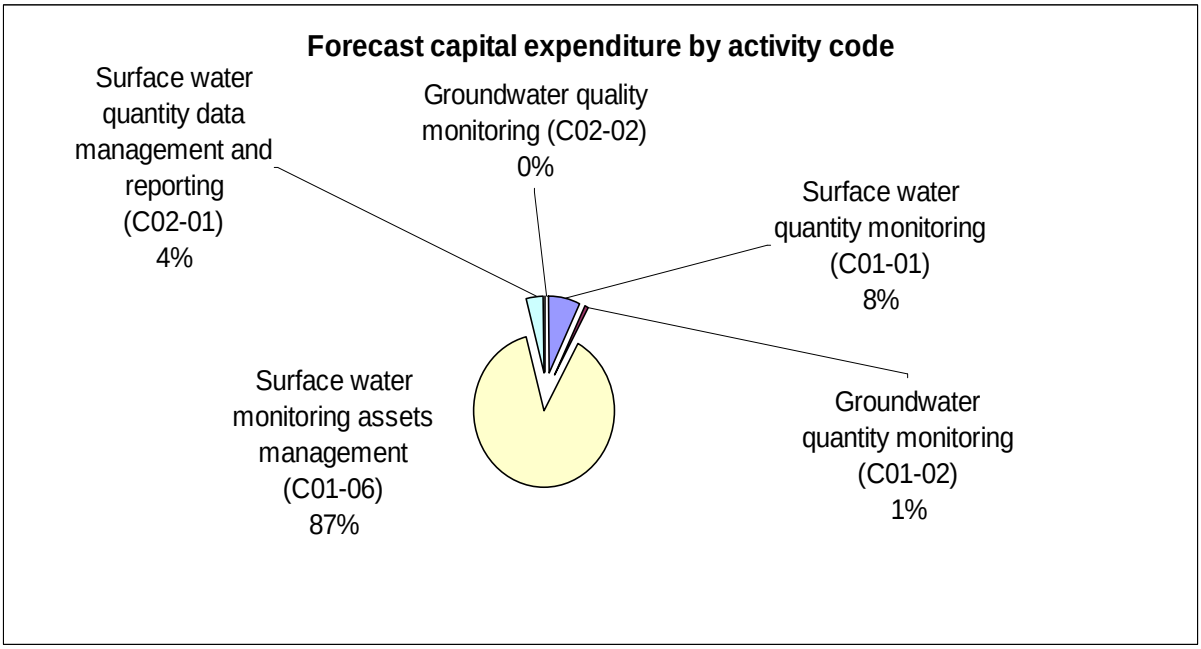
Table 10.6: Forecast capital expenditure ($2009-10, '000s)

Financial Year Ending	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Corporate water database						
Surface water quantity data management and reporting (C01-02)	68.0	-	-			68.0
Groundwater quality monitoring (C02-02)	4.0	-	-			4.0
Total	72.0	-	-			72.0
Hydrometric network Renewals						
Surface water monitoring assets management (C01-06)	152.0	2,032.0	2,032.0	2,032	2,032	8,280.0
Water extraction monitoring (Metering & data systems)						
Surface water quantity monitoring (C01-01)	714.5	-	-			714.5
Groundwater quantity monitoring (C02-01)	354.9	-	-			354.9
Total	1,069.4	-	-			1,069.4
Total	**1,293.4**	**2,032.0**	**2,032.0**	**2,032**	**2,032**	**9,421.4**

Source: 3_DWE cost model 2009 POST QA (1 Oct 09)_MDBA unreg gw_EXCL NO NET COST – incl assets.xls

The expenditure primarily relates to the 'surface water monitoring assets management' (C01-06) activity code. The remaining expenditure relates to 'surface water quantity monitoring' (C01-01), 'groundwater quantity monitoring' (C02-01), 'surface water quantity data management and reporting' (C01-02), and 'groundwater quality monitoring' (C02-02). A breakdown of expenditure by activity code is shown in the following figure.

Figure 10.1: Forecast capital expenditure ($ '000, 2009-10)



Review of projects

NOW has proposed only one new capital project for the coming pricing period, Hydrometric network renewals. We have undertaken a review of this project to understand the scope, the key drivers and links to strategic objectives, project planning and development, and cost estimates. The results of our review are included in Appendix D, and are summarised in the following paragraphs. Our review of the expenditure that is required to complete capital work programs that are currently on-going is included in section 10.5.

Hydrometric Network Renewals

This program of work involves the replacement and refurbishment of NOW's hydrometric station assets. The forecast expenditure is effectively an allowance which will be required on an ongoing basis for renewal and refurbishment of hydrometric network assets which do not attract third-party funding.

We would typically expect the justification for a renewals program of this nature to be based on detailed asset records such as the condition and age profile of the assets, together with records of asset failures. However, NOW does not currently maintain this level of information on its asset base and, consequently, the justification for its proposed renewals program is based on the premise that many of its network assets were established before 1989 and are currently older than their expected asset lives. NOW has indicated that this assessment was, 'a first cut, satisfactory to get the project moving.' If funding is granted, NOW indicated that a more detailed analysis of the asset database will be undertaken and a model developed to manage the logical and structured replacement cycle of each asset.

NOW is yet to complete a business case for this expenditure, or undertake any form of cost benefit analysis or cost effectiveness analysis. The forecast expenditure included in NOW's submission is based on an 'average replacement value' of a typical gauging station and assumed asset lives of gauging station components. Due to an error, NOW's submission has understated the required expenditure in 2010-11 by a factor of 10. Our recommended expenditure includes a correction for this error.

NOW's capital expenditure estimate for this scheme takes into account the increase in the hydrometric network asset base that will result from the Commonwealth funded 'Hydrometric Network Expansion' project. The expenditure estimate for the asset renewals allowance is based on the assumption that the asset base will expand by 150 hydrometric stations and six additional vehicles (and associated mobile support equipment) by 2011-12. We note that this is not consistent with NOW's 2009 submission, which indicates that the Hydrometric Network Expansion' project will deliver 128 new stations and relocation or upgrade of 50 stations. NOW indicated that while its original estimate of 150 new gauging stations was correct at the time of estimating the capital expenditure associated

with this scheme, it has since revised this figure, and the current estimate is as reported in its 2009 submission. As such, the capital expenditure allowance for this scheme requires adjustment to account for this change.

On the basis of our review, we consider that the proposed renewals program is prudent, although this should be confirmed with development of a robust business case. In addition, it will be necessary to ensure that expenditure is targeted towards those assets most critical to enabling NOW to meet its water management objectives.

We note that some efficiencies may be gained by delivering the renewals using a period contract, or bundling the work into large packages. We are of the opinion that these efficiencies should be reinvested into the renewals program, or in the collection of asset condition data.

Findings

On the basis of our review, we have proposed some minor adjustments to the capital expenditure forecasts included in NOW's submission to IPART. We have made an adjustment to the expenditure in 2010-11 to account for carryover from 2009-10 to account for likely delays to the groundwater monitoring project. In addition, we have included a correction for the error in NOW's submission for 2010-11 expenditure on its hydrometric network, and have made adjustments to account for the latest estimate of stations to be delivered by the Hydrometric Network Expansion project. Our recommendations are shown in the following table. A detailed breakdown of the capital expenditure is contained within Appendix E.

Table 10.7: Forecast capital expenditure ($2009-10, $ million)

Capital Expenditure	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Allowance in 2009 submission[1]	1.29	2.03	2.03	2.03	2.03	9.42
Adjustments	-	-	-	-	-	-
Deferral of expenditure from historical schemes	0.86	-	-	-	-	0.86
Adjustment to hydrometric network renewals cost estimate	1.37	- 0.07	-0.07	- 0.07	- 0.07	1.11
Halcrow Recommended	3.52	1.97	1.97	1.97	1.97	11.39

Note (1) The expenditure reported in Table 5, p 45 of NOW's submission is rounded, and the total expenditure reported for 2012-13 is incorrect. The figures reported here have been confirmed back to relevant supporting data. While NOW's submission does not report any capital expenditure for 2013-14 or 2014-15, supporting documentation indicates that expenditure on hydrometric network renewals will be required in these years.

Capital efficiency

In the absence of robust capital planning and asset management frameworks, and business cases for projects, it is difficult to define a clear baseline from which NOW can strive to achieve efficiency

gains. We are of the opinion that it is first necessary for NOW to develop robust capital planning and monitoring processes before any efficiency targets can be proposed and measured.

Implications of capital expenditure for forecast operating expenditures

Operating cost increases

The expansion of the hydrometric network (funded by BOM) will have cost implications for NOW's operational budget. NOW has indicated that, 'a condition of the funding is that the Office continues to operate these sites to national standards. This will require a doubling of visits per year at existing sites from three to six and the additional responsibility for the ongoing operation and maintenance of the expanded network.' NOW's operating expenditure forecasts include allowances for additional FTE's to account for these activities, although we have commented separately on the adequacy of these cost estimates.

In addition, NOW's submission includes an outline of 'foreshadowed charges' that will result from the Commonwealth funded rollout of meters in the Murray Darling Basin. While this will not have any implications for operating expenditure in the period 2010-11 to 2012-13, it is likely to have an impact on operating expenditure (operations and maintenance) and capital expenditure (asset renewals) thereafter. NOW's expenditure forecasts do not include any allowances for these 'foreshadowed charges'.

Operating cost savings

NOW has not identified potential cost savings to its operational budget as a result of its capital investments. Based on the information provided to the review, it would appear that the following cost savings could arise:

- the groundwater and water quality databases should make it easier to search, extract and deliver relevant information for water resource management, thus leading to a labour saving; and
- the telemetry systems and installation of data loggers on gauging stations should reduce labour costs.

As noted in section 5.2, some efficiency gains would be expected to arise due to the reduced need for manual visits to stations. It is not clear from NOW's submission whether these efficiencies have been built into its future resource needs and whether consideration has been given to the possibility that some current FTEs could be redeployed as a result of the increasing automation.

Appendices

Appendix A Overview of steps used by NOW to establish the cost base

This appendix provides additional detail about how NOW established a cost base for 2009-10 and forecast expenditure for the forward period out to 2014-15.

Stage 1:

The first stage of NOW's internal budget is to determine the base level of expenditure for 2009-10. This is done by deriving a budget forecast of current FTEs for each activity code and any expected cash costs to be incurred. From this starting point, total remuneration costs, total cash costs and total corporate overhead costs are calculated (using NOW's calculation of corporate overheads per FTE).

These estimates of costs for each activity code for 2009-10 are carried forward for each following year and used as the 'base' for future expenditure.

Stage 2:

NOW has assumed corporate efficiencies of 4 per cent for 2010-11, with an additional 4 per cent in 2011-12. From discussions with NOW, it has indicated that these assumed efficiencies were based on internal discussions and are consistent with NSW Government initiatives to increase corporate efficiencies.

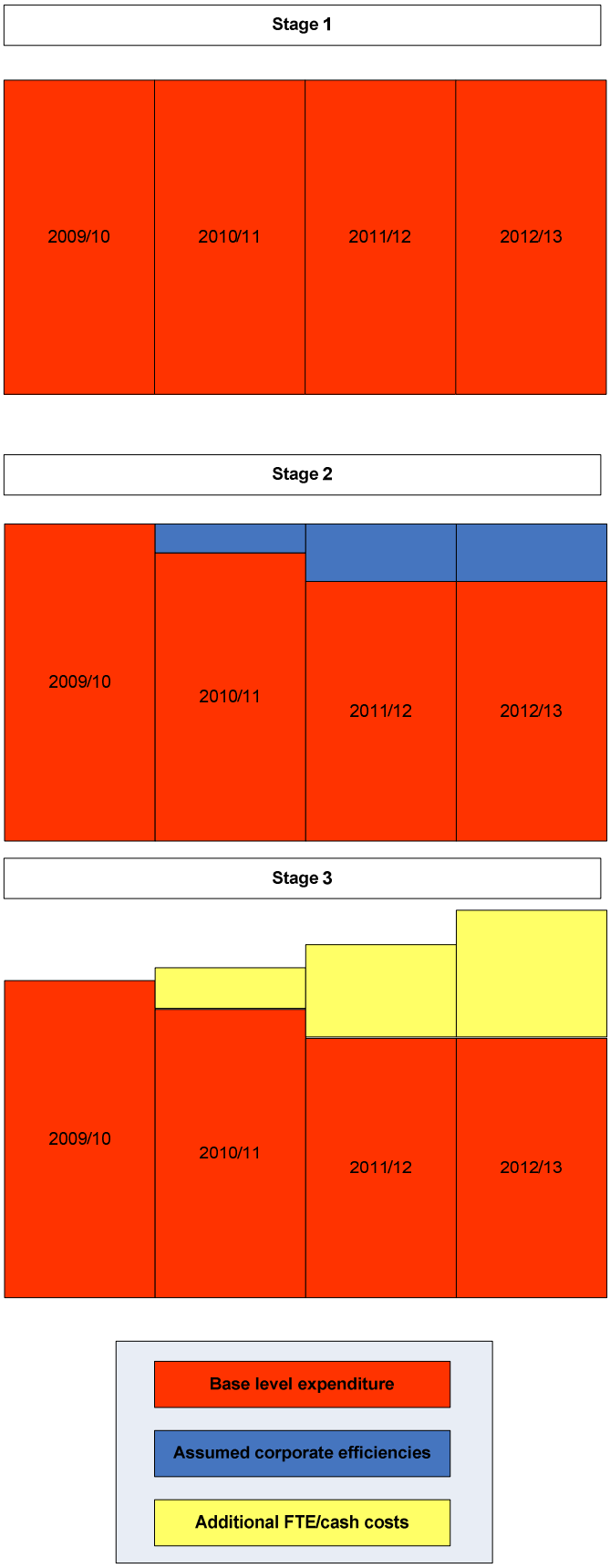
These assumed efficiencies result in a new base level of expenditure for each year following 2009-10.

Stage 3:

For each year following the base year, the cost of any additional FTEs and cash costs for each activity code is combined with the base expenditure (2009-10) to form the expenditure forecast for that year.

The cost of these additional FTEs is based on an average annual salary that NOW has determined ($82,378) plus 25 per cent on-costs ($20,595). The corporate overheads are allocated in the same manner as outlined for the base level expenditure.

Figure A.1: Diagrammatic representation of NOW's budgeting process



Appendix B NWI Water Pricing Principles - water planning and management

1 The NWI Water Pricing Principles

The NWI pricing principles have been developed jointly by the Australian Government and state and territory governments to provide a set of guidelines or road map for rural and urban pricing practices and to assist jurisdictions to implement the NWI water pricing commitments in a consistent way.

The draft principles are currently the subject of a consultation regulatory impact statement.

2 Principles for recovering the costs of water planning and management activities

Background

1. Water planning and management aims to ensure the long term sustainability of the water resource, thereby enabling continued water use while maintaining the health of natural ecosystems[44].

2. Conceptually, water planning and management activities can include a broad range of activities that are undertaken as a result of water use or may occur irrespective of water use (e.g. activities to reduce water pollution from land uses).

3. Water planning and management activities may be undertaken by a range of parties: including government agencies, water businesses (both government-owned and private), government bodies (e.g. catchment management authorities or natural resource management councils), non-government organisations and private landholders.

4. Water planning and management aims to provide clear rights to water while managing the negative external impacts of water use on other water users and the environment. These rights are provided to both consumptive users (e.g. rights to extract water for irrigation and stock and domestic use) and non-consumptive users (e.g. – rights for environmental flows). In providing these rights, water planning and management

[44] Water use, for the purposes of this definition refers to all forms of water use (including extractive and non-extractive water use).

helps to address water users' obligation or duty of care to ensure their activities accord with environmental, social and economic objectives.

National Water Initiative cost recovery context

5. In the context of the NWI and for the purpose of cost recovery, water planning and management are those activities undertaken by, or on behalf of governments as a result of water use (or potential water use e.g. where a water access entitlement holder/licence holder is not using water) only. Water planning and management does not include activities undertaken to manage land-based impacts such as those associated with land clearing for example.

6. Water planning and management covers a wide range of activities to meet a wide range of demands for which the associated costs need to be allocated between water users and governments (representing the community) on the basis of cost sharing principles, noting that these principles do not preclude the total cost of a particular activity being allocated to one party. The activities may be of an operating (recurrent) and/or capital nature.

7. The water planning component of water planning and management is concerned with establishing transparent (statutory based) frameworks for ensuring an appropriate balance between economic, environmental and public benefit outcomes. It aims to ensure the future integrity of the resource by facilitating adjustments to the total consumptive pool in response to scientific input and establishing pathways to adjust for over-allocation and/or overuse. Water planning also provides the mechanism through which resource security outcomes are determined through the specification of shares in the consumptive pool and the rules to allocate these shares.

8. The water management component of water planning and management is concerned with operationalising water planning, including the implementation of statutory plans which aim to codify water management decisions to meet economic, environmental and social objectives, noting that water management has both strategic and operational dimensions. Water management activities also occur in water systems that do not have water plans.

9. In the context of the NWI, water planning and management involves activities:

   a) to promote the long term sustainability of the resource and to maintain the health of natural ecosystems by minimising impacts associated with water extraction; and

   b) that are necessary to manage the impacts of past, current and future patterns of water extraction; or

   c) that are concerned directly with the hydrology of surface and groundwater systems (as opposed to wider catchment

management activities, although there are close linkages); or

d) that protect the integrity of the entitlement system and the security of users' authorised access to water.

10. The activities broadly cover:

a) collecting and analysing data to gain a better understanding of the levels of extractions as well as the potential implications of extraction for the water system, and managing this data;

b) developing policies to manage the resource, including managing the interstate sharing of the resource;

c) developing plans and strategies/frameworks to allocate water among users and the environment, and to remediate impacts associated with water use;

d) implementing these plans/strategies/frameworks and monitoring compliance against the plans;

e) undertaking capital works, such as the modification of weirs to achieve environmental outcomes;

f) administering water entitlements, compliance, metering and trading systems.

11. Governments have committed in the NWI to publicly report the total cost of water planning and management and the proportion of the total cost of water planning and management (where water planning and management is defined in accordance with paragraphs 5 and 6 above) attributed to water access entitlement holders and the basis on which this proportion is determined (Paragraph 68 of the NWI refers).

12. The water planning and management activities framework (at Appendix B) provides the basis on which water planning and management activities can be classified on a consistent basis.

13. It is important to note that the costs of all activities listed in the water planning and management activities framework (at Appendix B) will not be fully recovered from water users. Charges for activities undertaken for the Government (such as policy development and Ministerial or Parliamentary services) are excluded. Costs of the remaining activities will be apportioned between water users and governments in accordance with Principle 4. Where costs are recoverable from water users, they will be tested for cost-effectiveness by an independent party in accordance with Principle 3.

Principle 1: Water planning and management activities

14. Water planning and management activities include the activities outlined in the water planning and management activities framework provided at Appendix B.

Principle 2: Government activities

15. Water planning and management charges levied on to water users should exclude the cost of activities undertaken for government such as policy development[i] and Ministerial or Parliamentary services[ii] (Paragraph 67 (ii a) of the NWI refers). These activities are marked with an asterisk in the activities framework provided at Appendix B, and the associated activity costs should be allocated entirely to governments.

Notes:

i. Policy development includes the development and/or refinement of overarching policy frameworks designed to plan for, and manage water resources. Policy development will typically be characterised by the development of comprehensive strategies that articulate the long-term policy objectives for sustainable water management and the overarching policy and institutional framework for achieving these objectives. This includes overarching legislation (e.g. *Water Act 2000* (Qld), *Water Management Act 2000* (NSW), *Natural Resource Management Act 2004* (South Australia)) or overarching policy frameworks (e.g. the State Water Plan (Western Australia), Securing our Future Together – White Paper (Victoria) and the State Water Management Outcomes Plan (NSW)). Developing and refining statutory, catchment/valley/regional-level water plans or other secondary/subordinate legislation that operationalises water planning and management activities does not constitute policy development or a Ministerial or Parliamentary service and the associated activity costs should not be exempt from cost recovery.

ii. Ministerial or Parliamentary services include reporting to parliament; advising parliament on issues where the agency has expertise; answering parliamentary questions; briefing Ministers and responding to Ministerial correspondence.

Principle 3: Cost-effectiveness test

16. Having identified water planning and management costs to be recovered from water users, in whole or in part, activities should be 'tested' for cost-effectiveness by an independent party and the findings of the cost-effectiveness review are to be made public.

Principle 4: Cost allocation

17. Costs are to be allocated between water users and governments using an impactor[i] pays approach.

Notes:

i. An impactor is any individual, group of individuals or organisation whose activities generate costs, or a justifiable need to incur costs. The impactor pays approach seeks to allocate costs to different individuals, groups of individuals or organisations in proportion to the contribution that each individual, group of

individuals or organisation makes to creating the costs, or the need for the costs to be incurred.

Principle 5: Differentiation of costs

18. Water planning and management costs are to be identified and differentiated by catchment or valley or region and by water source where practicable. Water planning and management charges should in turn, recover the costs of the activities concerned and be differentiated by catchment or valley or region and by water source (e.g. regulated, unregulated or groundwater sources) where practicable[i].

Notes:

i. It would not be considered practicable to differentiate water planning and management charges by catchment or valley or region where a jurisdiction can demonstrate that water planning and management costs do not vary significantly across catchments or valleys or regions or by water source, or it is excessively costly to determine costs at these levels. Where this is currently the case, a broader charge (such as a state-wide charge) may be applied.

Principle 6: Community Service Obligations

Where practical, jurisdictions should aim to reduce or eliminate subsidies or Community Service Obligations. Any shortfall between the revenue required to achieve cost recovery from water users and the total costs recovered through water charges, should be transparently reported.

3 Appendix B of the Draft Water Pricing Principles: A framework for classifying water planning and management activities

This Appendix outlines a framework which classifies water planning and management activities. It is important to note that the costs of some of these activities will be allocated entirely to governments (e.g. water reform, strategy and policy). An asterisk (*) denotes the activities where this is the case.

It should be noted also that there will be capital and corporate services costs associated with each of the activities listed in the framework.

Capital costs can include the provision of infrastructure (e.g. physical works such as streamflow gauging stations, monitoring bores and control weirs) and systems (e.g. water registers and water accounting systems).

Corporate services can include the delivery of corporate services (e.g. legal, IT, communications, human resources, financial management and records management) and corporate planning functions (business and strategic planning and reviewing performance against these plans).

A. WATER REFORM, STRATEGY & POLICY (*)

1. Development of intergovernmental agreements

a) e.g. the National Water Initiative, Murray-Darling Basin Agreement, Lake Eyre Basin Intergovernmental Agreement etc.

2. Development of broad strategies for managing water

b) e.g. State Water Plan (Western Australia), Securing our Future Together – White Paper (Victoria), State Water Management Outcomes Plan (NSW).

3. Development and/or refinement of overarching statutory instruments

c) e.g. Water Management Act 2000 (NSW), Water Act 2000 (Queensland). Overarching legislation does not include statutory-based, catchment/valley/regional-level water plans or other secondary/subordinate legislation that operationalises water planning and management.

B. WATER PLANNING

1. Water resource planning

a) Development of water resource plans:

i. Cross border water plans - sharing and management (inc. allocation) of water resources in cross-border areas;

ii. Regional water plans - sharing and management of water resources between catchments where interconnectivity occurs (either naturally, or as a result of infrastructure, i.e. a pipeline);

iii. Catchment scale water plans - allocation and sustainable management of water resources (strategic and operational), including planning for current and future water use, environmental flow arrangements;

iv. Localised water plans - plans developed to address specific water resource problems (quantity or quality) at a local level;

v. Other water plans - plans developed at a local or catchment level to address other water management issues, such as water or floodplain harvesting or drainage issues;

b) Operationalisation and implementation of plans:
i. development of rules for water sharing (including environmental shares);
ii. determining water availability and distribution (e.g. announced/seasonal allocations);
iii. establishing system operating rules, monitoring and reporting requirements etc.;
iv. storage and delivery of water to achieve environmental outcomes; c) Monitoring and evaluation of planning outcomes and progress against targets (including compliance); d) Review of water resource plans / development of new plans.

2. Environmental and ecosystem management planning

a) Development of environmental management plans where related to water resources (e.g. salinity, blue green algae, riverine management);
b) Development of plans to manage water-dependent ecosystems (e.g. riverine zones, estuaries, wetlands).

C. WATER MANAGEMENT

1. Measures to improve water use

a) Water use efficiency programs (irrigation, commercial, urban); b) Development of property level water management plans; c) Great Artesian Basin Sustainability Initiative; d) Flood Plain Management.

2. Construction of works (not significant water supply infrastructure)

a) Construction of weirs, replacement of bores etc., to achieve water management outcomes.

3. Environmental works

a) Works to reduce or remediate environmental impacts arising from water use.

D. WATER MONITORING & EVALUATION

1. Monitoring and evaluation of water resources

a) Water resource monitoring:
i. Streamflow gauging;
ii. Groundwater bore monitoring (pressure and levels);
iii. Water quality monitoring (surface and groundwater resources).

b) Water use monitoring:

i. Collection of water use information (metering, surveys).

c) Water resource assessment:

i. Hydrological and hydraulic assessment;

ii. Water quality assessment (e.g. turbidity, nutrient monitoring, salinity, algal blooms etc);

iii. Surface water / groundwater interconnectivity;

iv. Effects of land use change, land clearing, climate change, etc.

2. Monitoring and evaluation of water dependent ecosystems

a) Monitoring and evaluation of riverine health (flow and non-flow elements), wetland health, estuary health.

E. INFORMATION MANAGEMENT & REPORTING

1. Water resource accounting a) Development of frameworks and systems; b) Data collection and processing.

2. Publication of water resource information

a) Water use statistics, water trading statistics, resource condition and assessment reporting, etc.

F. WATER ADMINISTRATION & REGULATION

1. Administration of entitlements and permits a) Granting of water allocations, entitlements and permits to users (incl. bulk water entitlements); b) Processing of applications and transactions; c) Management of bulk water entitlements; d) Ensuring compliance with licence and other conditions; e) Regulation of water-related works or developments (e.g. dams, bores, pumping equipment); f) Benchmarking costs and standards of water planning and management activities (where applicable).

2. Development of entitlement frameworks

a) Overland flow, interception, non-use 'entitlements'.

3. Administration of water trading arrangements a) Development and regulation of trading frameworks; b) Facilitation and administration of water trading.

4. Business administration a) Pricing review and implementation; b) Financial management and reporting

(e.g. costing, revenue monitoring); c) Billing and debt management.

5. Administration of water metering arrangements a) Development of metering requirements and standards; b) Implementation of metering requirements; c) On-going management of metering activities.

G. WATER INDUSTRY REGULATION

1. Oversight of water businesses

a) Review of water business operations to ensure compliance with statutory requirements.

Appendix C Information provided to PwC

Information provided by NOW for the review:

- NOW's submission to IPART for Review of 2010 Bulk Water Prices
- NOW's information return provided to IPART
- NOW's internal budget and costing models
- "Overview of the methodologies adopted by NSW Office of Water in the preparation of historical and forecast costs included in the 2009 pricing submission"
- Consents transactions model
- NSW Office of Water – powerpoint presentation on IPART submission opex and capex review – December 2009.
- NSW Department of Water and Energy, Water Management Division Draft Business Plan – 2009-10.
- Excel spreadsheet setting out the timetable for development of remaining WSPs
- Office of Water's cost claim to the Department of Environment, Water, Heritage and the Arts (setting out NOW's funding requirements under the 'no additional net costs' provisions).
- Overview – NSW Office of Water (a documents that sets out the new functions and responsibilities of the Office of Water, post departmental restructure in June 2009).
- Murray Darling Basin Authority Corporate Plan, 2009-2013

Other information relied upon for the review

Council of Australian Governments. National Water Initiative. June 2005.

Department of Environment and Resource Management, Annual Report 27 March – 30 June 2009.

Department of Primary Industries, Parks, Water and Environment, Annual Report 2008-09.

Department of Sustainability and Environment, Annual Report 2009.

Department of Water, Annual Report 2008-09.

Economic Regulatory Authority. Inquiry into Water Resource Planning and Management Charges. Draft report. 3 December 2009

National Water Commission. Australian Water Markets Report 2008-2009. December 2009.

Western Australian Auditor General's Report. Public Sector Performance Report 2009. Report 1 – April 2009

Appendix D Capital projects - Summary sheets

This appendix contains project summary sheets for the following projects:

- Groundwater Monitoring.
- Water Extraction Monitoring (Metering and Data systems)
- Corporate Water Database, and
- Hydrometric Network Renewals.

Groundwater Monitoring

Summary of Project

The objective of this project has been to enhance NOW's groundwater monitoring network across the state to meet the requirements of existing WSPs. The enhanced bore network was required to provide appropriate surveillance for WSPs and advise CMAs on investment strategies. The program has involved construction of new State-owned bores, the purchase and installation of metering instruments (data loggers and salinity probes), and 'asset management' (commissioning of the asset ready for use).

Evaluation and justification of the project

NOW has been unable to provide the business case for this program of work. Consequently, it has not been possible to review the evaluation and justification of the groundwater monitoring program, or details of intended project outputs. However, NOW has indicated that the project was originally intended to deliver 464 new groundwater bores across approximately 40 of its groundwater management areas in NSW. The groundwater bores are required to provide accurate information on which to base water management decisions.

Individual projects within this program of work are prioritised by the Groundwater Steering Committee. NOW has provided examples of project proposal forms which are completed for each project in this program. The Groundwater Steering Committee reviews and assesses each proposal and, if approved, funding for each project is drawn down from the groundwater monitoring program. Typical works include installation of monitoring bores, surveying and installation of borehole telemetry.

Cost Estimate

Funding approval for $9.6 million (nominal) was granted by Treasury in 2004-05, with delivery of the program planned over the period 2004-05 to 2007-08.

Ongoing delays to the project have resulted in the re-phasing of program expenditure, as reflected in IPART's 2006 Determination and NOW's 2009 submission. Actual expenditure on the project has continued to slip, and the project is now planned for completion by the end of 2009-10. NOW has attributed the delays principally to the lack of driller availability. Other factors have included the lack of staff availability and staff time, departmental priorities and departmental restructures.

A breakdown of forecast and actual expenditure is shown in Table D.1.

Table D.1: Actual and forecast expenditure on Groundwater monitoring network ($ '000)

Expenditure	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2006-07 to 2009-10	2004-05 to 2010-11	Comment
			Current Price Path							
Approved project expenditure - Treasury approved ($ nominal)	2,802	2,263	2,192	2,343	-	-	-	4,535	9,600	Planned budget for the project, as first approved.
NOW's 2005 Submission ($2005-06)	807	2,573	3,073	3,075	-	-	-	6,148	9,528	Reflects expenditure profile forecast by NOW at the time of the 2006 pricing review
2006 IPART Determination ($2005-06)			3,073	3,075	-	-	-	6,148		2006 Determination accepted NOW's revised delivery timeframe.
2009 Submission ($ nominal)	808	1,255	772	2,010	3,036	1,719	-	7,537	9,600	NOW's current forecast assumes expenditure up to the original approved budget.
$2009-10										
Treasury approved	3,258	2,550	2,400	2,481	-	-	-	4,881	10,688	
NOW's 2005 Submission	938	2,899	3,462	3,465	-	-	-	6,927	10,765	
2006 IPART Determination			3,462	3,465	0	-	-	6,927		
2009 Submission	940	1,414	845	2,128	3,112	1,719	-	7,804	10,158	

Note: In its 2006 Determination (Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation from 1 October 2006 to 30 June 2010, September 2006, p75), IPART reported expenditure of $2.6 million ($ 2005-06) for the groundwater monitoring network, and $6.1 million ($2005-06) for the metering and data systems project, which was consistent with NOW's 2006 submission document. However, it appears that NOW's submission incorrectly reversed the expenditure for these two schemes. Supporting information indicates that IPART's detailed review of these schemes was based on the correct expenditure. There is no impact on the 2006 Determination, as it is based on total (program) capital expenditure.

The latest reforecast of expenditure, as reported in NOW's 2009 submission, is based on the premise that the program will continue until the Treasury approved budget is expended ($ nominal). As such, the total project expenditure will be lower (in real terms) than the Treasury approved funding.

The original project budget was split between construction of new bores ($6.5 million), instrumentation ($1.4 million) and asset management ($1.7 million). NOW has been unable to provide a breakdown of the full expenditure into these items, although it has provided the split of expenditure for 2009 (new bores 70%, instrumentation 15%, asset management 15%). The split of expenditure is approximately in line with that estimated in the original budget.

As at 3rd September 2009, 283 bores of the 464 planned bores had been completed. NOW has indicated that while the project still aims to deliver 464 bores this may be impacted by escalating costs of fuel, labour and drilling. Given that approximately 80 per cent of the budget has been spent to deliver 283 bores (61 per cent of the intended outputs), it is unlikely that NOW will deliver 464 bores within the project budget. NOW is yet to reassess the number of boreholes that it is likely to deliver under this program, however, it indicated that additional funding would be necessary to deliver all of the planned bores. Unless such funding becomes available, the management of WSP areas will become less accurate due to gaps in groundwater data. Despite this, NOW's 2009 submission does not include any additional funding to complete this program of work.

NOW attributed the variance between the planned budget and actual expenditure to the increasing cost of drilling (fuel and labour) and installation (labour). NOW also indicated that original budget estimates were unrealistic. Ongoing delays to the program have no doubt had an impact on NOW's ability to meet its original budget estimates.

Contributed capital works

NOW has indicated that no third party funding has been provided for this project.

Timing and delivery

Approximately 60 per cent of the drilling services have been delivered by NOW's commercial Groundwater Drilling Unit. The Groundwater Drilling Unit has the first option to undertake the work. In instances where it is unavailable to do the work, the services are provided by external drilling contractors. Work let to external drilling contractors is via competitive pricing. Three quotes must be obtained for smaller jobs, and larger jobs are let via an open tender process. Instrumentation purchases are bundled with surface water instrumentation purchases in order to maximise purchasing power.

As noted above, it was originally intended that this project would be delivered over the period 2004-05 to 2007-08, however, the project

has been re-phased, and NOW currently forecasts that this project will be completed by the end of 2009-10. It noted that lower demand on drillers since the easing of the drought should ensure driller and technical availability. Given the history of project delays, it is very likely that this project will continue to slip into 2010-11. We have adjusted NOW's forecast expenditure to account for this anticipated slippage.

Assessment of project

In the absence of a project business case, it has not been possible to make a detailed assessment on the efficiency or prudence of this project. However, from the information provided, it does appear that this project is aligned to NOW's strategic objectives of monitoring water extractions, and developing statutory WSPs. Prioritisation of individual projects being delivered under the program by the project Steering Committee should mean that works are appropriately targeted. On this basis, the project appears prudent. However, while the project has enhanced NOW's groundwater monitoring network across the state, it has not, and is unlikely to, deliver all of the intended groundwater monitoring installations. While NOW indicated that it has sought to obtain value for money in procurement of services, any efficiencies obtained are likely to have been eroded by the impact of delays to the program.

Our assessment of the likely future project expenditure is shown in Table D2.

Table D.2: Actual and forecast expenditure on Groundwater monitoring network ($'000 2009-10)

Forecast Expenditure	2006-07	2007-08	2008-09	2009-10	2010-11
2009 Submission	845	2,128	3,112	1,719	
Adjustments for re-profiling				(859)	859
Assessment	845	2,128	3,112	859	859

Water Extraction Monitoring (Metering and Data Systems)

Summary of Project

This project has undergone significant change since Treasury first approved funding in 2004-05.

The project was originally intended to deliver metering and site reconnaissance to quantify the magnitude and timing of water extractions from unregulated rivers and groundwater systems. This information is required to implement NOW's water extraction monitoring policy and WSPs. The project also involved development of an internet based water accounting system to record meter readings for critical catchments that are not under a WSP.

As part of the original project, unregulated and groundwater licence holders would be required to buy and install meters, while NOW

would undertake meter installation audits/calibration, enhanced communication and data collection/archiving systems, and audit and compliance work. While NOW has undertaken site reconnaissance in a number of areas, the requirement for irrigators to install meters was never enforced, and to date no meters have been installed.

NOW has indicated that the Commonwealth's agreement in principle to fund metering in the Murray-Darling Basin led to a change in metering direction. Following the July 2008 announcement, the project was realigned to carry out site assessments within the Murray Darling Basin, with the Murray catchment identified as a priority catchment. However, continued uncertainty surrounding NOW's metering policy has meant that the project is currently on hold. The future direction of the project, including definition of outcomes and outputs, is currently under review and expected to be determined at the project Steering Committee meeting in February 2010.

Evaluation and justification of the project

Although Treasury approval of the project was secured in 2004-05, a business case for this project was not developed. Consequently, we are unable to comment in detail on the proposed outputs of this project (in terms of number of licenses to be metered and monitored), or whether NOW undertook any cost benefit, cost effectiveness, or customer 'willingness to pay' analysis. Furthermore, no documentation surrounding the review and approval of changes to the program since 2004-05 has been provided (outlining the justification and approval of the decision to realign the project to carry out site assessments within the Murray Darling Basin). Given that NOW is yet to decide what outputs will be delivered from this project, we are unable to comment on the future direction of this project.

The key activity codes identified for this project are 'Surface water quantity monitoring' (C01-01) and 'Groundwater quantity monitoring' (C02-01). The split of expenditure between these drivers is 67:33 C01-01:C02-01.

Cost Estimate

NSW Government funding of $2.92 million ($nominal) was granted for this project. The original project budget included allowances for meter installation and calibration, enhanced communication and data collection/archiving systems; and audit and compliance work. A breakdown of the budget into these expenditure items is not provided in the project documentation.

Delays to the project have resulted in it being re-phased on a number of occasions, as reflected in IPART's 2006 Determination, and the latest re-forecast which has a planned completion date of 2010-11. The delays to the project have meant that to date NOW has underspent the allowance included in the 2006 Determination.

The latest breakdown of budgeted, actual and forecast expenditure is shown in Table D3.

Table D.3: Budget, actual and forecast expenditure on metering and data systems ($ '000)

Capital Expenditure	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2006-07 to 2009-10	2004-05 to 2010-11	Comment
			Current pricing period							
Approved project expenditure - Treasury approved ($nominal)	730,000	730,000	730,000	730,000	-	-	-		2,920,000	Planned budget for the project, as first approved.
2006 IPART Submission/ Determination ($2005-06)			1,097,000	730,000	730,000	-	-			Reflects expenditure profile forecast by NOW at the time of the 2006 pricing review.
Actual and forecast ($ nominal)	377,750	63,570	47,690	197,997	244,588	918,990	1,069,415[1]		2,920,000	The current forecast assumes expenditure up to the original approved budget, with delivery by 2010-11.
$2009-10										
Treasury approved	848,830	822,509	799,190	772,942	-	-	-	1,572,132	3,243,471	
2006 IPART Submission/ Determination			1,236,018	822,509	822,509	-	-	2,881,036		
Actual and forecast	439,240	71,626	52,210	209,644	250,703	918,990	1,069,415	1,431,547	3,011,828	

Note: In its 2006 Determination (Bulk Water Prices for State Water Corporation and Water Administration Ministerial Corporation from 1 October 2006 to 30 June 2010, September 2006, p75), IPART reported expenditure of $2.6 million ($ 2005-06) for the groundwater monitoring network, and $6.1 million ($2005-06) for the metering and data systems project, which was consistent with NOW's 2006 submission document. However, it appears that NOW's submission incorrectly reversed the expenditure for these two schemes. Supporting information indicates that IPART's detailed review of these schemes was based on the correct expenditure. There is no impact on the 2006 Determination, as it is based on total (program) capital expenditure.

In the absence of the original business case, and due to subsequent changes to the focus of the project, it has not been possible to review the historical expenditure against the intended project deliverables. However, NOW has provided a breakdown of some of the expenditure incurred to date. This includes:

- the Transitional Water Accounting System ($50,000 nominal),
- the WIX/iWAS data system ($377,000 nominal),
- site assessments ($93,000 nominal), and
- a pilot metering project at Bemoka ($50,000 nominal).

We understand that the remaining expenditure incurred to date (~$360,000) is related to a number of project management activities, including time to develop a service level agreement with State Water (State Water's Customer Field Officers will carry out site assessments for this project on behalf of NOW). It also includes time spent by NOW to write the business case to secure Commonwealth funds for the Murray-Darling Basin metering project.

Realignment of the Metering and Data Systems project to carry out site assessments within the Murray Darling Basin and to develop the business case to secure Commonwealth funds represents a change in the focus of the project. It does not appear that a formal reassessment of the project (redevelopment of the business case or project justification) was undertaken before this change to the scope of the project was made.

While the WIX/iWAS data system is operational, it is yet to be implemented for the unregulated and groundwater sources (as these sites are yet to be metered there is no information to populate the database).

The Transitional Water Accounting System was developed to accommodate meter readings for licences under the *Water Act 1912*. Although complete, the system is not fully operational. It was intended that the system be used by irrigators in the Hawkesbury-Nepean catchment prior to the Commonwealth agreement to fund metering along the Hawkesbury-Nepean River. Following the Commonwealth announcement to fund metering in Hawkesbury-Nepean, the Program Manager made a decision not to use the system.

Site reconnaissance has been undertaken at a number of sites, although no meters have been installed.

While we are unable to comment on the outputs to be delivered with the remaining project budget, NOW's forecast of remaining expenditure is based on the premise that the total project expenditure will be equal to the expenditure approved by Treasury ($2.92 million nominal).

Contributed capital works

NOW has indicated that this project has not attracted any contributed capital works.

Timing and delivery

As noted above, the project has been delayed and re-phased a number of times, and is now planned for completion by 2010-11. NOW indicated that initial delays to the project were primarily due to resourcing, as recruitment for the project manager did not commence until December 2007, two and a half years into the project. In addition, organisational restructures within NOW contributed to early project delays, as responsibility for implementation was moved from regional offices to a corporate level.

Further delays to the project have arisen following the Commonwealth's announcement in July 2008 that it would provide (in principle) funding for metering in the Murray-Darling Basin. NOW indicated that, following the announcement, it was necessary to review its metering strategy. We understand that this process is still ongoing

Given the current lack of project definition and the significant delays historically, we have some concern that NOW will deliver the remaining part of the project within its proposed timeframes. In the absence of more information on the likely future direction of the project, it is not possible to make an assessment of what the expenditure profile is likely to be.

Assessment of project

Our review of this project has been hampered by the lack of available documentation, particularly the business case or relevant planning documents outlining the justification for the project and planned deliverables. As a result, we have been unable to gain assurance that the outcomes achieved to date have been prudent and efficient, or resulted in enhanced monitoring and metering of water extraction for unregulated rivers and groundwater sources.

While site assessments have been completed at a number of priority sites, to date no new meters have been installed at unregulated or groundwater sites. Given that approximately one third of the project budget has already been expended, it is unclear whether this project will achieve its intended outcomes. Given this uncertainty, we recommend that the expenditure on this scheme be excluded from NOW's Regulatory Asset Base until such time as it is able to demonstrate that the expenditure incurred to date has contributed to its monopoly services and water management objectives. We do however, acknowledge that for NOW to effectively implement its WSPs, it will be required to deliver metering and site reconnaissance on its groundwater and unregulated sources. Hence, we have not recommended any adjustment to the 2010-11 expenditure forecast.

Corporate Water Databases

Summary of Project

This project has involved the development of corporate water databases to store water management data and to improve public access to the data. The project is comprised of two key elements: a telemetry system, and development of groundwater and water quality databases.

Funding approval of $1 million (nominal) for development of NOW's databases was granted by Treasury in May 2004. The expenditure was allocated under a broad heading of 'integrated databases' and was to be expended in two years. The 2006 Determination did not allow any expenditure for this project as it was to have been completed by the end of 2005-06. These funds have continued to be rolled over and the final expenditure is now forecast for 2010-11.

The document provided to Treasury to secure funding for these projects contains very little information and does not identify any specific deliverables, only indicating that NOW required 'development costs for an appropriate corporate database'.

The upgrade of NOW's telemetry system involved replacing five data acquisition systems with a single system. The telemetry system gathers river and dam data from remote sites and sends it to an operational database (in real time), making the data available for use to NOW and other stakeholders. Implementation of this project was completed in 2006-07.

In respect of the groundwater and water quality databases, NOW indicated that it is taking advantage of funding from BOM to upgrade its water quality and groundwater databases. NOW has pooled the remaining funds approved by Treasury in 2004-05 ($400,000 nominal) with the funding provided by BOM ($500,000 nominal). The new databases will enable delivery of relevant data to BOM as required by Commonwealth legislation. Whilst providing NOW with more integrated water database systems to meet specific NOW business needs. The NOW funding will be used to deliver NOW specific system enhancements and system testing. It also includes an allowance for project management.

Evaluation and justification of the project

The key activity drivers identified for this project are 'Surface water quantity data management and reporting' (C01-02) and 'Groundwater quality monitoring' (C02-02). The split of expenditure between these drivers is 94%:6% C01-02:C02-02.

A copy of the business case for the new telemetry system was provided for our review. The business case does not provide any information on options considered, customer 'willingness to pay', or any cost benefit analysis. Consequently, we are unable to make any comments in relation to the evaluation of this project. A review of the business case does, however, indicate that the project scope

was consistent with strategic objectives. NOW also provided a copy of the funding application to BOM. The document outlines the key benefits of the project, including upgrades to its existing technology, enabling better linkages with NOW's existing systems. On this basis, these projects appear prudent.

Cost Estimate

Historical and proposed expenditure on the Corporate Water Databases project is provided in Table D4.

Initial delays to the project were the result of additional time spent investigating possible solutions (products) for the telemetry system. Delays in delivery of the groundwater and water quality databases were primarily due to the decision to combine the remaining project funds with the funding from BOM, which led to the project being put on hold until funds were secured.

NOW's forecast of expenditure is based on the assumption that all approved funding ($ nominal) will be spent.

Table D.4: Actual and forecast expenditure on Corporate Water databases ($ '000)

Capital Expenditure	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2006-07 to 2009-10	2004-05 to 2010-11	Comment
			Current pricing period							
Approved project expenditure - Treasury approved ($ nominal)	500	500	-	-	-	-	-	-	1,000	Planned budget for the project, as first approved by Treasury in 2004-05.
NOW's 2006 submission	-	-	-	-	-	-	-	-	-	The project was not included in NOW's 2006 submission to IPART as delivery was to be completed by 2005-06.
NOW's 2009 Submission ($ nominal)	44	59	400	75	50	300	72	824	1,000	The current forecast assumes expenditure up to the original approved budget, with delivery by 2010-11.
$2009-10										
Approved by Treasury	581	563	-	-	-	-	-	-	1,145	
NOW's 2006 submission	479	563	-	-	-	-	-	-	1,042	
NOW's 2009 Submission	51	67	437	79	51	300	72	868	1,058	

Contributed capital works

Grant funding of $500,000 has been approved by BOM to deliver the groundwater and water quality databases. The figures in NOW's submission are reported net of this funding.

Timing and delivery

As noted in Table D.4, the delivery of this scheme has been delayed and is now due for completion in 2010-11. NOW indicated that, due to delays in procurement of the groundwater and water quality database, it is possible that some of the expenditure forecast for 2009-10 will slip into 2010-11. It did not provide an estimate of what the slippage might be, but indicated that the total project expenditure would remain unchanged.

The majority of outputs delivered to date are hardware items which were procured competitively within the market via open tenders, and hence there is some confidence that the expenditure has been delivered at market rate.

All of the forecast expenditure relates to the delivery of the groundwater and water quality databases. Procurement of these databases will be by open tender, with the procurement process currently in its final stages. NOW has indicated that contract negotiations had commenced with the preferred bidder.

Assessment of project

The expenditure on the telemetry system and the groundwater and water quality databases will better enable NOW to meet its obligations to provide real time data, and will increase the efficiency with which data is collected and reported. We consider streamlining its corporate databases in this way to be prudent, and combining the remaining project budget with the funding obtained from BOM should result in greater value for money.

Hydrometric Network Renewals

Summary of Project

NOW currently owns and operates 800 surface water hydrometric stations. In addition it has 30 vehicles which contain equipment necessary for maintenance of these hydrometric stations. Of its surface water hydrometric stations, 400 are externally (third-party) funded. The remaining 400 hydrometric stations and the equipment to maintain these assets are funded by NOW.

A significant portion of NOW's existing hydrometric stations were built with federal funds during the 1960s, and 80 per cent of its network was established before 1989. To date, NOW has not had a replacement program for these assets and, as a consequence, there is currently a backlog of required asset renewals. BOM has provided $3 million funding to address some of the backlog replacement.

Moving forward, NOW intends to implement an ongoing annual replacement strategy for its hydrometric station assets. It has included an allowance for an asset renewals program in its 2009 submission, commencing in 2010-11. The expenditure forecast is an annual allowance for the ongoing renewal and refurbishment of the hydrometric network assets which do not attract third-party funding. The expenditure proposed by NOW is required in addition to the BOM funding.

NOW's asset renewals allowance takes into account the increase in the hydrometric network asset base that will result from the Commonwealth funded 'Hydrometric Network Expansion' project. The expenditure estimate for the asset renewals allowance is based on the assumption that the asset base will expand by 150 hydrometric stations and six additional vehicles (and associated mobile support equipment) by 2011-12. We note that this is not consistent with NOW's 2009 submission, which indicates that the Hydrometric Network Expansion' project will deliver 128 new stations and relocation or upgrade of 50 stations. NOW indicated that while its original estimate of 150 new gauging stations was correct at the time of estimating the capital expenditure associated with this scheme, it has since revised this figure, and the current estimate is as reported in its 2009 submission. As such, the capital expenditure allowance for this scheme requires adjustment to account for this change.

Evaluation and justification of the project

The driver identified for this project is 'surface water monitoring assets management' (C01-06).

We would typically expect the justification for a renewals program of this nature to be based on detailed asset records such as the condition and age profile of the assets, together with records of asset failures, however, NOW does not currently maintain this level of information on its asset base. Consequently, the justification for its proposed renewals program is based on the premise that many of its network assets were established before 1989 and are currently older than their expected asset lives. NOW has indicated that this assessment was, 'a first cut, satisfactory to get the project moving'. NOW indicated that if funding is granted, a more detailed analysis of the asset database will be undertaken and a model developed to manage the logical and structured replacement cycle of each asset.

Without more detailed information on asset failures and the current condition and age profile of the network, it is not possible to accurately assess whether the level of expenditure proposed by NOW will efficiently address current asset renewal requirements. However, given the current age of the network, and the hitherto absence of a renewals program, we consider that the implementation of such a program should not be delayed.

Given the increasing focus on provision of reliable, up to date hydrometric data, a targeted and effective asset renewals program is required to ensure that NOW will be able to meet its legislative

obligations into the future. While NOW has identified a list of sites for priority replacement, it is based on a simple analysis of the age (establishment date) of the station, and not the individual asset age, or the condition and criticality of the assets.

NOW is yet to complete a business case for this expenditure, or undertake any form of cost benefit analysis or cost effectiveness analysis. We recommend that such an analysis be undertaken to confirm the prudence of the proposed investment and the delivery approach.

Cost Estimate

The expenditure for these works included in NOW's submission is a high level estimate of the annualised asset replacement cost of its hydrometric network. It is based on an 'average replacement value' of a typical gauging station and assumed asset lives of gauging station components. The proposed expenditure for the asset renewals program is shown in Table D.5.

Table D.5: Forecast expenditure for the Hydrometric Network ($ million, 2009-10)

Upgrade/replacement/ refurbishment of hydrometric network	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Allowance in 2009 submission[1]	0.152	2.032	2.032	2.032	2.032	8.280
Allowance estimated in NOW's supporting analysis[2]	1.52	2.032	2.032	2.032	2.032	9.647
Number of hydrometric sites (as assumed for estimation of capex requirement)	400	550	550	550	550	-
Number of hydrometric sites (latest estimate)	400	528	528	528	528	-
Number of vehicles with support equipment	30	36	36	36	36	-

Note: (1) Figures extracted from NOW's cost models. (2) This is the forecast expenditure requirement estimated in the preliminary planning documentation that supports this expenditure proposal.

NOW's 2009 submission and its supporting cost models contain an error; the 2010-11 forecast expenditure is out by a factor of 10. NOW has acknowledged the error but, due to the immateriality on its total revenue requirement, it requests no change to its pricing submission.

NOW's estimate of renewals expenditure is based on an average replacement cost of $25,000 for a hydrometric station. There are a number of different hydrometric station types, and the typical replacement cost ranges from ~$2,500 for the most basic of stations, up to ~$35,000. The replacement cost will vary depending upon whether the station is elevated, whether the equipment is housed in a shelter, and also depending on what is measured (stations may measure rainfall, flow, temperature, conductivity, turbidity or a combination of these). We consider the allowance of $25,000

reasonable for a typical hydrometric station comprising of a concrete stand, shelter and associated electronic and sensing equipment.

NOW provided a breakdown of expenditure for a recent project that involved the renewal of a hydrometric station. The project is typical of the works that will be involved in the renewal of the hydrometric network. The breakdown identifies allowances for labour (for planning and installation), from which it was possible for us to estimate the indirect costs (corporate overheads) allocated to the project. Our review indicates that the indirect costs were in the order of 5 to 10 per cent of direct project costs, which we consider to be reasonable.

The asset lives assumed by NOW in developing the annualised replacement cost are shown in Table D6. The asset life assumptions are not substantiated by asset condition data (as this information is not currently collected).

Table D.6: Hydrometric Network Asset Lives

Asset Type	NOW Asset Life (years)	Assessment
Electronic and sensing equipment	5	5-15, average of 10
Civil infrastructure	20	50+
Support vehicle based equipment	Range from 5 to 15, with average of 10	Range from 5 to 15, with average of 10

We are of the opinion that these asset lives are likely to be understated, particularly for civil infrastructure assets. While NOW indicated that asset failures have started to increase, no detailed information on the types or rates of failure has been provided for this review. It is our understanding that the majority of NOW's hydrometric network continues to be operational. Given that many of the hydrometric stations were built with federal funds during the 1960s, and that 80 per cent of its network was established before 1989, it is unclear how an assumed asset life of 20 years for new civil assets can be justified. In addition, NOW has stated that most of its electronic and sensing equipment has been installed for greater than ten years. On this basis we question the validity of a five year asset life assumption. Our assessment of asset lives is shown in the Table D.6.

Adopting the Halcrow assessment of asset lives reduces the estimate of renewals expenditure by approximately $0.6 million ($2009-10) in 2010-11, and $0.9 million ($2009-10) thereafter. Given the hitherto lack of expenditure on these assets, and small size of the renewals program, we accept NOW's expenditure estimate. However, we recommend that it be adjusted to account for the fact that the Hydrometric Network Expansion project is now expected to deliver 128 new stations.

We recommend that NOW begins to collect information on the state of its asset base, such as the condition and failure rates, so that it may be better able to justify future renewals expenditure programs.

NOW's proposed annual renewals program will involve replacement of station infrastructure at 20 stations, and replacement of sensing equipment at 80 stations. These outputs have been back calculated from the annual renewals expenditure, and typical value of station components. Our analysis indicates that the expenditure program should also deliver ~3 sets of vehicle-based support equipment per year. We note that the expenditure in any given year may vary depending on asset failures and renewals requirements.

We note that NOW's method of estimating an annualised renewals expenditure assumes equal distribution of its hydrometric network assets by asset life (a uniformly spread asset profile). From the limited information available on asset lives, we know this to be incorrect. Expenditure on asset renewals is likely to be lumpy, and given the age of its existing hydrometric network, greater funding to address backlog renewals will be required in the short term. From the information provided by NOW it is not clear whether the funding from BOM will address the full backlog.

Contributed capital works

Except for the $3 million BOM funding to address some of the renewals backlog, this program of work will not attract any contributed capital works. The required expenditure for this project as reported in Table 5 of NOW's submission is net of any contributions.

Timing and delivery

NOW has indicated that it currently has a tender in the market place for establishment of a network of monitoring stations. Given the ongoing nature of this renewals program, some additional efficiencies may be gained by delivering the renewals using a period contract or bundling the work into large packages.

Assessment of project

While the need to ensure that sufficient expenditure is spent to renew NOW's existing network is evident, the absence of an asset management plan and asset condition data has meant that it is not possible to assess whether the level of expenditure proposed by NOW will efficiently and effectively address current asset renewal requirements.

Ideally, the renewals program should be targeted to reduce network failures in areas of the network which are critical to NOW's ability to meet its obligations. While NOW has identified a list of sites for priority replacement, it is based on a simple analysis of the age (establishment date) of the station, and not the individual asset age, condition, or the criticality of the asset. We recommend that this analysis be undertaken.

On the basis of our review, we consider that the proposed renewal program is prudent, although this should be confirmed with development of a robust business case. We recommend that NOW's proposed expenditure for this scheme be accepted, with adjustment to correct the expenditure in 2010-11, and to account for the latest estimate of new stations likely to be delivered by the Hydrometric Network Expansion Project. This is shown Table D.7.

We note that some efficiencies may be gained by delivering the renewals using a period contract, or bundling the work. We are of the opinion that any savings achieved would be best reinvested into the renewals program, or in the collection of asset condition data.

Table D.7: Recommended expenditure for the Hydrometric Network ($ million, 2009-10)

Upgrade/replacement/ refurbishment of hydrometric network	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Allowance in 2009 submission	0.152	2.032	2.032	2.032	2.032	8.280
Recommended	1.52	1.97	1.97	1.97	1.97	9.39
Difference	1.37	-0.07	-0.07	-0.07	-0.07	1.11

Appendix E Breakdown of recommended capital expenditure

Water Extraction Monitoring (Metering and Data Systems)

	2010-11			2011-12			2012-13			2013-14			2014-15			TOTALS			
$000 2009-10	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	TOTAL
Border	8	-	16	-	-	-	-	-	-	-	-	-	-	-	-	8	-	16	**24**
Gwydir	12	-	23	-	-	-	-	-	-	-	-	-	-	-	-	12	-	23	**35**
Namoi	14	-	27	-	-	-	-	-	-	-	-	-	-	-	-	14	-	27	**41**
Peel	9	-	20	-	-	-	-	-	-	-	-	-	-	-	-	9	-	20	**30**
Lachlan	19	-	40	-	-	-	-	-	-	-	-	-	-	-	-	19	-	40	**60**
Macquarie	24	-	50	-	-	-	-	-	-	-	-	-	-	-	-	24	-	50	**74**
Far West	30	-	61	-	-	-	-	-	-	-	-	-	-	-	-	30	-	61	**92**
Murray	27	-	55	-	-	-	-	-	-	-	-	-	-	-	-	27	-	55	**82**
Murrumbidgee	26	-	52	-	-	-	-	-	-	-	-	-	-	-	-	26	-	52	**78**
North Coast	56	-	111	-	-	-	-	-	-	-	-	-	-	-	-	56	-	111	**166**
Hunter	61	-	121	-	-	-	-	-	-	-	-	-	-	-	-	61	-	121	**182**
South Coast	69	-	137	-	-	-	-	-	-	-	-	-	-	-	-	69	-	137	**206**
	355	**-**	**714**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**355**	**-**	**714**	**1,069**

	2010-11			2011-12			2012-13			2013-14			2014-15			TOTALS			
$000 2009-10	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	TOTAL
Border	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	-	**2**
Gwydir	0	3	0	-	-	-	-	-	-	-	-	-	-	-	-	0	3	0	**4**
Namoi	0	4	0	-	-	-	-	-	-	-	-	-	-	-	-	0	4	0	**4**
Peel	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	**1**
Lachlan	0	5	0	-	-	-	-	-	-	-	-	-	-	-	-	0	5	0	**6**
Macquarie	0	5	0	-	-	-	-	-	-	-	-	-	-	-	-	0	5	0	**6**
Far West	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	**1**
Murray	1	19	0	-	-	-	-	-	-	-	-	-	-	-	-	1	19	0	**20**
Murrumbidgee	0	10	1	-	-	-	-	-	-	-	-	-	-	-	-	0	10	1	**10**
North Coast	0	1	3	-	-	-	-	-	-	-	-	-	-	-	-	0	1	3	**4**
Hunter	0	4	1	-	-	-	-	-	-	-	-	-	-	-	-	0	4	1	**5**
South Coast	1	1	8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	8	**9**
	4	**54**	**15**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**54**	**15**	**72**

	2010-11			2011-12			2012-13			2013-14			2014-15			TOTALS			
$000 2009-10	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	TOTAL
Border	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	**15**
Gwydir	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	**15**
Namoi	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	-	-	**54**
Peel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Lachlan	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	-	-	**67**
Macquarie	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	-	-	**75**
Far West	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	**48**
Murray	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	-	-	**121**
Murrumbidgee	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	-	-	**121**
North Coast	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	-	-	**104**
Hunter	118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	-	-	**118**
South Coast	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	121	-	-	**121**
	859	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**859**	**-**	**-**	**859**

	2010-11			2011-12			2012-13			2013-14			2014-15			TOTALS			
$000 2009-10	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	TOTAL
Border	-	12	28	-	15	36	-	15	36	-	15	36	-	15	36	-	73	171	**244**
Gwydir	-	28	24	-	36	31	-	36	31	-	36	31	-	36	31	-	171	146	**317**
Namoi	-	8	63	-	10	82	-	10	82	-	10	82	-	10	82	-	49	390	**439**
Peel	-	4	8	-	5	10	-	5	10	-	5	10	-	5	10	-	24	49	**73**
Lachlan	-	59	4	-	77	5	-	77	5	-	77	5	-	77	5	-	366	24	**390**
Macquarie	-	47	51	-	61	66	-	61	66	-	61	66	-	61	66	-	293	317	**609**
Far West	-	-	75	-	-	97	-	-	97	-	-	97	-	-	97	-	-	463	**463**
Murray	-	39	59	-	51	77	-	51	77	-	51	77	-	51	77	-	244	366	**609**
Murrumbidgee	-	138	154	-	179	199	-	179	199	-	179	199	-	179	199	-	853	951	**1,804**
North Coast	-	8	316	-	10	409	-	10	409	-	10	409	-	10	409	-	49	1,950	**1,999**
Hunter	-	12	107	-	15	138	-	15	138	-	15	138	-	15	138	-	73	658	**731**
South Coast	-	4	272	-	5	352	-	5	352	-	5	352	-	5	352	-	24	1,682	**1,706**
	-	**359**	**1,160**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**-**	**2,218**	**7,167**	**9,385**

Recommended Capital Expenditure Program

	2010-11			2011-12			2012-13			2013-14			2014-15			TOTALS			
$000 2009-10	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	GW	REG	UNREG	TOTAL
Border	23	14	44	-	15	36	-	15	36	-	15	36	-	15	36	23	**75**	**187**	**285**
Gwydir	27	31	47	-	36	31	-	36	31	-	36	31	-	36	31	27	**174**	**170**	**370**
Namoi	68	12	91	-	10	82	-	10	82	-	10	82	-	10	82	68	**52**	**418**	**538**
Peel	10	5	28	-	5	10	-	5	10	-	5	10	-	5	10	10	**25**	**69**	**103**
Lachlan	87	64	45	-	77	5	-	77	5	-	77	5	-	77	5	87	**371**	**65**	**522**
Macquarie	100	53	101	-	61	66	-	61	66	-	61	66	-	61	66	100	**298**	**367**	**765**
Far West	79	-	137	-	-	97	-	-	97	-	-	97	-	-	97	79	**-**	**525**	**605**
Murray	149	59	114	-	51	77	-	51	77	-	51	77	-	51	77	149	**263**	**421**	**833**
Murrumbidgee	147	148	207	-	179	199	-	179	199	-	179	199	-	179	199	147	**863**	**1,003**	**2,013**
North Coast	160	8	429	-	10	409	-	10	409	-	10	409	-	10	409	160	**49**	**2,064**	**2,273**
Hunter	179	16	229	-	15	138	-	15	138	-	15	138	-	15	138	179	**77**	**780**	**1,037**
South Coast	191	5	418	-	5	352	-	5	352	-	5	352	-	5	352	191	**25**	**1,827**	**2,043**
	1,218	**413**	**1,890**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**-**	**465**	**1,502**	**1,218**	**2,272**	**7,896**	**11,387**

Appendix F Activity codes

Table F.1: Water planning and management activities proposed by NOW for inclusion in its regulated cost base.

New Code	Activity
C01	Surface water monitoring
C01-01	Surface water quantity monitoring
C01-02	Surface water quantity data management
C01-03	Surface water quality monitoring
C01-04	Surface water ecology, biology & algal monitoring
C01-05	Surface water quality database management
C01-06	Surface water monitoring assets management
C02	Groundwater monitoring
C02-01	Groundwater quantity monitoring
C02-02	Groundwater quality monitoring
C02-03	Groundwater database management
C02-04	Groundwater monitoring assets management
C03	Surface & groundwater metering
C03-01	Metering operations
C03-02	Metering data management
C04	Surface water & groundwater analysis
C04-01	Water quality analysis
C05	Water modelling & impact assessment
C05-01	Water sharing/water management modelling
C05-02	Resource assessments
C05-03	Water balances/accounting
C05-04	Groundwater modelling
C06	Water management implementation
C06-01	Systems operation & water availability management
C06-02	Trading & accounts management
C06-03	Plan performance monitoring & reporting
C06-04	Blue-green algae management
C06-05	Environmental water management
C07	Water management planning
C07-01	Water sharing plan development
C07-02	Operational planning
C07-03	Environmental water planning
C07-04	Cross-border & national commitments
C07-05	Water industry regulation
C08	River management works
C08-01	River management works
C09	Water consents administration
C09-01	Consents administration
C09-02	Licence conversion & entitlement specification

C09-03	Compliance
C09-04	Consent transaction Overhead
C10	Water consents transactions
C10-01	Water consents transactions
C11	Business administration
C11-01	Financial administration
C11-02	Business development
C12	Capital program
C12-01	Surface water assets renewal
C12-02	Groundwater assets renewal
C12-03	Water laboratory assets renewal
C12-04	Metering water use systems on unregulated rivers & groundwater
C12-05	Integrated corporate water & ecological databases