Expenditure review of Water Administration Ministerial Corporation

Final Report

3608-44

Prepared for
Independent Pricing and Regulatory Tribunal

11 March 2021

Cardno

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Executive summary

Background

The Water Administration Ministerial Corporation (WAMC) is responsible for planning for and managing water resources in New South Wales. WAMC is constituted under section 371 of the *Water Management Act 2000* and its main functions are set by that Act. WAMC's activities in the following areas have been declared government monopoly services and are therefore subject to economic regulation by the Independent Pricing and Regulatory Tribunal (IPART):

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

The scope of the WAMC services subject to regulation are those necessary to plan for and manage the sustainable long term use of water. The National Water Initiative (NWI) developed pricing principles which is a reference for what is within the scope of WAMC's monopoly services. The costs of providing WAMC services are shared between Government and users. The share of costs that users fund for each activity is based on an assessment of the extent to which it is considered that it is the impact of users that create the need for the WAMC activity (the "impactor pays" principle). Costs are also shared between valleys based on a cost driver considered reflective of the relative costs of providing the WAMC service for each valley.

IPART will determine the prices that will apply for WAMC's monopoly services from 1 July 2021.

In 2016 when IPART last determined prices for WAMC monopoly services all services were delivered by the then Department of Primary Industries - Water, which was a Division of the Department of Primary Industries. Following industry reform, WAMC services are now delivered by the Department of Planning, Industry and Environment (DPIE) and WaterNSW. The Natural Resources Access Regulator (NRAR) was created in 2018 and is an agency within DPIE but acts independently under the guidance of an independent board. For this review, separate pricing proposals submissions were made by DPIE (including NRAR) and WaterNSW.

Review objectives and scope

Cardno, in associations with Atkins, have been commissioned to provide advice to IPART to support its pricing Determination. The scope of the review undertaken by Cardno/Atkins comprises:

- A strategic review of the WAMC expenditure
- A review WAMC’s monopoly services and the applicable user share of costs
- Recommendation of efficient historical and forecast capital expenditure and forecast operating expenditure
- Review of WAMC performance against past output measures and recommendation of future output measures
- A review of proposed charges for consent transactions (licensing services). These charges are recovered from users on a fee for service basis.
- A review of WAMC’s metering program and its meter reading, meter service and ancillary charges. These charges are recovered from users on a fee for service basis.

Historical expenditure is that incurred in the time since the 2016 Determination (1 July 2016 to 30 June 2021) and proposed expenditure is that which is proposed for the period from 1 July 2021 to 30 June 2026.

Our findings on the above scope items are summarised following.

Strategic review of WAMC expenditure

Total expenditure on WAMC activities in the current period significantly exceeds that included in the 2016 Determination. As WAMC expenditure is predominantly operating expenditure, costs that have exceeded the 2016 Determination have been borne largely by the agencies that deliver WAMC services, not users.

Expenditure in the future period is proposed to remain at levels substantially higher than actual expenditure in the current period. For operating expenditure, the proposed increase is $12.8 million per year (22%) compared with current period excluding fee for service activities. A small number of activity groupings are driving the increase: W06 Water management planning ($6.4 million per year higher in the future period than

the current period) and W08 Water regulation management[1] ($3.6 million per year higher in the future period than the current period).. At the activity code level, the largest increases are for W08-03 Compliance management (NRAR) ($4.2 million per year higher in the future period than the current period) followed by W06-05 Regional planning and management ($3.5 million per year higher in the future period than the current period) followed by W05-04 Water plan performance assessment and evaluation ($2.2 million per year higher in the future period than the current period).

Capital expenditure in the current and future periods has all been or is proposed to be delivered by WaterNSW. In the current period, capital expenditure on surface water and groundwater monitoring has been in line with the 2016 Determination. Corporate capital expenditure (largely for ICT) has greatly exceeded that included in the 2016 Determination. WaterNSW considers that the 2016 Determination substantially underestimates its corporate capital expenditure requirements.

While the DPIE pricing proposal frequently cites that a driver for increased expenditure in the future period is a requirement to deliver an increased quality and/or quantity of service (largely to meet customer expectations) we consider that this argument is weak for many activities. This is because there has been limited or no customer and stakeholder engagement at an activity level that would inform service and cost trade-offs and because there are few unambiguously new requirements on the WAMC business. Where WAMC has proposed increased expenditure to meet increased expectations where this hasn't been justified, we have not accepted this expenditure in our recommended level of efficient expenditure.

Review of WAMC's monopoly services and the applicable user share of costs

Activity code framework and definition of monopoly services

An activity code framework underpins the regulation of WAMC monopoly services. While the definition of these activity codes has changed over previous determinations, they are founded on the definition of water planning and management activities included in the National Water Initiative pricing principles and as interpreted by IPART at the 2011 Determination.

WaterNSW has mostly not used the activity code framework in its pricing proposal as it considers that the activity codes "do not directly align with… [its]… own activities and cost allocation methods". Instead, WaterNSW's proposal aggregates activities into single service areas. While we understand the challenge of recording costs to underlying activities, WaterNSW's proposed aggregation of activities creates significant problems for this expenditure review and IPART's regulatory process which include:

- Loss of traceability of costs between the 2016 Determination, current period actual costs and forecast costs
- Inconsistencies with DPIE and NRAR for activities which are delivered jointly
- Where WaterNSW has proposed aggregating activity codes with varying user shares, the link between the impactor and the price borne by them is reduced.

WaterNSW states that it does not have better information on which to base allocation of costs to activity codes. This review has therefore relied on the information available and noted where the allocation of costs to activity codes may impact a conclusion. We recommend that in future WaterNSW uses detailed cost coding to record actual costs for at least the following most material activities: Consent transactions, customer management activities and Water take monitoring. We consider that the new activities proposed by WaterNSW relating to water take assessment (water take data collection and management and meter maintenance) are appropriate and should be adopted for the future regulation of expenditure in this area.

We have considered whether the expenditure for activities proposed for the future period fall within the scope of WAMC monopoly services. We note that there is some subjectivity in scoping WAMC services and this relies on convention and interpretation of the NWI pricing principles. However, the scope of the activities is largely unchanged compared with previous Determinations. We noted the following areas for consideration:

- We are concerned that some activities for W06-07 Cross border and national commitments are more consistent with "policy development" (which is not a monopoly service) rather than implementation and operationalisation of policy (which is a monopoly service). Based on our assessment of activities

[1] Note that for the W08 activity grouping that two activities undertaken in the current period – W080-01 Regulation systems management and W08-99 Water consents overhead – are proposed to have costs allocated elsewhere in the future period which impacts the comparison for the W08 activity grouping. That these activities have no costs assigned to them in the future period makes the apparent increase for W08 lower than what it would be if these activities had continued in the future period at the same level as in the current period.

undertaken, we consider that around one-quarter of the activities undertaken for W06-07 Cross border and national commitments fall into the "policy development" category and we have therefore excluded one-quarter of expenditure in this area from our recommended level of efficient expenditure for this activity.

- DPIE has included a Sustainable Diversion Limit Adjustment Mechanism (SDLAM) project to deliver environmental flows to the Nimmie-Caira floodplain in the Murrumbidgee River valley. Based on the obligation of the New South Wales government to implement the project to meet its Basin Plan commitments and as it addresses the environmental impacts of water extraction, we agree with DPIE's assessment that the Nimmie-Caira project meets the definition of WAMC monopoly services.
- At the last Determination only a proportion of costs for Metropolitan Water Planning were considered within the scope of WAMC monopoly service. While we understand the basis for this decision under the regulatory framework, we consider that all of these costs should be considered within the scope of WAMC monopoly services as this would be consistent with the fundamental objectives of the NWI pricing principles and also reflect that good practice water resource planning should consider all water sources in an integrated way.

User shares

IPART undertook a review of user shares for rural water activities in 2019. DPIE has stated that it adopts these user shares in its pricing proposal. WaterNSW implicitly adopts these. Our review has considered whether circumstances have changed since 2019 to warrant a change in user shares. We consider that this is the case for the user share for W06-05 Regional planning and management strategies as Government policy has changed to place increased emphasis on high-level strategic planning. We therefore recommend that the user share for this activity be reduced from 70% to 60%.

For W08-03 Compliance Management, we have made a recommendation that the efficient costs recovered from users are commensurate with what we expect the level of activity in this area to be in the medium to long term. However, recognising that relatively high costs are required in the short term as NRAR is established and responds to the historical compliance issues, we consider that Government should pay the balance of costs proposed by NRAR, subject to an efficiency challenge. This recommendation, if adopted, has the effect of reducing the user share of costs for this activity but we have not recommended a changed user share to implement this recommendation as we as we consider that the reasoning regarding the long term efficient costs should be apparent.

Cost drivers

DPIE has proposed changes to the cost drivers for 12 activities. Volume of entitlements is proposed as the new underlying cost driver for seven of these 12 activities. We note that over preceding determinations, there has been a shift between water take and water entitlements and back again based on arguments of cost reflectivity, data reliability and variability. The main advantages that we see in using entitlements in place of water take as a cost driver is that it is simpler administratively to implement, more reliable and more reflective of the largely fixed costs of the WAMC activities compared with take which has an advantage of more fully capturing variable as well as fixed costs. We therefore support the move to water entitlements as a cost driver in place of water take where proposed by DPIE. We also support the move away from number of models to water entitlements as the cost driver for the water modelling activities (W04-01 and W04-02), as this will better reflect the scale and potential complexity of modelling required in different valleys while remaining relatively simple. The proposed change in the cost driver for W06-05 Regional planning and management strategies, from water entitlements held by utilities and industry to the number of licences, needs further consideration. We note that this proposed change impacts regulated users more than unregulated users and we don't have information on whether this is reflective of underlying costs. Therefore, we recommend that volume of entitlements be maintained as the cost driver until more information is available that links costs to the outcomes delivered.

DPIE has also proposed a change in the cost driver for W08-03 Compliance management, from compliance risk profile to the number of licenses. We consider that metering and enforcement is relatively immature and therefore retaining risk as a cost driver has merit. However, we have made a recommendation that users pay a lower share of total costs for this activity in the short term as we consider that the high proposed costs for this activity are reflective of Government policy and lack of action over the last decade. For the proportion of costs which we recommend that users contribute to, we consider that under the impactor pays principle, number of licenses is an appropriate cost driver as it is more reflective of compliance needs for the long term

where we expect a steady state with lower costs to be achieved. This is because in this situation, compliance effort will be more evenly directed across users and works. .

Efficiency of WAMC operating expenditure

Our methodology for determining the recommended efficient level of capital and operating expenditure required by WAMC is consistent with that employed by Cardno and Atkins for regulatory review across Australia in recent years. This approach uses the concept of an efficient 'frontier' company competing in an open market to deliver services to customers. Under this framework, efficiency gains made by the frontier company are referred to as continuing efficiency, with catch-up efficiency applied to companies that are inefficient. The adjustments made by us to arrive at the recommended levels of future expenditure are scope adjustments, catch-up efficiency and continuing efficiency. Our observations and recommendations for each are detailed following. Our recommended level of operating expenditure also includes an adjustment to increase expenditure by $2.06 million over the four year period to 2024/25 arising from the separate review of WaterNSW's corporate cost. This adjustment reflects the recommended approach to allocation of corporate overheads to WaterNSW's regulated businesses arising from that review.

Scope adjustments

Scope adjustments are made where the level of activity has not been sufficiently justified. This includes the proposed timing of expenditure. Scope adjustments are specific to the nature of the activity or service being delivered or the proposed capital expenditure project. Our recommended level of future expenditure for WAMC services includes adjustments for the following reasons:

- **Not all activities proposed meet the definition of WAMC monopoly services.** For W06-07 Cross border and national commitments, we found that around a quarter of the effort proposed for intergovernmental activities falls within the scope of "policy development" which is not a WAMC monopoly service. Policy development includes establishing policy positions and developing long term strategies for meeting objectives. This adjustment results in a reduction of $1.6 million in recommended expenditure over the five year future period.
- **Insufficient evidence of increased output requirements.** For the water modelling activities (W04-01 surface water modelling, W04-02 Groundwater modelling) and W05-04 Water plan performance assessment, DPIE sought increased expenditure citing increased output requirements. However, we were not provided sufficient evidence that increased outputs were required. These reductions total $2.0 million over for five years for the modelling activities and $5.1 million for W05-04 Water plan performance assessment. We also recommend a scope reduction for W06-07 Cross border and national commitments totalling $325k over the future period to reflect the potential for efficiency gains identified in the Claydon Review.
- **Forecast expenditure not supported by sufficient evidence**. For W06-06 Development of water planning and regulatory framework, DPIE had proposed a large increase in expenditure above the actual expenditure in the current period without being able to provide a link between what it expects to deliver and its forecast expenditure requirement. For W10-01 Customer management, WaterNSW has proposed a significant increase in expenditure compared with the 2016 Determination but in line with its recorded level of expenditure in the current period. This activity is impacted by WaterNSW not adopting the activity code framework and not having granularity in recording costs; this makes it difficult to have confidence in the actual costs reported and their extrapolation into the future period. Our recommended adjustment for W06-06 Development of water planning and regulatory framework is $3.4 million over the future period and our recommended adjustment for W10-01 Customer management is $6.3 million over the future period.
- **Lack of clear Government policy position**. For drainage management plan development (W06-04), there is no clear Government policy position and we therefore recommended that no expenditure be considered efficient. DPIE had proposed $2.7 million for this activity for the future period. In its response to the draft report DPIE accepted this recommendation.
- **Reprofiling of expenditure for improved outcome over a longer period**. A step change in expenditure is proposed by DPIE for W06-05 Regional planning and management strategies primarily to deliver a government commitment to state-wide regional planning. While there is clear justification for this expenditure, we also observed concern from stakeholders regarding engagement and the evidence from the recent Auditor General Report into this area as being grounds for DPIE to take stock in the early part of the future period to ensure that its engagement and planning will be effective. Accordingly, we have

recommended a reduced expenditure profile initially for this activity totalling $2.6 million less in the first two years of the future period.

- **Current levels of expenditure exceed those expected under an efficient steady state.** The establishment of NRAR is a justified response to the observed levels of non-compliance and the expectations of the Matthew Report. However, it appears that the level of expenditure is in large part due to an ineffective approach by Government to compliance over a long period of time and the length of time taken to progress metering reform. We benchmarked expenditure in this area against Victoria where metering reform has been more extensively implemented and found that NRAR's level of resourcing is three to four and a half times higher across a range of benchmarks including volume of entitlements, area of land watered, and number of licences. Therefore we recommend that NRAR's proposed $77.6 million of expenditure for the five years of the future period should be adjusted to $74.0 million to account for potential catch-up and continuing efficiency. Of this total, we recommend that $27.7 million be included in the calculation of user charges based on the benchmarking undertaken and the balance ($46.3 million) be funded by Government.

Catch-up efficiency

Catch-up efficiency has been applied where we consider that the business processes used to justify and develop expenditure forecasts fall behind good industry practice. Therefore, the catch-up efficiencies applied are specific to the agency that developed the expenditure forecast. We consider that there is substantial opportunity for the WAMC businesses to improve how they plan for and deliver the relevant services. We found that while staff could communicate the need for undertaking an activity, the level of justification and planning to deliver the activity was relatively immature compared to good industry practice.

We make the following observations as to where we consider that efficiencies can be gained in the planning and delivery of WAMC services in the future period. Note that a varying level of maturity was observed between agencies and between the different monopoly services so not all observations apply to all activities.

- **The level of service provided has been infrequently tested.** Many WAMC services deliver specific requirements of the *Water Management Act 2000*. Therefore the need for the service is clear. However, the level of service provided (e.g. the quality or quantity of the service) is often open to interpretation. We found that generally, WAMC has accepted the existing level of service (implicitly or explicitly) as the level of service for the future period. Good practice is that levels of service should be tested with stakeholders routinely and considered alongside customer willingness to pay and affordability. Throughout its submission, DPIE points to rising stakeholder expectations as a reason for increased expenditure in the future period. However, there is little evidence that these expectations have been validated or that the customers have been consulted on their willingness or ability to pay for meeting these expectations. For a monopoly business that does not have the benefit of competition to provide service and price signals, this engagement is vital.
- **Poor quantification of outputs, timing of the outputs for the service and immature resource planning.** Despite many WAMC activities being 'business as usual' and having been delivered for many years, we found that WAMC had difficulty communicating what its efforts produce and the level of effort to produce outputs (e.g. models, plans, regulatory instruments, etc.). One area of focus for this review has to be develop revised output measures and performance indicators to help improve measurement and communication of what the WAMC business delivers. For DPIE, its expenditure proposals have largely been based on top-down estimates of staffing requirements. For very few activities were we provided bottom-up activity based estimates of future expenditure requirements. Our expectations is that for most activities this is possible and should be undertaken in future in line with good practice. A similar, related shortcoming is that there is little historical cost information at a meaningfully granular level to inform future planning. This information would be valuable for validating future estimates and again, is an element of good practice.
- **Limited consideration of risk to WAMC objectives and prioritisation of effort to mitigate risks**. As identified, we don't have confidence in the level of service provided for many services. Alongside levels of service, the risk to WAMC's objectives of not delivering the service should also be considered for all services as this enables a business to reprioritise effort when circumstances inevitably changes. We saw limited evidence of risk being an input into levels of service or the reprioritisation of effort.
- **Inconsistent approach to ongoing improvement**. Across the WAMC activities many examples were provided of improvements in service delivery and how efficiencies had been gained. However, in few areas was potential efficiency gains able to be quantified. A related problem is the lack of robustness of definition of the levels of service meaning that cost and service trade-offs aren't known with confidence.

An exception to this observation is for the water monitoring services provided by WaterNSW where a relatively stable level of service has been provided for a decreasing level of expenditure in recent years demonstrating efficiency gains.

- **Limited evidence of optimisation of resource mix**. We saw little evidence that the resource mix (including use of external providers) had been optimised. For only one service was evidence provided that testing against the market had been undertaken. Where possible, comparison of service provision to the market would provide greater confidence that costs are efficient.

Based on the above observed opportunities for gaining efficiencies in the future period, we have applied a catch-up efficiency to operating expenditure being 0.9% per year for relatively more mature activities delivered by DPIE and 1.4% per year for relatively less mature activities delivered by DPIE. For activities delivered by WaterNSW we have applied a catch-up efficiency of 1.1% per year for operating expenditure and 0.7% per year for capital expenditure. We have not applied a catch-up efficiency to the activities where DPIE has applied its own internal efficiency challenge to avoid double counting. We have also not applied a catch-up efficiency to water monitoring expenditure in recognition of the efficiency gains made by WaterNSW in recent years.

Continuing efficiency

Continuing efficiency, or frontier shift, relates to the ability of even the most efficient firms in the sector, those at the efficiency frontier, to become more efficient over time. In this regulatory context, a frontier shift estimate should reflect the pressures to become more efficient that utilities face in an open market. It reflects the continuing efficiencies being gained across all major sectors through process innovation and new systems and technologies that all well-performing businesses should achieve.

The continuing efficiency adjustment applied of 0.7% per year has been supplied by IPART and is based on its review and analysis of various data sets.

Recommended level of efficient expenditure

The recommended level of efficient operating expenditure for inclusion in user charges based on the adjustments described above is shown in the figure following. The businesses that deliver WAMC services proposed operating expenditure of $347 million for the five year period from 1 July 2021 (excluding fee for service activities). Our recommended level of efficient expenditure includes a reduction of $78.9 million for scope adjustments, $5.5 million for catch-up efficiencies and $5.5 million for continuing efficiency gains.

The level of catch-up efficiency ($1.1 million per year) and continuing efficiency ($1.1 million per year) proposed is at the lower bound of that applied in the 2016 Determination and lower than that achieved by Sydney Water and Hunter Water over previous regulatory periods. We did not apply catch-up efficiency to activities where WAMC had applied its own efficiency adjustments to avoid any potential for double-counting. We consider that this is a cautious approach as WAMC's own efficiency challenge is different in nature and includes items which we don't consider are genuine efficiencies, such as duplication of costs for activities delivered by WaterNSW which comprise 44% of its total efficiency challenge. On this basis, we consider that the catch-up and continuing efficiency applied by us is conservative and achievable by DPIE. The scope adjustments proposed are more material than the catch-up and continuing efficiency adjustments. The scope adjustments are proposed based on insufficient justification for the levels of expenditure proposed to meet the required levels of outputs and performance.

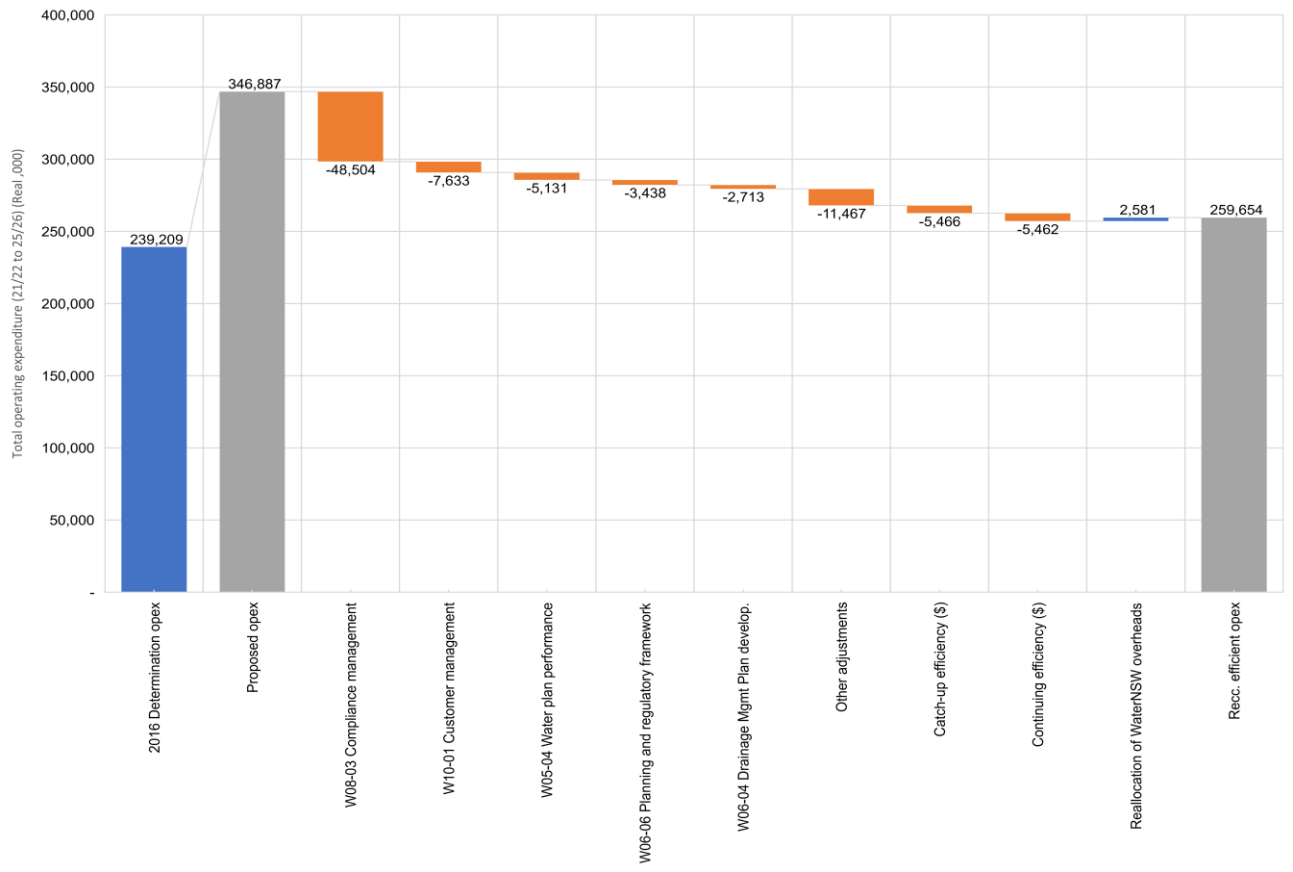

Figure 1-1 Recommended efficient operating expenditure for inclusion calculation of user charges

Note: The “other adjustments” category includes $2.6 million for W06-05 Regional planning and management strategies, $1.9 million for Cross border and national commitments, $1.6 million for W04-01 Surface water modelling, $734k for W04-02 Groundwater modelling and a $4.9 million adjustment for double counting.

Efficiency of WAMC capital expenditure

Capital expenditure in 2015/16

We were requested to review historical capital expenditure for 2015/16, being the last year of the regulatory period before the current period. We observed that actual expenditure for Groundwater quality monitoring exceeded that forecast earlier in that year by $1.0 million ($15/16). DPIE advised that this was an error and should be excluded from inclusion in the regulatory asset base.

Capital expenditure in the current period

For capital expenditure in the current period we found that expenditure for surface water and groundwater monitoring was in line with that forecast at the 2016 Determination. We accepted this capital expenditure (total of $12.4 million) is efficient. For corporate capital expenditure, actual expenditure ($29.8 million) has greatly exceeded that included in the 2016 Determination ($3.4 million). The main driver for this expenditure was WaterNSW’s corporate accommodation strategy which sought to consolidate staff across the state and from its various regulated businesses. WaterNSW sets out, and we accept, that the 2016 Determination did not allow for sufficient corporate capital expenditure for the WAMC business. However, the level of expenditure is also the result of cost allocation– the WAMC businesses did not suddenly required a step change in corporate capital expenditure, WaterNSW will have taken time to build its understanding of the business and its expenditure requirements. We therefore recommended that the level of corporate capital expenditure allocated to the WAMC business and considered efficient be in line with a moderated profile of expenditure rising from 25% of that submitted by WaterNSW in 2016/17 to 100% in 2019/20. This has the result of reducing efficient expenditure by $7.4 million. As this expenditure has been subject to efficiency assessment through previous expenditure reviews and found to be efficient, we recommend that this amount should in future be allocated to the regulatory asset base(s) of the other businesses that benefited from the expenditure.

Capital expenditure in the future period

For the future period, we do not propose any adjustments to the scope of water monitoring capital expenditure. We have adopted the scope adjustments for corporate capital expenditure made in the separate review of WaterNSW's corporate costs. These adjustments are for reallocation of ICT project costs to better reflect the driver of costs and moderation of vehicle costs to be in line with long term rends.

We have adopted the catch-up efficiency targets recommended by the separate review of WaterNSW's rural valleys expenditure. These targets rise from 2.11% in 2021/22 to 7.44% in 2024/25. The continuing efficiency adjustment applied to capital expenditure is 0.7% per year, consistent with that for operating expenditure.

The recommended level of efficient operating expenditure for inclusion in user charges based on the adjustments described above is shown in the figure following. The businesses that deliver WAMC services proposed capital expenditure of $84.1 million for the four year period from 1 July 2021. Our recommended level of efficient capital expenditure includes reductions of $3.2 million for scope adjustments, $4.1 million for catch-up efficiencies and $1.3 million for continuing efficiency gains.

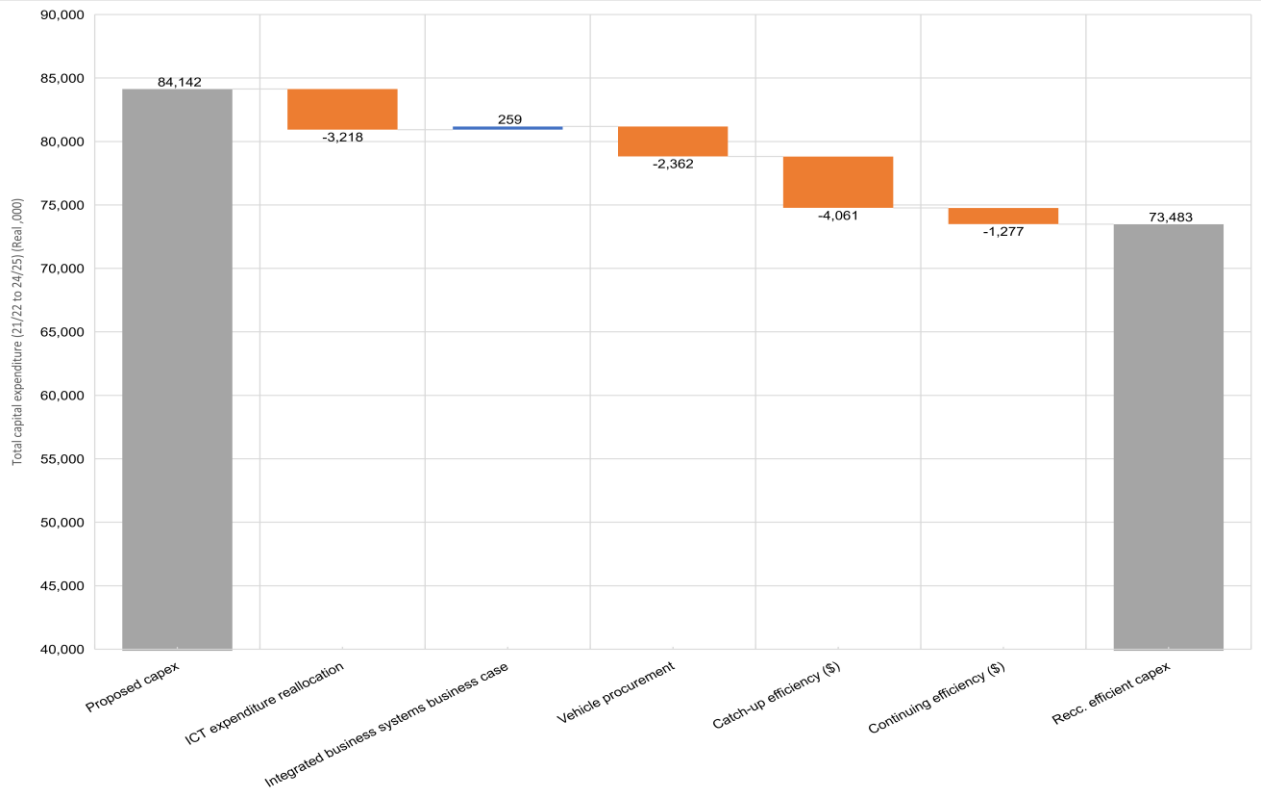

Figure 1-2 Recommended efficient capital expenditure for inclusion calculation of user charges

Consent transaction charges

Consent transactions are undertaken by both WaterNSW and NRAR on a fee-for-service basis and include activities such as gaining approvals for works, new licence approvals, dealings in licences, and changes to licence conditions. Dealings in licenses include activities such as assigning share components, consolidating licences, subdividing licences, and surrendering licences.

NRAR has proposed consent transaction charge categories that are different to those currently in place as set by the 2016 Determination. WaterNSW has adopted the existing charge categories (consistent with the 2016 Determination). While a change in categories may not materially impact customers as the customers of each agency are sufficiently different, we consider that it is desirable for fee categories to be as consistent as possible to enable comparison between the agencies. Even if the effort required to complete the transactions for the different customer bases is different, there are still similarities in the transaction requirements and the outcome sought. We have recommended a structure for transaction charges that provides better alignment between the NRAR proposal and the existing categories (adopted by WaterNSW) while maintaining the additional categories proposed by NRAR for categories with material effort. We recommend the charges levied should vary whether groundwater assessment is required or not. This would increase cost reflectivity without creating uncertainty or complexity that is not manageable.

Both WaterNSW and NRAR propose significantly increased charges for consent transaction for the future period. The same conclusion has been arrived at from different approaches: WaterNSW has undertaken a top-down assessment of historical costs assigned to its activities in FY19, while NRAR has built a comprehensive bottom-up model that relies on resource estimates for tasks to build up an overall cost. There are potential shortcomings in both approaches; WaterNSW's top-down approach may be limited by the efficacy of its cost allocation and recording of direct costs while bottom-up models tend to overstate effort by not recognising synergies and overstating risk.

Groundwater assessment costs also need to be considered in the efficient charges. DPIE undertakes groundwater assessment for consent transactions. WaterNSW did not include these costs in its charges submitted in its pricing proposal and NRAR submitted revised charges to adjust for the groundwater assessment component.

While both agencies have implemented transparent and defensible methodologies, it is concerning to us given the very large increases proposed that no validation (e.g. audit) of the key assumptions has been undertaken. A further concern regarding WaterNSW's costs is the issues with recording costs to a granular level and accurate allocation of costs to the WAMC activities. We are also concerned that despite the very large increases proposed that neither agency has engaged with customers to test the affordability or willingness to pay for such large increases. If this had occurred, the agencies may have arrived at a different trade-off between cost and service.

We consider that, given the lack of validation of the costs that drive the proposed charges and the relative immaturity of the business processes in both agencies to capture and record costs that reflect the activities, that a relatively large efficiency challenge of 20% should be applied to the charges proposed by the agencies to arrive at efficient costs.

A new type on consent transaction has been created in the current period, assessments under *the Water Supply (Critical Needs) Act*. DPIE has undertaken two assessments under this Act in the current period. The legislation has a sunset clause and few, if any, assessments may be undertaken in future. Recognising that this is a new activity, considerable efficiencies should be gained for future assessments if undertaken. We therefore recommend an efficiency challenge of 10% be applied to the charges proposed by DPIE.

Metering program and meter reading, meter service and ancillary charges

The impact of the implementation of the Government metering policy is considered separately to this report.

There are three separate water take measure service charges levied:

- Meter services charges
- Water take assessment charge
- Ancillary charges

Meter service charges are fee-for-service charges that intend to recover the costs of operating and maintaining WaterNSW-owned meters. WaterNSW has proposed meter service that remain relatively flat in real terms between the current and future period even though it considers that costs will increase. We recommend that WaterNSW's proposed charges should be adopted as efficient.

Water take assessment charges are fee-for-service charges that intend to recover the costs of physically reading user-owned meters and meter equivalents. WaterNSW has proposed a significantly greater water take assessment charge for the future period, equating to more than double the water take assessment charge in 2020/21. Costs have been determined by an allocation of WaterNSW's field staff to this activity which WaterNSW considers to be "relatively fixed " despite there being a reduced number of meter reads per year. We do not agree with WaterNSW's implied position that a fixed resource base is efficient for this activity and we recommend that WaterNSW's proposed increases are not implemented.

The ancillary charges proposed by WaterNSW for WAMC are consistent with those in the 2017 Determination for rural bulk water services and are therefore accepted by us as appropriate. Note that these ancillary charges are a large step increase from those set at the 2016 WAMC Determination as the 2017 rural bulk water determination found that these charges had previously been undercharged.

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1 Introduction

1.1 Background

The Independent Pricing and Regulatory Tribunal (IPART) is the independent pricing regulator in New South Wales established under the Independent Pricing and Regulatory Tribunal Act 1992. IPART acts as a pricing regulator for water, public transport, and local government; as well as acting as the licence administrator of water, electricity and gas. Pricing for these services is determined through independent decision utilising advice from external reviewers, and set to reflect the efficient cost of delivering a utility's monopoly services.

IPART is currently reviewing the prices that the Water Administration Ministerial Corporation (WAMC) can charge for its monopoly water planning and management services from 1 July 2021. Cardno, supported by Atkins, have been appointed by IPART to undertake a review of WAMC's expenditure to inform its price review. WAMC services are delivered by three agencies:

- Department of Planning, Industry and Environment – Water (DPIE)
- Natural Resources Access Regulator (NRAR)
- WaterNSW.

DPIE and NRAR have provided a joint pricing proposal to IPART and WaterNSW has provided a separate proposal. DPIE, NRAR and WaterNSW have provided a joint factsheet that contains a high-level overview of their pricing proposals.

1.2 Review objectives and scope

The objective for this review is to provide an opinion to IPART on the efficient level of historical and proposed operating and capital expenditure required by WAMC to deliver its services. Historical expenditure is that incurred in the time since the 2016 Determination (1 July 2016 to 30 June 2021) and proposed expenditure is that which is proposed for the period from 1 July 2021 to 30 June 2026. The 2016 Determination only covered the period up to 30 June 2020. However, IPART and WAMC agreed to a one-year deferral to this review.

To meet the objective, the scope of works required to be undertaken is comprised of the following six tasks:

- Task 1 – a strategic review of WAMC's expenditure
- Task 2 – a review of WAMC's monopoly services and the applicable user share of costs
- Task 3 – a detailed review of WAMC's historical and forecast operating and capital expenditures, to recommend the efficient level of expenditures
- Task 4 – a review of WAMC's performance against past output measures and to propose new output measures for the next determination period if appropriate
- Task 5 – a review of WAMC's consent transaction charges
- Task 6 – a review WAMC's metering program and its meter reading, meter service and ancillary charges.

1.3 Terms of reference

The detailed Terms of Reference for this review are included in Appendix A.

1.4 Price base and cost data

The financial information used for this review is based on the Annual Information Return and Special Information Return (AIR/SIR) data submitted by the agencies. One AIR/SIR has been submitted by DPIE covering both its activities and those of NRAR and a separate AIR/SIR has been submitted by WaterNSW. The AIR/SIR includes both financial and non-financial information and is submitted annually to IPART. The agencies provided AIR/SIRs updated for 2019/20 actual data in mid-October 2020. This draft report is based on this updated information. DPIE also provided in its updated AIR/SIR revised forecasts for some activities for the 2021 period where it had identified some areas for improvement (e.g. double counting in cost allocation).

Within the AIR/SIR, historical costs are recorded on a nominal basis. IPART has requested the agencies to provide forecast costs in a real price base of 2020/21. For our analysis and within this report, we have sought to present all historical and forecast costs in a consistent, real price base of 2020/21. This allows for better comparison of the underlying drivers of costs over time. To achieve a consistent price base, inflation indices supplied by IPART were applied to historical costs. The indices applied to convert all costs to a real 2020/21 price base are summarised in Table 1-1.

Table 1-1 Indices used to convert costs to real 2020/21 price base

Period	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Inflation factor (CPI) to inflate to subsequent year	1.9%	2.10%	1.60%	2.10%	2.50%	N/A
Compounding factor to inflate to real 2020/21	1.106	1.086	1.063	1.047	1.025	1.000

Unless otherwise noted, all prices within this report are presented in a real price base of 2020/21.

1.5 Terminology relating to the regulatory process

A small number of terms are used within this report which have specific meaning relating to the regulatory process. These terms are detailed in Table 1-2.

Table 1-2 Determination period terminology

Term	Usage
2016 Determination	The determination made by IPART which set maximum prices for WAMC's services for the period 1 July 2016 to 30 June 2020. For convenience, this will also be used where it refers to the period up to 30 June 2021. We will not in our report typically refer to the deferral from June 2020 to June 2021.
2016 determination period or Current determination period	The period from 1 July 2016 to 30 June 2021. This includes: • The period 1 July 2016 to 30 June 2020, which was the subject of the 2016 Determination • The period from 1 July 2020 to 30 June 2021, which was due to the deferral.
2021 determination period or Future determination period	The period from 1 July 2021 up to 30 June 2026[2].
Pricing proposal	The document prepared by the agencies that summarises the level of service that they will provide with respect to WAMC services for the future determination period, how they will provide this service, and the operating and capital expenditure required to do so. Two separate pricing proposals have been provided to IPART – one by DPIE and NRAR, and one by WaterNSW.

[2] IPART is considering the appropriate length of the future determination period. WAMC has proposed a four-year period and IPART in its Issues Paper of September 2020 states that its preliminary preference is for a four year period. This report considers a five-year period in case this is decided as the appropriate length of the future determination period.

2 Review methodology

2.1 Overview

Our methodology for undertaking this review is based on the combined experience of the Cardno/Atkins team in undertaking similar expenditure reviews across Australia and internationally.

Our review work commenced in August 2020. Our initial task was to review the pricing proposals prepared by the agencies as well as a small number of reference documents. On this basis and in response to the objectives and scope set by IPART, we prepared an inception report to guide our review. In early September 2020 we made initial information requests of the agencies and commenced meetings to interview key subject matter experts and the business process owners responsible for planning and delivery of WAMC services. We completed this first round of interviews by 11 September 2020. On the basis of the information received by this time and the discussions at our first round of interviews, we prepared an initial draft report.

Preparation of the initial draft report helped identify areas for further investigation with the agencies to address through a second round of interviews, which were held from later September to mid October 2020. In addition to these meetings we requested, and received, further documentation on which to base our analysis for this review. We received an updated AIR from WaterNSW on 16 October 2020 and an updated AIR/SIR from DPIE on 20 October 2020.

This final draft report is based on our review work in September and October 2020, drawing from those new interviews and documentation. The report was subject to fact checking by the agencies before this final version was prepared in mid-February 2021.

2.2 Determining efficient expenditure

To determine our recommended efficient level of capital and operating expenditure required by WAMC for the upcoming regulatory period, we have used an approach consistent with that employed by Cardno and Atkins for regulatory review across Australia in recent years. This approach uses the concept of an efficient 'frontier' company competing in an open market to deliver services to customers. Under this framework, efficiency gains made by the frontier company are referred to as continuing efficiency, with catch-up efficiency applied to companies that are inefficient compared with the frontier company.

The efficiency methodology applied is shown in Figure 2-1.

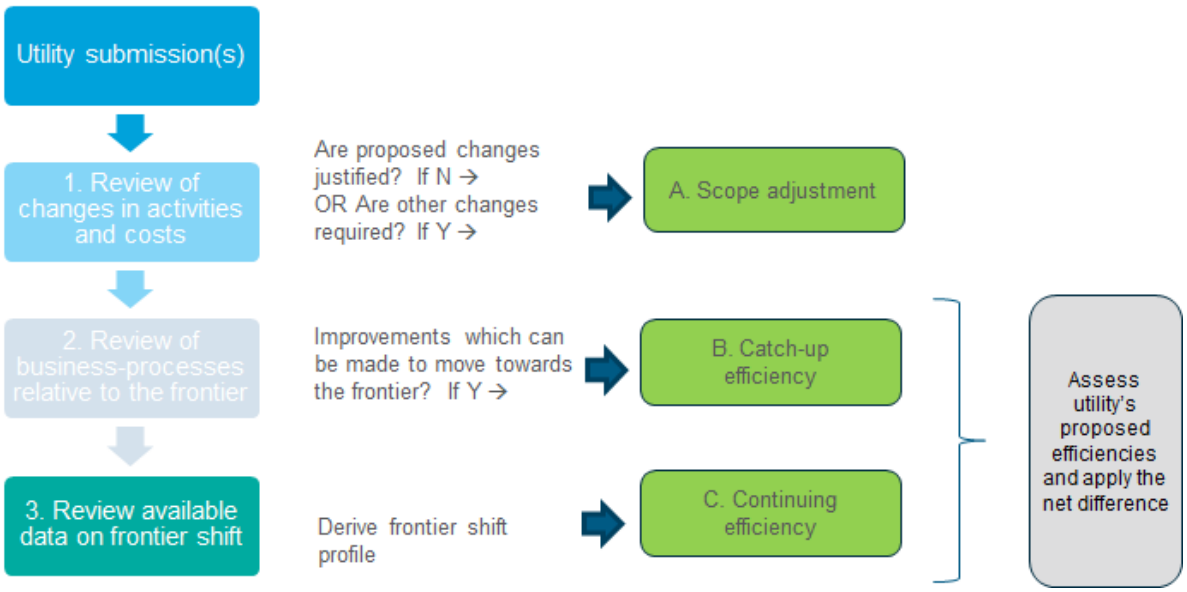

Figure 2-1 Efficiency methodology

The first step of the efficiency methodology involves identifying inefficiencies within proposed changes to a business's specific programs. These adjustments are clearly distinct from the types of efficiencies identified in Step 2 in that they correct for an imprudent or inefficient proposed change to activities (and associated costs) rather than the business processes employed to deliver services. If the business's proposed changes in activities (and associated costs) are not efficient, a scope adjustment is made. Examples of adjustments

made at this step include scope adjustments that lack justification that they are required to achieved desired service performance.

Catch-up efficiency is the productivity gains that may be realised when an agency moves from its current position to that of the frontier utility. Our assessment of catch-up efficiency is based on a qualitative, process-based assessment of the agencies that deliver WAMC services against leading practice for utilities in Australia and internationally, supplemented by benchmarking where possible. This assessment involved identifying improvements to processes and business opportunities which would generate efficiencies in future years to enable the agencies delivering services to move towards the frontier utility. Catch-up efficiency is applied to total expenditure net of the scope adjustments made in Step 1 to avoid double counting of potential efficiency gains.

Continuing efficiency is the scope for top performing or frontier companies to continue to improve their efficiency. It reflects the continuing efficiencies being gained across all major sectors through innovation and new technologies. The continuing improvement element of efficiency relates to the increased productivity derived from process innovation and new technology that all well performing businesses should achieve, including frontier companies. This applies to a range of industry sectors and applies internationally to the extent that new innovations in one region are able to be adopted in other regions. Continuing efficiency is applied to expenditure net of the Step 1 scope adjustments and the Step 2 catch-up efficiencies to avoid potential double counting of potential efficiency gains.

As WAMC activities are delivered by multiple agencies, the methodology is implemented giving consideration to how the expenditure forecast was developed, as outlined in Table 2-1.

Table 2-1 Application of efficiency methodology to WAMC services

Efficiency step	Application
Scope adjustment	Scope adjustments are specific to the nature of the activity or service being delivered or the proposed capital expenditure project. Therefore, scope adjustments reflect considerations particular to the expenditure that they are applied to.
Catch-up efficiency	Catch-up efficiencies relate to the business processes used to justify and develop expenditure forecasts. Therefore, the catch-up efficiencies applied are specific to the agency that developed the expenditure forecast. As NRAR is within DPIE, a consistent approach to catch-up efficiencies is applied to DPIE and NRAR.
Continuing efficiency	Continuing efficiencies are available to all industry participants and are therefore consistently applied to all WAMC expenditure.

The implementation of this methodology to arrive at our recommended levels of efficient operating and capital expenditure is detailed in Section 6 (operating expenditure) and Section 7 (capital expenditure).

2.3 Information sources

Information for this review was provided by the agencies. While some of these documents are publicly available online, the majority were directly issued by DPIE, WaterNSW or NRAR.

The key documents relied upon for this review include:

- Annual Information Return and Special Information Return
- NSW DPIE & WaterNSW 2020, *2020 Water Administration Ministerial Corporation Pricing Submission*
- NSW DPIE 2020, *Pricing proposal*, PUB20/518
- NSW DPIE 2020, *Administrative Information*, PUB20/530
- WaterNSW 2020, *WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Water Licensing and Monitoring Services from 1 July 2021*
- IPART 2016, *Review of prices for the Water Administration Ministerial Corporation*, Water – Final Report, ISBN 978-1-925340-88-4
- IPART 2019, *Rural Water Cost Shares*, Final Report: Water, ISBN 978-1-76049-286-1
- Synergies Economic Consulting 2016, *DPI Water Expenditure Review*, Final Report prepared for IPART.

3 Operating context

3.1 Summary

Under the Terms of Reference, we are required to consider:

- The alignment between water management legislative or other priorities applicable to WAMC and its expenditures (including WAMC's relationship with the Murray-Darling Basin Commission and the Border Rivers Commission)
- The changes in WAMC's operations resulting from the New South Wales bulk water reforms, including the effect on WAMC's functions, its activities and associated costs.

To this end, we have summarised in this section the key bulk water reforms that have occurred in New South Wales since the 2016 Determination, as well as the current roles and functions of water agencies in New South Wales resulting from these reforms.

At a high level, the impacts of these reforms on the functions of WAMC, its activities and associated costs are summarised in Table 3-1. This includes both reforms that have occurred in the current period and that are ongoing and will impact the future period.

Table 3-1 Summary of impact of reforms on WAMC services

Reform in current period	Impact on delivery of WAMC services
The distribution of WAMC functions from a singular agency as at the time of the 2016 Determination (Department of Primary Industries – Water) to multiple agencies (DPIE, WaterNSW and NRAR)	WAMC services are now delivered by multiple agencies (noting that NRAR is within DPIE but is largely autonomous). The intent of the transfer of function was to improve "responsiveness to customers, eliminating duplication and promoting efficiency by separating policy, planning and regulation from operational activities"[3]. There is evidence of efficiency being achieved in some areas resulting from this functional separation. For example, WaterNSW has demonstrated material savings in the delivery of water monitoring services through economies of scale and integration of the WAMC water monitoring services with the activities it was already undertaking in this area. However, there arises potential for inefficiencies due to duplication in delivery of services and uncertainty for customers as to which agency is responsible for delivering a particular service. For example, both NRAR and WaterNSW have customer management functions, albeit for the different services they provide. NRAR and WaterNSW also both deliver consent transaction services. While the customer bases are different – NRAR generally is responsible for large and more complex customers and WaterNSW the balance of customers – it is inevitable that both agencies will undertake similar business processes independently and that some customers will be uncertain as to which agency to approach for their consent application. All agencies are aware of these potential issues.
Transfer to WaterNSW of responsibility for the following functions and assets: ▪ Surface water and groundwater monitoring activities and the assets used to perform these activities ▪ Water take monitoring activities as well as the assets used to perform the activities. As noted, as WaterNSW is responsible for this activity area, we understand it will also be responsible for implementing the Government's metering policy.	Surface water and groundwater monitoring activities along with water take monitoring have been integrated into WaterNSW's similar activities that it performs across the State but outside the scope of the WAMC monopoly services (these are generally within the scope of its "Rural Valley" services which are subject to a separate review by IPART). WaterNSW has demonstrated efficiencies in the delivery of these services in the current period through reduced labour costs to service its entire water monitoring network. WaterNSW has incorporated its licensing, billing and customer service activities into its wider business activities as it provides the same or similar services across different customer bases. Its objective is to deliver these activities in an integrated way to achieve efficiencies. However, in doing so, there is now a less

[3] NSW DPIE & WaterNSW 2020, *2020 Water Administration Ministerial Corporation Pricing Submission, Paper C*

Reform in current period	Impact on delivery of WAMC services
▪ Initially, compliance and enforcement activities. These were later transferred to NRAR ▪ Other regulation activities for managing the licencing system and applying consents to licences ▪ Processing of applications for new or amended water licenses (consent transactions) ▪ Customer and billing management.	reliable link between WaterNSW's activities and the allocation of expenditure to the defined WAMC monopoly services. We discuss this issue further in Section 4. Similarly, corporate support has been provided using the same resources, information systems etc. that are used by the wider business. Again, this has diminished the traceability between expenditure and the defined WAMC monopoly services. While it is appropriate that WaterNSW allocates corporate costs to its direct activities, basis of allocation and the demonstrated relationship to demand for corporate services is still maturing.
The creation of NRAR in late 2018 following the publication of the Matthews Report	The creation of NRAR reflects increased stakeholder and wider community expectations that there are strong measures in place to promote compliance with the regulatory framework for water management. The increased expectations in this area have led to materially increased expenditure in the current period and into the future period compared with the 2016 Determination. We discuss the formation and role of NRAR further in Section 8.18
An increase in regulatory requirements, such as those arising from the new metering framework	WAMC has been required to design, plan for, and implement new government policies in the current period, some of which represent step changes in the quantity of effort required to be undertaken.
Implementation of state-wide integrated regional planning	Across the state, 12 regional water strategies are being prepared and will be delivered in the future period. There is increased expectation over the level of stakeholder engagement for these plans and the integration with infrastructure planning. The Department is also leading State-wide climate modelling to inform planning.

We discuss impacts of water reform in recent years on individual activities in Section 8 as part of our detailed activity reviews.

3.2 Regulatory framework

The guiding legislation for the management of water in NSW is the *Water Management Act 2000*. The objective of this Act is the sustainable and integrated management of water resources. This *Act* is supported by the *Water Management (General) Regulation 2018*. WAMC is created under this legislation and many of the monopoly services that WAMC deliver are functions under Chapter 3 of the *Act.*

The *Water Management Act 2000* has largely superseded the *Water Act 1912* particularly in the creation of water sharing plans that cover all water sources in the State. Most user licences have also been converted to the *Water Management Act 2000*. However, the *Water Act 1912* also remains in place and is relevant for licences which have not yet been able to be converted and for the sharing of water in circumstances not covered by the *Water Management Act 2000*.

3.3 Water Administration Ministerial Corporation

In New South Wales, WAMC is responsible for planning and managing water resources on behalf of the New South Wales Government. WAMC is constituted under section 371 of the *Water Management Act 2000*. The main functions of WAMC are set out in the *Water Management Act 2000*, which requires it to:

> Construct, maintain and operate water management works, gauging stations and other monitoring equipment

> Conduct research, collect information and develop technology in relation to water management

> Acquire rights to water, whether within or beyond New South Wales

> Undertake any action required for the purpose of fulfilling the objects of the *Water Management Act 2000*.

3.4 Bulk water reforms in New South Wales

At the time of the 2016 Determination, WAMC services were delivered wholly by the Department of Primary Industries – Water, which was a Division of the Department of Primary Industries within the Industry cluster.

The Industry cluster has since merged with the Planning and Environment cluster to create the present Department of Planning, Industry and Environment (DPIE). Since the 2016 Determination, several key reforms have occurred in New South Wales in relation to the management of bulk water. These include:

- The transfer of some WAMC functions to WaterNSW during 2016/17
- The creation of NRAR in 2018 in response to an independent investigation into water management and compliance in New South Wales. NRAR took on all compliance functions from WaterNSW as well as some licensing functions.
- The commencement of a new metering framework in 2018 to fulfil a commitment made under the New South Wales Government's Water Reform Action Plan[4].

Under the *Water Management Act 2000*, metering equipment is required to be installed, used and properly maintained on all water supply work approvals (the "metering condition"). The *Water Management (General) Regulation 2018* extends on this by setting out requirements for all holders of approvals, licences and entitlements who are subject to the metering condition; prescribing exempted holders based on thresholds; and stipulating additional requirements in areas such as telemetry and reporting. The Non-Urban Water Metering Policy[5] explains these requirements in greater detail and, in conjunction with the *Water Management Act 2000* and *Water Management (General) Regulation 2018*, forms the new metering framework. While the new metering framework commenced on 1 December 2018, it is being implemented in a staged approach, with five separate components of the framework undergoing roll-out between 1 April 2019 and 1 December 2023. The expected costs of implementing metering reform were not available to be included in this final report. WaterNSW has made these costs available in December 2020 and these costs have been subject to a review that has been documented separately to this report.

In light of these reforms, the current roles and functions of DPIE, WaterNSW and NRAR are discussed in Section 3.5.

3.5 Roles of water agencies in delivering WAMC services

As referred to in previous sections, DPIE, WaterNSW and NRAR are responsible for providing water planning and management services on behalf of WAMC.

Under the *Water Management Act 2000*, WAMC delegates its functions to DPIE, WaterNSW and NRAR. Broadly speaking, DPIE has a policy setting role, with responsibility for "ensuring sustainable, secure and healthy water resources and services for [New South Wales]"[6]. DPIE undertakes this function by developing and setting policies, plans and rules for sharing water between users and the environment. This includes determining water allocations; preparing water sharing plans and regional water strategies; performing analytics, modelling and scientific functions; and delivering the Murray-Darling Basin Agreement and Murray-Darling Basin Plan. DPIE is governed by the *Water Management Act 2000*.

In regards to the delivery of WAMC functions, WaterNSW is responsible for implementing the policies set by DPIE, including conducting water monitoring to meet the needs of DPIE, processing licence and approval applications, administering water trades, performing account management and billing, providing licence advisory services and customer support, and supplying water resource information for most users. In addition to these functions, WaterNSW is responsible for providing water take assessment and meter maintenance services in accordance with existing operational requirements, operating water infrastructure and the state's river systems, and supplying bulk and environmental water. The functions of WAMC that are conferred to WaterNSW are set out in Schedule A of the WaterNSW Operating Licence 2017-2022. WaterNSW is established under the *Water New South Wales Act 2014*.

NRAR is established under the *Natural Resources Access Regulator Act 2017* as an independent regulator with "total carriage of the compliance and enforcement of water management legislation"[7] in New South Wales. NRAR was formed in 2018 as a result of an independent investigation into water management and compliance in New South Wales (the "Matthews Report"), commissioned by the former Department of Industry in 2017, and undertakes functions previously delivered by the former Department of Industry and

[4] NSW Government 2017, *Securing our water: NSW Government water reform action plan*, https://www.industry.nsw.gov.au/__data/assets/pdf_file/0015/312144/nsw-government-water-reform-action-plan.pdf, viewed 14 September 2020
[5] NSW DPIE 2020, *NSW Non-Urban Water Metering Policy*, https://www.industry.nsw.gov.au/__data/assets/pdf_file/0017/312335/NSW-non-urban-water-metering-policy.pdf, viewed 14 September 2020
[6] NSW DPIE & WaterNSW 2020, *2020 Water Administration Ministerial Corporation Pricing Submission*
[7] NRAR n.d., *About NRAR*, https://www.industry.nsw.gov.au/natural-resources-access-regulator/about-nrar, viewed 11 September 2020

WaterNSW. As part of its compliance and enforcement role, NRAR is responsible for monitoring and auditing the use of surface water and groundwater, investigating and enforcing compliance, and managing licensing and approvals for larger entities.

The roles and functions of water agencies in New South Wales, in respect of carrying out WAMC functions, are summarised in Figure 3-1.

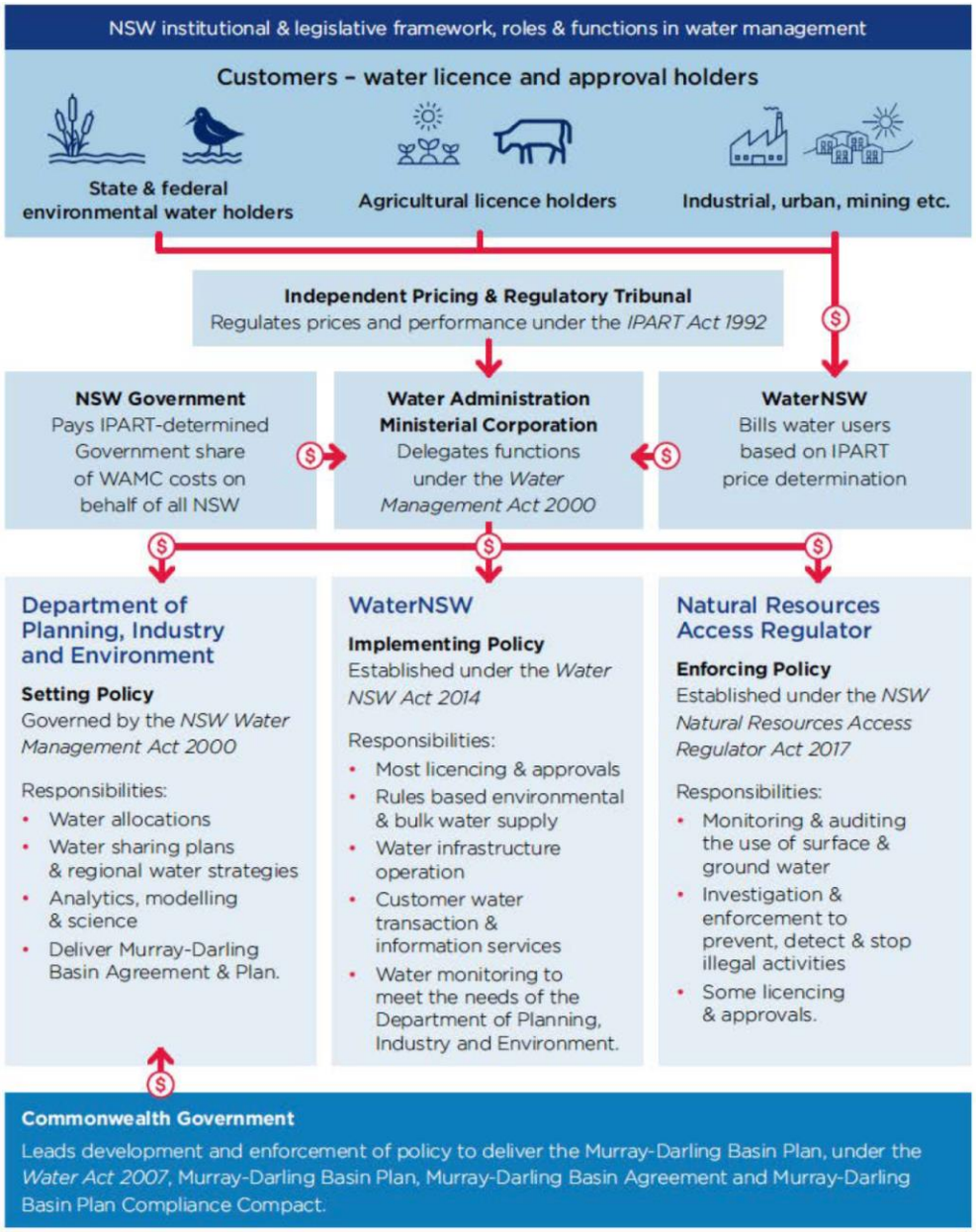

Figure 3-1 Regulatory environment

Source: NSW DPIE & WaterNSW 2020, *2020 Water Administration Ministerial Corporation Pricing Submission*

3.6 Relationships between WAMC, Murray-Darling Basin Authority and Dumaresq-Barwon Border Rivers Commission

Under the *Water Act 2007* (Commonwealth) and Murray-Darling Basin Agreement, which is Schedule 1 to the *Water Act 2007*, New South Wales is deemed to be a "Basin State" for the purpose of implementing the Murray-Darling Basin Plan and a "Contracting Government" for the purpose of delivering Joint Programs. The Joint Programs can be broadly separated into two main programs – the River Murray Operations Joint Program and the Natural Resource Management Joint Program. While the Murray-Darling Basin Plan is wholly funded by the Australian Government, the Joint Programs are funded in agreed shares by the Contracting Governments. Through water users and the prices determined by IPART, DPIE recovers part of New South Wales' contribution to the Joint Programs, with the amount recovered determined based on

"protection of [New South Wales] interests – economically and environmentally – and the integration of the Joint Program with the [New South Wales] policy and legislative framework"[8]. In the 2016 Determination, these Joint Program activities were accepted by IPART as monopoly water management services.

In a similar fashion to its commitments to the Murray-Darling Basin Joint Programs, DPIE also recovers part of New South Wales' contribution to the costs of the Dumaresq-Barwon Border Rivers Commission. The Dumaresq-Barwon Border Rivers Commission is constituted under the *New South Wales-Queensland Border Rivers Agreement*, made on 27 August 1946, and exists to "control and coordinate water available from the rivers around the border of [New South Wales and Queensland]"[9]. The costs of the Dumaresq-Barwon Border Rivers Commission are shared equally between New South Wales and Queensland, with DPIE recovering part of New South Wales' contribution through water users and the prices determined by IPART.

3.7 Activities delivered by each agency

The activities delivered by DPIE, WaterNSW and NRAR on behalf of WAMC are summarised in Table 3-2, including the agency responsible for each activity. In a small number of cases, an activity is delivered by multiple agencies, such as the case of water consents transactions. Of the 32 activities (or 33 activities when including W08-99, which is incorporated into W09-01), 15 activities are wholly delivered by DPIE, 13 activities are wholly delivered by WaterNSW, 1 activity is wholly delivered by NRAR, and 3 activities are shared between multiple agencies.

Table 3-2 Activities delivered by each agency

W-code	Activity	Responsible agency(s)
W01	Surface water monitoring	
W01-01	Surface water quantity monitoring	WaterNSW
W01-02	Surface water data management and reporting	WaterNSW
W01-03	Surface water quality monitoring	WaterNSW
W01-04	Surface water algal monitoring	WaterNSW
W01-05	Surface water ecological condition monitoring	DPIE
W02	Groundwater monitoring	
W02-01	Groundwater quantity monitoring	WaterNSW
W02-02	Groundwater quality monitoring	WaterNSW
W02-03	Groundwater data management and reporting	WaterNSW
W03	Water take monitoring	
W03-01	Water take data collection	WaterNSW
W03-02	Water take data management and reporting	WaterNSW
W04	Water modelling and impact assessment	
W04-01	Surface water modelling	DPIE
W04-02	Groundwater modelling	DPIE
W04-03	Water resource accounting	DPIE
W05	Water management implementation	
W05-01	Systems operation and water availability management	DPIE
W05-02	Blue-green algae management	WaterNSW
W05-03	Environmental water management	DPIE
W05-04	Water plan performance assessment and evaluation	DPIE
W06	Water management planning	

[8] NSW DPIE 2020, *Pricing proposal*, PUB20/518
[9] NSW DPIE 2020, *Pricing proposal*, PUB20/518

W-code	Activity	Responsible agency(s)
W06-01	Water plan development (coastal)	DPIE
W06-02	Water plan development (inland)	DPIE
W06-03	Floodplain management plan development	DPIE
W06-04	Drainage management plan development	DPIE
W06-05	Regional planning and management strategies	DPIE
W06-06	Development of water planning and regulatory framework	DPIE
W06-07	Cross border and national commitments	DPIE
W07	Water management works	
W07-01	Water management works	DPIE
W08	Water regulation management	
W08-01	Regulation systems management	WaterNSW
W08-02	Consents management and licence conversion	WaterNSW
W08-03	Compliance management	NRAR
W09	Water consent transactions	
W9-01	Water consents transactions	▪ Mostly WaterNSW ▪ Some NRAR
W10	Business and customer services	
W10-01	Customer management	▪ Mostly WaterNSW ▪ Some NRAR
W10-02	Business governance and support	All
W10-03	Billing management	WaterNSW

3.8 Organisational structure and resources used by agencies to deliver WAMC monopoly services

3.8.1 DPIE

DPIE is a department of the New South Wales Government and part of the Planning, Industry and Environment cluster, which came into effect on 1 July 2019. In forming this cluster, DPIE assumed most of the activities of the former Department of Planning and Environment, Department of Industry, Office of Environment and Heritage, and Office of Local Government. WAMC functions within DPIE are undertaken by the Water group of DPIE, which is led by the Chief Executive Officer – Water (Deputy Secretary) and consists of six branches:

1. Office of the Deputy Secretary and Strategic Relations
2. Water Policy, Planning and Sciences
3. Regional Water Strategies
4. Programs and Services
5. Water Reform Implementation
6. Metropolitan Water Utilities.

In addition to the above branches, the DPIE Water group also has an Interim Chief Strategy Officer Water, Regional Town Water Supply Coordinator, and Interim Chief Executive Water Infrastructure.

The organisational structure of the DPIE Water group is illustrated in Figure 3-2.

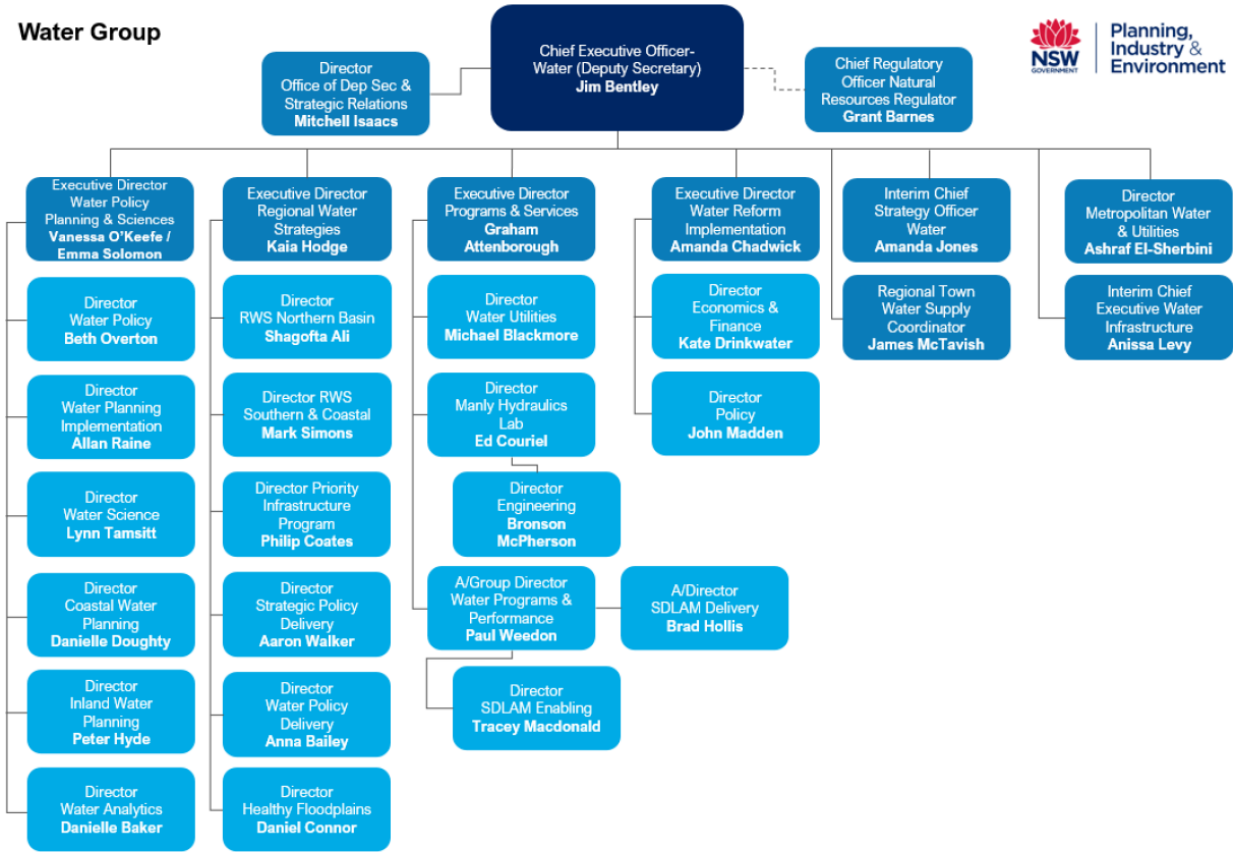

Figure 3-2 Organisational structure of DPIE Water group

Source: NSW DPIE 2020, *2020 WAMC pricing submission – response to item 1 of IPART expenditure consultant RFI*

Table 3-3 summarises the number of staff, measured in full-time equivalents, proposed by DPIE in its 2020 pricing proposal. This excludes an efficiency challenge and W09-01 Consent transactions. W10-02 Business governance and support has been included by DPIE into overheads applied to each activity and so there are no FTE specifically allocated to this activity.

Table 3-3 Number of staff proposed by DPIE

Branch	Proposed number of staff (full-time equivalents)
Office of the Deputy Secretary and Strategic Relations	11.15
Water Policy, Planning and Sciences	120.84
Regional Water Strategies	26.00
Programs and Services	2.00
Water Reform Implementation	2.00
Metropolitan Water Utilities	2.55

Note: Excludes efficiency challenge and W09-01. W10-02 is proposed to be incorporated into overheads.

3.8.2 NRAR

NRAR is an independent regulator within DPIE that is established under the *Natural Resources Access Regulator Act 2017*. NRAR commenced operations in April 2018, following the publication of the Matthews Report in November 2017, formative work by its Board in late 2017, and subsequent appointment of its executive team in March 2018. While NRAR sits within DPIE, and its officers work closely with DPIE staff to ensure consistency and effectiveness of approach, it is ultimately an independent body reporting to an independent Board. The Board, comprising four members, is appointed by the relevant Minister and reports to the Minister. However, once appointing the Board, the Minister may only give directions of a general nature and in accordance with the *Natural Resources Access Regulator Act 2017*. The Chief Regulatory Officer of NRAR is responsible for day-to-day operations and is accountable to the Board.

Throughout the 2020 pricing proposal submitted by DPIE, which also incorporates a submission from NRAR, NRAR is noted to have "strong powers to oversee the compliance and enforcement of water regulation in [New South Wales]"[10], with a current remit to enforce the *Water Management Act 2000* and *Water Act 1912*. NRAR has a current workforce of over 90 compliance staff to deliver this remit, in addition NRAR has a workforce who are not employed to undertake water management activities and are therefore not funded through WAMC prices. The creation of NRAR as a distinct, independent entity within DPIE, with dedicated resources, is stated to have seen water prosecution rates almost triple since the establishment of NRAR[11].

In the 2020 pricing proposal submitted by DPIE, NRAR is also stated to work closely with WaterNSW[12] and undertakes some "shared" activities with WaterNSW, such as water consents transactions and customer management. There is also an interface between NRAR and WaterNSW in the issuing and enforcement of licences and approvals. Specifically, NRAR and WaterNSW share the responsibility of issuing licences and approvals, but NRAR is responsible for overseeing the compliance and enforcement of all licences.

3.8.3 WaterNSW

WaterNSW is a state-owned corporation that is established under the *Water New South Wales Act 2014*. On 1 July 2016, many WAMC functions delegated to the former Department of Primary Industries – Water were transferred to WaterNSW. As part of this reform, over 200 staff were also transferred to WaterNSW[13], along with additional office locations. Beyond its WAMC functions, WaterNSW has also assumed the functions of two other legacy organisations in recent years: State Water Corporation and the Sydney Catchment Authority.

WaterNSW has sought to integrate and consolidated these businesses through transition to a single Enterprise Agreement for all award staff, review of its mix of insourcing and outsourcing, and has planned and is implementing a major restructure of its information systems[14]. These changes have been implemented by WaterNSW across the entirety of its organisation. In particular, WaterNSW has implemented the Microsoft Dynamics 365 platform at the organisation level, using this platform to launch unified systems such as a Customer Information Management System and Computerised Maintenance Management System. While this consolidation and integration of the businesses and various functions is understandable as WaterNSW looks for efficiencies of scale, in doing so it has created challenges in tracing historical costs to WAMC monopoly services and in the reliability of the allocation of corporate wide costs to the regulated WAMC business. These will be recurring themes in this report.

[10] NSW DPIE 2020, *Pricing proposal*, PUB20/518
[11] NSW DPIE 2020, *Pricing proposal*, PUB20/518
[12] NSW DPIE 2020, *Detailed paper C – Who we are and what we do*, PUB20/521
[13] NSW DPIE 2020, *Detailed paper C – Who we are and what we do*, PUB20/521
[14] WaterNSW 2020, *WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Water Licensing and Monitoring Services from 1 July 2021*

4 WAMC's monopoly services

4.1 Summary

Use of activity codes

Activity codes are used in the regulation of the WAMC business to help describe and delineate the monopoly services that it provides. While the activity codes have changed over previous determinations, most notably at the 2016 Determination, they are founded on the definition of water planning and management activities included in the National Water Initiative pricing principles and as interpreted by IPART at the 2011 Determination. We consider the adoption of this activity code framework to be appropriate.

While DPIE has used the activity codes employed for the 2016 Determination (updated for the findings of the 2019 Rural Water Cost Shares review report), WaterNSW has mostly not used the activity code framework in its pricing proposal as it considers that the activity codes "do not directly align with… [its]… own activities and cost allocation methods"[15]. For example, while there are seven separate activity codes for surface water and groundwater monitoring that WaterNSW is responsible for delivering, it uses largely the same processes and resources for this work with staff often visiting both groundwater and surface water and quality and quantity monitoring sites in a day. As a result, the business has difficulty recording costs to the underlying activities and has proposed to aggregate all W01 and W02 activities into a single "water monitoring services" service area. WaterNSW has also proposed to aggregate other activities, such as W09-01 Water consents transactions and W10-01 Customer management, into single service areas.

While we understand the challenge of recording costs to underlying activities, WaterNSW's proposed change (i.e., aggregation of activities) creates significant problems for this expenditure review and IPART's regulatory process which include:

- Loss of traceability of costs at the (more granular) activity code level between the 2016 Determination, current period actual costs and forecast costs
- Inconsistencies with DPIE and NRAR for activities which are delivered jointly or within an activity group. For example, WaterNSW has proposed to aggregate W09-01 Water consents transactions and W10-01 Customer management into a single "licence advisory services" service area. However, as these activities are jointly undertaken by WaterNSW and NRAR, there will be a loss of traceability and comparability (between agencies and over time) if WaterNSW's proposal is adopted.
- Where WaterNSW has proposed aggregating activity codes with varying user shares, the link between the impactor and the price borne by them is reduced. In turn, the user shares proposed for aggregated service areas will not be reflective of the individual user shares of the constituent activities.

A challenge is that WaterNSW states that it does not have better information on which to base allocation of costs to activity codes. We have therefore relied on the information provided by WaterNSW and noted where the allocation of costs to activity codes may impact a conclusion. However, we recommend that for the future, WaterNSW uses its detailed cost coding within its finance system to improve its recording of costs in the following areas:

- Consent transactions including against each specific transaction type
- Customer management activities
- Water take monitoring.

Definition of monopoly services

We have reviewed the definition of the WAMC monopoly services and whether the costs included within the pricing proposals meet the definition. We identified that there is potential for the activities of the Natural Resources Commission in undertaking audits and reviews relating to W05-04 Water plan performance assessment and evaluation to be considered a WAMC monopoly service. These audits and reviews are required under the *Water Management Act 2000* and may fall under the National Water Initiative pricing principle of "Monitoring and evaluation of planning outcomes and progress against targets (including compliance)". However, WAMC also undertakes monitoring and evaluation reviews and the Natural

[15] WaterNSW 2020, *WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Water Licensing and Monitoring Services from 1 July 2021*

Resources Commission activities are currently funded outside of WAMC. Therefore, we don't propose that these costs are included in WAMC monopoly services.

Conversely, we consider that some of the "intergovernmental activities" undertaken as part of activity W06-07 Cross border and national commitments are more consistent with "policy development" under the National Water Initiative principles and therefore should not be included in WAMC's monopoly services. We have assessed that around one-quarter of the proposed effort for intergovernmental activities is more in line with policy development and we therefore recommend that this proportion of costs not be included in the costs for WAMC monopoly services.

In its pricing proposal, DPIE has also included a Sustainable Diversion Limit Adjustment Mechanism (SDLAM) project to deliver environmental flows to the Nimmie-Caira floodplain in the Murrumbidgee River valley. Based on our review of the business case for Nimmie-Caira as well as the obligation of the New South Wales government to implement the project to meet its Basin Plan commitments, we agree with DPIE's assessment that the Nimmie-Caira project meets the definition of WAMC monopoly services and in particular, comprises works that reduce or remediate environmental impacts arising from water use. We recommend that the costs of the Nimmie-Caira project be included within the scope of WAMC monopoly services.

We recommend that all of the costs for Metropolitan Water Planning be considered a WAMC monopoly service and allocated using the existing cost driver. Costs for this activity have been wholly recovered from WaterNSW in the past as IPART assessed that WaterNSW was the major impactor due to its activities to provide supply to meet demand in the Greater Sydney region. We consider that this allocation of costs for Metropolitan Water Planning is appropriate, as WaterNSW continues to be the impactor, and therefore should continue.

We consider that WaterNSW's division of the water take monitoring activity group into two separate areas is logical and should be considered as the basis for revised activity codes for the future period. The new activities could be named as follows:

- W03-01 - Water take data collection and management
- W03-02 - Meter maintenance

User shares

In its pricing proposal, DPIE has proposed user shares consistent with the 2019 Rural Water Cost Shares review report. However, in its AIR/SIR, DPIE has not applied the updated user shares from 2019 and has instead included the user shares from the 2016 Determination. The DPIE AIR/SIR is therefore inconsistent with the 2019 Rural Water Cost Shares report. We recommend that, with the exception of W06-05 Regional planning and management strategies, that the user shares applied for all other DPIE activities are consistent with those in the 2019 Rural Water Cost Shares review report and reflected in the AIR/SIR. For W06-05 Regional planning and management strategies, we recommend that the user share be reduced to 60% to reflect a change in scope to high-level strategic planning.

For W08-03 Compliance Management, we have made a recommendation that the efficient costs recovered from users are commensurate with what we expect to be the level of activity in this area in the medium to long term. However, recognising that relatively high costs are required in the short term as NRAR is established and responds to the historical compliance issues, we consider that Government should pay the balance of costs proposed by NRAR and subject to an efficiency challenge. This recommendation, if adopted, has the effect of reducing the user share of costs for this activity but we have not recommended a changed user share to implement this recommendation as we consider that the reasoning regarding the long term efficient costs should be apparent.

As noted, WaterNSW's aggregation of activities would impact user shares if applied, particularly for the W01 and W02 activity groups because costs have been largely allocated to one activity within the group for convenience and therefore the costs reported by WaterNSW are not reflective of actual costs for the activities. We recommend that the weighted user share from the 2016 Determination be retained when determining user charges for the W01 and W02 activity groups. Further, we recommend that WaterNSW investigate capturing direct costs at a sufficiently granular level such that the link between costs and user shares is not diminished.

We considered whether the observed underperformance of WAMC in the current period warranted a change in user share in the future period such that users did not have to bear the costs of activities that they may have already paid for. In this report, "performance" refers to whether output measures and performance indicators, as set in the 2016 Determination, have been met for each activity. While we note this possibility, we did not make any adjustments to efficient costs on this basis.

Cost drivers

DPIE has proposed changes to the cost drivers for 12 activities. Volume of entitlements is proposed as the new underlying cost driver for seven of these 12 activities. We note that over preceding determinations, there has been a shift between water take and water entitlements and back again based on arguments of cost reflectivity, data reliability and variability. The main advantages that we see in using entitlements in place of water take as a cost driver is that it is simpler administratively to implement, more reliable and more reflective of the largely fixed costs of the WAMC activities compared with take which has an advantage of more fully capturing variable as well as fixed costs. We therefore support the move to water entitlements as a cost driver in place of water take where proposed by DPIE. We also support the move away from number of models to water entitlements as the cost driver for W04-01 and W04-02, as this will better reflect the scale and potential complexity of modelling required in different valleys while remaining relatively simple.

The proposed change in the cost driver for W06-05, from water entitlements held by utilities and industry to the number of licences, needs further consideration. We note that this proposed change impacts regulated users more than unregulated users and we don't have information on whether this is reflective of underlying costs. Therefore, we recommend that volume of entitlements be maintained as the cost driver until more information is available that links costs to the outcomes delivered.

DPIE has also proposed a change in the cost driver for W08-03, from compliance risk profile to the number of licenses. We consider that metering and enforcement is relatively immature and therefore retaining risk as a cost driver has merit. However, as is discussed in Section 8.18.5, we recommend that the level of efficient expenditure included in user charges for the future period reflects a more progressed metering and a more settled approach to compliance. If this recommendation is adopted, then we consider that the number of licences is an appropriate cost driver for this activity.

WaterNSW notes in its submission that more complex cost drivers will not necessarily improve cost reflectivity in pricing. We agree with this sentiment. While it has also suggested that its own valley-based budgeting approach may be an alternative approach to assigning costs to valleys, further information was not available for this report. We recommend that the existing cost drivers for the activities that WaterNSW is responsible for be maintained.

4.2 Definition of WAMC's monopoly services

4.2.1 Introduction

We are required to review the definition of WAMC's monopoly services. Monopoly services are subject to regulation by IPART, and IPART will set maximum prices for these services. For the purposes of the *Independent Pricing and Regulatory Tribunal Act 1992*, monopoly services are defined as:

- Services for which fees and charges are payable under Chapter 3 of the Water Management Act 2000 and
- in accordance with the definition of "government monopoly services" set out in the *Independent Pricing and Regulatory Tribunal (Water Services) Order 2004*.

The scope of Chapter 3 of the Water Management Act 2000 includes basic landholder rights, access licences, approvals, conditions imposed by regulations and regulations relating to water management works. The Water Services Order 2004 declares WAMC's monopoly services as any service provided by WAMC, to the extent to which the service involves:

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

As noted at the time of the 2016 Determination[16], the Water Services Order is open to interpretation as the regulations do not provide practical guidance as to what water management activities should be included as monopoly services. Consistent with the review work undertaken for the 2016 Determination, we have relied on the guidance provided by IPART in the 2011 Determination[17]:

[16] Synergies Economic Consulting 2016, DPI Water Expenditure Review, Final Report prepared for IPART, p30.
[17] IPART, Review of prices for the Water Administration Ministerial Corporation for the NSW Office of Water, from 1 July 2011, Final Report, February 2011

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

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

The 2016 Determination saw a change in WAMC activity groups and activity codes, with the former Department of Primary Industries – Water, who provided services on behalf of WAMC at the time of the 2016 Determination, proposing several amendments to activity groups and activity codes. These proposed amendments comprised a revised schedule of activity groups and activity codes ("W-codes"), a new activity (W01-05 Surface water ecological condition monitoring), and a revised activity (W06-05 Regional planning and management strategies) to account for the incorporation of the former Metropolitan Water Directorate into the former Department of Primary Industries – Water.

IPART accepted the conclusion[18] of its consultant that the revised activity codes proposed by the former Department of Primary Industries – Water were consistent with the *Water Services Order 2004*. The consultant further assessed W01-05 Surface water ecological condition monitoring as being consistent with a monopoly service.[19] However, the consultant recommended that 50% of the costs associated with reviewing the Sydney Metropolitan Water Plan, as part of W06-05, be removed from the cost base. In relation to this recommendation, IPART decided to exclude "25% of the cost of the Metropolitan Water Directorate's development of the Metropolitan Water Plan" in making its 2016 Determination. We consider that all costs for Metropolitan Water Planning should be considered as WAMC monopoly services for this Determination as they are consistent with the fundamental objectives of the NWI pricing principles and consistent with good practice integrated water resource planning.

4.2.2 Definition of monopoly services

In its 2020 pricing proposal[20], DPIE states that it has continued to adopt most principles applied by IPART in the 2016 Determination. One such pricing principle applied is the definition of monopoly services, where DPIE notes that the activities described in its 2020 pricing proposal are WAMC monopoly services as decided by IPART in 2011[21].

In reviewing the definition of monopoly services, we identified that there is potential cause for confusion in the definition of W10-03 Billing management. This activity is for "the management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities". The inclusion of responding to queries is potentially problematic as W10-01 Customer management includes "customer liaison activities". In practice, many organisations do not separate out billing enquiries from general enquiries. We recommend that "responding to queries on billing activities" is removed from the definition of W10-03 Billing management and included within W10-01 Customer management. As discussed further below, WaterNSW has raised broader concerns about the applicability of granular activity codes to its business.

In reviewing expenditure for W06-07 Cross border and national commitments, we were concerned that some of the description of expenditure for "intergovernmental activities" (as distinct from Basin Salinity Management) appeared to be more in line with "policy development" rather than the other water planning and management categories defined in Appendix B of the National Water Initiative Pricing Principles[22]. Expenditure on activities for "policy development" should not be included in water management and planning costs. For the purposes of this final report, we have made our own assessment of the amount of effort undertaken for intergovernmental activities which appears to be policy development and therefore should not be included within the scope of the WAMC monopoly services. We identified that around one-quarter of all effort appears to be "policy development" and therefore should not be considered a WAMC monopoly service. We therefore recommend that the scope of this activity be reduced by one-quarter when determining

[18] IPART 2016, *Review of prices for the Water Administration Ministerial Corporation*, Water – Final Report, ISBN 978-1-925340-88-4
[19] Synergies Economic Consulting 2016, *DPI Water Expenditure Review*, Final Report prepared for IPART
[20] NSW DPIE 2020, *Pricing proposal*, PUB20/518
[21] IPART 2011, *Review of prices for the Water Administration Ministerial Corporation*, Water – Final Report, ISBN 978-1-921628-85-6
[22] NRMMC, 2010, *National Water Initiative pricing principles*.

the level of expenditure that users should support. We recommend that DPIE undertakes an assessment of the intergovernmental activities component of this activity code and tests them against the National Water Initiative Pricing Principles Appendix B.

For all other activities considered to be monopoly services in the 2016 Determination, we accept the categorisation of these activities as monopoly services.

4.2.3 Recording of costs against activity codes

We have compared the activity groups and activity codes outlined by DPIE in its 2020 pricing proposal with the list of monopoly services contained in IPART's 2016 Determination[23] and have identified two changes proposed by DPIE for the future period. The proposed changes involve the[24]:

- Removal of W08-99 Water consents overhead, with the costs associated with this activity instead proposed to be incorporated into W09-01 Water consents transactions
- Removal of W10-02 Business governance and support, with the costs associated with this activity instead proposed to be incorporated into corporate overheads. However, we note that these costs are also included under the W10-02 activity code, rather than in corporate overheads, in the annual information return and special information return. DPIE has stated that, within the annual information return/special information return, it has depicted these costs separately for the purpose of transparency.

However, as all of these activities were considered to be monopoly services in the 2016 Determination, we confirm that no material changes are proposed by DPIE in relation to activity groups and activity codes. We also confirm that no new activities are proposed by either DPIE or WaterNSW.

In contrast, WaterNSW has submitted that the activity codes used to define monopoly services at the 2016 Determination "do not directly align with… [its]… own activities and cost allocation methods"[25]. While it has provided mapping of historical and proposed costs to the activity codes from the 2016 Determination in its 2020 pricing proposal, it also cautions that these should be interpreted carefully. WaterNSW has also proposed that corporate capital expenditure be included within a separate regulatory asset base outside of the existing activity code framework,

WaterNSW has proposed that the 18 existing activity codes which it provides services against be reduced to the following 6 wider activities:

1. Water monitoring services
2. Account management and billing services
3. Licence advisory services
4. Meter maintenance services
5. Water take assessment services
6. Other services.

For the 18 activities performed by WaterNSW, including those undertaken jointly with other agencies, Table 4-1 summarises WaterNSW's mapping of existing activity codes to its proposed activities and our assessment of the reliability of the mapping undertaken.

[23] IPART 2016, *Review of prices for the Water Administration Ministerial Corporation*, Water – Final Report, ISBN 978-1-925340-88-4
[24] NSW DPIE 2020, *Detailed paper E – Services and expenditures by activity*, PUB20/523
[25] WaterNSW 2020, *WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Water Licensing and Monitoring Services from 1 July 2021*

Table 4-1 Comparison of activities from 2016 Determination with activities proposed by WaterNSW

W-code	Activity	Responsible agency(s)	Proposed WaterNSW activity	Reliability of mapping	Comments
W01-01	Surface water quantity monitoring	WaterNSW only	Water monitoring services	Low	▪ We have assigned a "low" rating for reliability of mapping due to the proposed aggregation of seven W-code activities into a single proposed WaterNSW activity ▪ User shares vary across the W01 W-codes, as determined by IPART in its 2019 Rural Water Cost Shares review[26] ▪ Expenditure for W05-02 also included with surface water and groundwater monitoring ▪ As W01-05 Surface water ecological condition monitoring is undertaken by DPIE, it may be "orphaned" by WaterNSW's proposal to aggregate W01 and W02 W-codes into a single activity
W01-02	Surface water data management and reporting	WaterNSW only	Water monitoring services	Low	▪ As above
W01-03	Surface water quality monitoring	WaterNSW only	Water monitoring services	Low	▪ As above
W01-04	Surface water algal monitoring	WaterNSW only	Water monitoring services	Low	▪ As above
W02-01	Groundwater quantity monitoring	WaterNSW only	Water monitoring services	Low	▪ As above
W02-02	Groundwater quality monitoring	WaterNSW only	Water monitoring services	Low	▪ As above
W02-03	Groundwater data management and reporting	WaterNSW only	Water monitoring services	Low	▪ As above
W03-01	Water take data collection	WaterNSW only	▪ Water take assessment services ▪ Meter maintenance services	Medium	▪ WaterNSW has proposed to separate this W-code activity into two activities – water take assessment services and meter maintenance services ▪ Meter maintenance services are outsourced which provides ringfencing around this component. ▪ We consider that WaterNSW's division of this activity group into two separate areas is logical and should be considered as the basis for revised activity codes for the future period.

[26] IPART 2019, *Rural Water Cost Shares*, Final Report: Water, ISBN 978-1-76049-286-1

W-code	Activity	Responsible agency(s)	Proposed WaterNSW activity	Reliability of mapping	Comments
					▪ WaterNSW has not used W03-02 and included all water take costs against activity W03-01. As a consequence, costs are not comparable at an activity level or able to be readily disaggregated for comparison.
W03-02	Water take data management and reporting	WaterNSW only	Not to be used in the future		▪ WaterNSW has not used W03-02 and included all water take costs against activity W03-01. As a consequence, costs are not comparable at an activity level or able to be readily disaggregated for comparison.
W05-02	Blue-green algae management	WaterNSW only	No change proposed by WaterNSW	Low	▪ Function transferred to WaterNSW ▪ Costs developed alongside surface water and groundwater monitoring (W01 and W02) ▪ Forecast costs have been included in the AIR/SIR. However, these costs have been allocated to this activity code and therefore we have low confidence in their reliability.
W08-01	Regulation systems management	WaterNSW only	Account management and billing services	Medium	▪ WaterNSW has proposed to combine W08-01 Regulation systems management, W08-02 Consents management and licence conversion and W10-03 Billing management into a single activity. Equivalent user shares (of 100%) are proposed for all three of these W-code activities. Therefore, there appears to be merit in combining these three W-code activities. ▪ No expenditure is proposed for this W-code activity in the future period ▪ We have, therefore, assigned a “medium” rating for reliability of mapping
W08-02	Consents management and licence conversion	WaterNSW only	Account management and billing services	Medium	▪ WaterNSW has proposed to combine W08-01 Regulation systems management, W08-02 Consents management and licence conversion and W10-03 Billing management into a single activity. Equivalent user shares (of 100%) are proposed for all three of these W-code activities. Therefore, there appears to be merit in combining these three W-code activities. ▪ We have, therefore, assigned a “medium” rating for reliability of mapping

W-code	Activity	Responsible agency(s)	Proposed WaterNSW activity	Reliability of mapping	Comments
W08-03	Compliance management	NRAR only	Function of NRAR	High	▪ Transfer of functions to NRAR but some costs proposed/ retained by WaterNSW for legal support ▪ Costs should be able to be reliably mapped where both parties recognise the cost and service provided
W08-99	Water consents overhead	N/A	Not to be used in the future	N/a	▪ No agency proposes to use this W-code in the future
W09-01	Water consents transactions	Joint NRAR and WaterNSW	Licence advisory services	Low	▪ WaterNSW has proposed to combine W09-01 Water consents transactions and W10-01 Customer management into a single activity ▪ WaterNSW uses the same resources for water consent transactions and customer management making it difficult to separate out costs. ▪ As this activity is also undertaken by NRAR there will be a loss of traceability to historical costs if WaterNSW's proposal is adopted.
W10-01	Customer management	Joint NRAR and WaterNSW	Licence advisory services	Low	▪ WaterNSW has proposed to combine W09-01 Water consents transactions and W10-01 Customer management into a single activity ▪ WaterNSW uses the same resources for water consent transactions and customer management making it difficult to separate out costs.
W10-02	Business governance and support	Joint DPIE, NRAR and WaterNSW	Not to be used in the future	N/a (discontinue)	▪ The 2019 user cost shares review recommended removing this activity provide that the costs were allocated across other related activities ▪ No agency proposes to use this W-code in the future, with costs instead proposed to be incorporated into corporate overheads for operating expenditure and for corporate capital expenditure, WaterNSW proposes establishment of a regulated asset base specific to these costs. WaterNSW proposes a user share of 94% for corporate capital expenditure which reflects the weighted average of all capital and operating expenditure. ▪ However, we do not accept this proposal as it is not supported by transparent allocation. Instead we have included WaterNSW's corporate capital

W-code	Activity	Responsible agency(s)	Proposed WaterNSW activity	Reliability of mapping	Comments
					expenditure against W10-02 Business Governance and Support and we recommend that the existing user share of 80% be retained for this activity..
W10-03	Billing management	WaterNSW only	Account management and billing services	Medium	▪ As for W08-02

WaterNSW's proposal to use its own activity areas raises the following issues:

- WaterNSW has proposed to aggregate all W01 and W02 activity codes into a single "Water monitoring services" activity. This includes one activity delivered by DPIE (W01-05 Surface water ecological condition monitoring). The proposed aggregation of these activity codes would impact on the traceability of expenditure between the current and future periods at activity level as well as the delineation in scope between activities. It also would create an orphan activity in W01-05.
- The proposed aggregated activity codes for the W01 and W02 groups have varying user shares. We discuss this further in Section 4.3.
- The inclusion of W05-02 with the W01 and W02 groupings further increases the difficulty in disaggregating all of these costs
- More broadly, WaterNSW's proposed aggregation of existing activities may lead to a loss of granularity in understanding movements in expenditure and the drivers for these movements.

The preceding analysis and discussion highlights that we have significant concerns regarding the ability of WaterNSW's historical and forecast expenditure to be accurately reported against activity codes. WaterNSW has been open about its approach in its pricing proposal and the challenges it faces in reliably allocating costs to the activity codes. A challenge that we face is that there appears to be little additional information on which to improve the allocation of costs to activity codes. Therefore, we have accepted WaterNSW's presentation of costs against activity codes for the purposes of reporting our recommendations within the regulatory framework. We recommend that WaterNSW uses its detailed cost coding within its finance system to improve its recording of costs in the following areas:

- Consent transactions including against each specific transaction type
- Customer management activities
- Water take monitoring.

We recognise the difficulties in recording costs against the surface water monitoring and groundwater monitoring groups. However, we recommend that WaterNSW identifies if there are any opportunities for more detailed use of cost codes to complement its cost model.

4.2.4 Inclusion of activities within definition of monopoly services

In evaluating WAMC's expenditure, we identified the following areas where we considered that costs may have been included within the pricing proposals inconsistent with the definition of the WAMC monopoly services:

- W05-04 Water plan performance assessment and evaluation – for this activity, the Natural Resources Commission plays an important role in that they undertake the following activities:
  - Section 43(a) reviews
  - Section 44 audits.

  Both of these activities are required under the *Water Management Act 2000*. DPIE collects and analyses data to help inform the Natural Resources Commission reviews and activities. However, no costs are included in the pricing proposals for the costs of the Natural Resources Commission. The National Water Initiative Pricing Principles Appendix B includes "Monitoring and evaluation of planning outcomes and progress against targets (including compliance)" as water planning and management activities. However, WAMC also undertakes monitoring and evaluation reviews and the NRC activities are currently funded outside of WAMC. Therefore, we don't propose that these costs are included in WAMC monopoly services.
- W06-07 Cross border and national commitments – we have set out in Section 4.2.2 that we were concerned that a proportion of the expenditure for "intergovernmental activities" (as distinct from Basin Salinity Management) appears to be for "policy development" rather than the other water planning and management. We recommend that DPIE review both the definition of this service and the inclusion of activities within this service.

In addition to the above two areas where we consider that costs may have been included within pricing proposals inconsistent with the definition of WAMC monopoly services, there are two areas that warrant further discussion regarding their inclusion in the pricing proposals. There are:

- Nimmie-Caira project

> Metropolitan Water Planning.

We consider each of these in more detail following.

4.2.4.1 Nimmie-Caira project

For the first time, the costs of a Sustainable Diversion Limit Adjustment Mechanism (SDLAM) project, being the Nimmie-Caira project, have been included directly in proposed WAMC costs. The costs included are for ongoing operation and maintenance of the project only as the capital costs have been funded by the Commonwealth. SDLAM projects allow flexibility in how the sustainable diversion limits for the Southern Basin as set out in the Murray-Darling Basin Plan can be achieved. SDLAM projects are expected to deliver environmental outcomes while allowing more water to remain in the system. The SDLAM project included by DPIE in its pricing proposal is to deliver environmental flows to the Nimmie-Caira floodplain in the Murrumbidgee River valley. DPIE states in its response to IPART's Issues Paper that the project meets the impactor pays principle as the environmental releases through the project are required to mitigate the impacts of water use by other licence holders. DPIE also notes that users in the Murrumbidgee Valley will also receive benefits from the potential increase in water allocations that arise from an adjustment mechanism.

We consider that the Nimmie-Caira project meets the definition of WAMC monopoly services in the Water Services Order 2004 in that they are required for the making available of water as the Murray-Darling Basin Plan is fundamental to ongoing sustainable use of water. The project also meets the NWI pricing principles for water planning and management activities in that it is works to reduce or remediate environmental impacts arising from water use. The New South Wales government is required to implement the project to meet its Basin Plan commitments.

SDLAM projects are required to be notified to the MDBA and subject to an agreed assessment process. Projects have been identified by states and notified to MDBA. Business cases had to be prepared for each project setting out their costs and long term benefits. Therefore, the extent and nature of SDLAM projects is known. The proposals were open to public feedback and extensive feedback was received and considered. SDLAM projects have been adopted following joint workshops and consideration between MDBA and Basin states. An independent panel was also engaged to undertake a review of the SDLAM adjustment process[27].

We note that water users in New South Wales are already supporting the ongoing costs of other SDLAM projects. For example, WAMC users indirectly contribute to the costs of the River Murray Operations which include the operation and maintenance of SDLAM projects at the Chowilla Floodplain, Lindsay Island, Mulcra Island, Gunbower Forest, Hattah Lakes, Barmah-Millewa Forest and Koondrook-Perricoota Forest. Similarly, WaterNSW rural valley customers support the ongoing costs of the Computer Aided River Management (CARM) project which is also a SDLAM project.

Based on our review of the business case for Nimmie-Caira as well as consideration that New South Wales is required to implement the project to meet its Basin Plan commitments, we agree with DPIE's assessment that the Nimmie-Caira project meets the definition of WAMC monopoly services and in particular, comprises works that reduce or remediate environmental impacts arising from water use.

4.2.4.2 Metropolitan Water Planning

Metropolitan Water Planning costs form part of the W06-05 Regional planning and management strategies activity. At the 2016 Determination, IPART decided that as WaterNSW is the major impactor in the South Coast unregulated region due to its activities to provide supply to meet demand in the Greater Sydney region, IPART allocated all of the Metropolitan Water Planning costs solely to WaterNSW. These costs have been recovered as an additional fixed charge applied to water access licenses held by WaterNSW in the South Coast unregulated rivers water source.

At the time of the 2016 Determination, IPART excluded 25% of DPIE's costs for Metropolitan Water Planning from the costs recovered from WaterNSW. IPART's decision was based on the following considerations:

> Under the NWI pricing principles, separate pricing principles apply for recycled water and stormwater use compared with those for water planning and management activities. IPART noted that while Integrated water resource planning (IWRP) systems should take recycled water and stormwater into consideration, in their role as substitutes for potable water and raw water, NWI pricing principles for recycled water and

[27] More information on the assessment process for SDLAM projects and the projects accepted can be found at: https://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits/sdl-adjustment-proposals-state-projects

stormwater are relevant in urban water. In the bulk water sector, access to rainwater and surface water is granted through water access licences or through basic landholder (harvestable) rights.

- In integrated water resource planning, desalinated water is a non-rainfall dependent substitute for potable water and raw water. However, desalinated water is outside the scope of the *Water Management Act 2000* as a water access licence is not required to take this water. Due to its costs, desalinated water can only be considered as a substitute for potable water in the urban water sector. Any planning costs related to desalinated water should therefore be excluded from the cost base for water management charges.

Regarding the first consideration of IPART at the time of the 2016 Determination regarding the applicability of the NWI pricing principles for recycled water and stormwater to WAMC services, our assessment is that this is a narrow reading of the NWI pricing principles. The fundamental objectives of the NWI pricing principles are to promote economically efficient use of water, provide for sufficient revenue streams for businesses, facilitate efficient water markets, give effect to user pays principles and achieve transparency. These fundamental objectives should be the first consideration whereas the 2016 Determination was more specific in drawing distinction between different sources.

Regarding the second consideration regarding desalination being outside the Water Management Act 2000 and the water planning and management framework, we agree that this is likely grounds for costs to be excluded from the definition of WAMC monopoly services. However, we consider that there has been substantial change in the understanding of what constitutes good practice for water planning and management planning that the exclusion of desalination (or recycled water) from the regulatory framework should be seen as a historical inconsistency rather than a reflection of good practice. Further, distinctions between the various sources are lessening as integrated planning is increasingly practiced and implemented and the solutions are cost effective.

DPIE submits in its pricing proposal that:

> *"…strategic water planning aims to create more secure and resilient water resources by identifying the best combination of options to meet the needs of cities and towns, water using industries, communities and the environment. The full range of measures to save, supply or substitute water should be considered to optimise the way we allocate water for extractive use and ensure we can protect water dependent ecosystems. We must have robust, integrated water planning that takes into account all viable options. Removing some very legitimate options from the planning framework could result in piecemeal investment decisions and suboptimal water management outcomes."*

We agree with this assessment. Good practice planning requires all supply measures to be considered and an integrated and adaptive management approach should not consider supply measures separately as that is fundamentally at odds with the planning principles. Planning undertaken in response to the recent drought demonstrates Government commitment to all supply options and also demonstrates that under an integrated approach it is less meaningful to consider options independently.

We consider that all costs for Metropolitan Water Planning should be considered a WAMC monopoly service because:

- this is consistent with the fundamental objectives of the NWI pricing principles
- good practice water planning and management should consider all supply sources together and any exclusion of sources from the existing water planning and management framework likely reflects the superseded understanding of water resource planning at that time the framework was put in place.

However, we note that there is grounds for these costs to be excluded in part because they strictly fall outside the scope of the Water Management Act 2000 framework. We consider that the existing allocation of these costs wholly to WaterNSW and its access licences in the Greater Sydney region is still appropriate.

4.2.5 Recommendations

We recommend that the costs of the Nimmie-Caira project be included within the scope of WAMC monopoly services.

We recommend that all of the costs for Metropolitan Water Planning be considered a WAMC monopoly service and allocated using the existing cost driver. The existing cost driver recovers these costs wholly from WaterNSW through its water access licenses held in the South Coast unregulated rivers water source which supply the Greater Sydney region.

We consider that WaterNSW's division of the water take monitoring activity group into two separate areas is logical and should be considered as the basis for revised activity codes for the future period. The new activities could be named as follows:

- W03-01 - Water take data collection and management
- W03-02 - Meter maintenance

We recommend that WaterNSW undertakes a thorough review of its WAMC activities and proposed groupings against the National Water Initiative pricing principles definitions. Where WaterNSW can demonstrate that activities can be logically grouped and maintained consistently with the pricing principles, then it should propose this grouping. Costs should generally be recorded at a granular level aligned with the pricing principles and activities. Only for immaterial items should it be considered that costs be collected under more general groupings. We understand that improvements to WaterNSW's finance system enable more granular costing.

4.3 Proposed user shares

4.3.1 Introduction

We are required to review the user shares proposed by the agencies for each activity. Based on the "impactor pays" principle, user shares form the basis for apportioning costs between users and the government for WAMC's monopoly services. We are required to compare the user shares proposed by the agencies for the 2021 determination period with those applied at the 2016 Determination. However, since the 2016 Determination, IPART has completed a review into cost shares for rural water[28] (the 2019 Rural Water Cost Shares review). The differences between the user shares applied at the 2016 Determination and those determined by IPART in 2019 are documented in the 2019 Rural Water Cost Shares review report. As such, the 2019 Rural Water Cost Shares review, rather than the 2016 Determination, forms the starting point of our review.

4.3.2 User shares proposed by DPIE and NRAR

In its 2020 pricing proposal, DPIE states that its proposed user shares are as per the cost shares determined by IPART in its 2019 Rural Water Cost Shares review. We have compared the user shares outlined by DPIE in its 2020 pricing proposal to the 2019 Rural Water Cost Shares review report and confirm that the user shares proposed by DPIE in its pricing proposal are consistent with those from the 2019 Rural Water Cost Shares review. However, in its AIR/SIR, DPIE has included the user shares from the 2016 Determination, and its AIR/SIR is therefore inconsistent with the 2019 Rural Water Cost Shares report. We consider that the cost shares report user shares should apply to the AIR/SIR.

4.3.3 Impact of WaterNSW's proposed use of activity codes on user shares

In its 2020 pricing proposal, WaterNSW has not explicitly considered changes to user shares for operating expenditure. However, as WaterNSW has proposed to move away from activity codes to its own service areas, implementation of this approach would impact on user shares. To this end, it has provided, in its 2020 pricing proposal, a mapping between IPART's activity codes and the "charge categories" it is proposing. WaterNSW states that the cost split of its charge categories, excluding water monitoring costs and corporate capital expenditure, is "consistent" with IPART's cost shares from the 2019 Rural Water Cost Shares review report.

However, WaterNSW's proposal is inconsistent with the 2019 Rural Water Cost Shares review report, as it proposes combining W01 and W02 activity codes which have user shares varying from 40% to 100%. Combining the activities reduces the link between the assessment of the impactor and the impactor bearing costs for the activity. It is difficult to see how this link between the impactor and pricing for these activities could be improved without WaterNSW being able to provide reliable allocation of costs to the activity codes. While the past provides some guidance – the weighted average user share across W01 and W02 (excluding W01-05) was 84% based on the 2016 Determination – this only reflects a point in time and doesn't provide guidance on how user shares might vary as costs at the activity level vary over time. We recommend that the weighted user share from the 2016 Determination be retained when determining user charges for the W01 and W02 activity groups. In calculating the weighted user shares, an adjustment needs to be made for the 2019 cost shares review which recommended changes to user shares for four of the W01 group activities. We have calculated user shares based on the 2016 Determination totex and it is 77% for W01 Surface water monitoring. For W02 Groundwater monitoring, all activities have a user share of 100% so the user share for the W02 group is also 100%.

[28] IPART 2019, *Rural Water Cost Shares*, Final Report: Water, ISBN 978-1-76049-286-1

WaterNSW proposes to combine W08-01 Regulation systems management, W08-02 Consents management and licence conversion and W10-03 Billing management into a single activity ("Account management and billing services"). All three of these activities have the same user share of 100%, so this proposal would not impact on the user share in pricing.

WaterNSW, like DPIE, proposes to discontinue the use of activity codes W08-99 Water consents overhead and W10-02 Business governance and support and allocate these costs to overheads to be apportioned across all activities. This is consistent with the recommendations of the 2019 Rural Water Cost Shares review report. However, while WaterNSW has allocated operating expenditure in these categories across other activities, it has not done so for capital expenditure. Instead, it proposes that a separate corporate capital expenditure regulatory asset base be established and a user share of 94% be applied to this expenditure to reflect a weighted average user share for all capital and operating expenditure. We do not support this approach as WaterNSW has not used a transparent cost allocation methodology to apportion this expenditure to the activities to which it is relevant. The impact of increasing user share is not justified without having confidence in this allocation. Therefore, we recommend that the W10-02 Business Governance and Support activity code be retained for corporate capital expenditure and the existing 80% user share be applied.

WaterNSW also proposes combining W09-01 and W10-01 into a new service area "licence advisory services". Both have the same user share of 100%. However, W09-01 is a fee-for-service activity.

For corporate capital expenditure (e.g., information technology, motor vehicles and head office costs), WaterNSW has itemised these costs and included them in a corporate regulatory asset base. WaterNSW also proposes separate regulatory asset bases for water monitoring assets and the legacy assets transferred to it. WaterNSW notes that this segmenting of the regulatory asset base is consistent with the approach taken by IPART for the recent Greater Sydney price determination. For the corporate regulatory asset base, WaterNSW proposes that the return of capital component be apportioned to users based on the weighted average user share for expenditure over the future period. We consider that this approach is reasonable given that corporate capital expenditure is used to support service delivery across all activities.

Overall, we recommend that WaterNSW investigate capturing direct costs at a sufficiently granular level such that the link between costs and user shares is not diminished.

4.3.4 Considerations for changed user shares

In our detailed reviews of expenditure at an activity level, we tested with the agencies whether there was any reason such as changes to the nature or scope of the activities that might warrant the user shares proposed in the 2019 Rural Water Cost Shares review report being revised. For all activities, the agencies responded that they could not identify any reason for changing the user shares, noting that the review report was completed very recently.

However, we consider that the scope of W06-05 Regional planning and management strategies is sufficiently different from that considered for the 2019 review that a review of the user share for this activity is warranted. The scope has now changed in response to stakeholder concern that regional water planning wasn't sufficiently integrated and effective to support infrastructure and resource planning. A State Wide water strategy is also being prepared. We consider that these requirements are reflective of increased high-level strategic planning that goes above and beyond the requirements of direct users. Accordingly, we recommend that the user share be decreased to 60%.

In submissions made to IPART, some stakeholders have suggested that climate change represents an impactor driving costs and therefore represents ground for reconsidering the user shares applied to activities. We do not consider that the effects of climate change is sufficient grounds for adjusting user shares for two reasons. Firstly, the impact on WAMC costs of climate change can only be seen in a handful of areas and these costs are very small compared to the overall costs of WAMC services. Secondly, if climate change is an impactor, its impact is substantially smaller than the impacts of high consumptive water use.

4.3.5 Recommendations

We do not think that WaterNSW's grouping of activity codes is appropriate where the link to differentiated user shares is lost. We recommend that WaterNSW investigate capturing direct costs at a sufficiently granular level such that the link between costs and user shares is not diminished.

For the W01 and W02 activity groups, we recommend that the weighted user share from the 2016 Determination (updated for changes recommended in the 2019 user shares report) be retained when determining user charges.

We recommend that the user share for W06-05 Regional planning and management strategies be changed to 60%.

We recommend that the user shares for all other activities are consistent with those in the 2019 Rural Water Cost Shares review report.

4.4 Proposed cost drivers

4.4.1 Introduction

We are required to review the cost allocation model and cost driver proposed for each activity. Cost drivers are used to distribute costs between water sources and geographic regions (valleys) with an objective that prices better reflect underlying costs. To the extent that costs vary between water sources and valleys, customer prices will also vary. At the 2016 Determination, costs were apportioned between:

- 11 valleys in regulated river systems
- 8 regions for unregulated river systems
- 2 regions for groundwater systems.

4.4.2 Cost drivers proposed by DPIE and NRAR

DPIE has proposed changes to the cost drivers for 12 activities. While DPIE commissioned a consultant to review the existing cost drivers, it also relied on its own judgement in arriving at these recommendations and has only adopted the CIE recommendation for two activities. In part this appears to be because DPIE does not have sufficiently robust cost recording and reporting systems to implement the intent of the CIE recommendations which seek more granularity in the cost drivers.

Table 4-2 sets out the cost drivers for the current period, the cost drivers proposed by DPIE for the future period, and the affected activities. The reason provided by DPIE, as per its 2020 pricing proposal, is also included for each proposed change. While for a number of activities DPIE has stated that it has reviewed the price impacts of the 2016 cost driver and found that the cost driver was no longer representative of the underlying activity costs we have not seen evidence that analysis of this nature has been undertaken and DPIE's judgement appears to be the basis of most of the recommendations.

Table 4-2 Changes to cost drivers proposed by DPIE

Cost driver for current period	DPIE's proposed cost driver for future period	Recommendation from CIE report	CIE recommendation accepted by DPIE?	Affected W-codes and activities	DPIE's stated reason for proposed change	DPIE proposal accepted by Cardno
Water models*	Volume of entitlements*	▪ Maintain current driver (water models) with updated information where available (staff resource requirement)	No	▪ W04-01 Surface water modelling ▪ W04-02 Groundwater modelling	A review of price impacts using the 2016 cost driver found that this cost driver was no longer representative of the underlying activity costs. A sensitivity analysis comparing alternative cost drivers found that volume of entitlements was more reflective of the activity costs by water source and region.	Yes
Total water take^	Volume of entitlements^	▪ W04-03 Water resource accounting: Number of licences ▪ W05-04 Water plan performance assessment and evaluation: Consider new unique activity-based cost driver ▪ W06-01/W06-02 Water plan development (coastal and inland): Consider new unique activity-based cost driver ▪ W06-06 Development of water planning and regulatory framework: Number of licences	No (for all six activities)	▪ W04-03 Water resource accounting ▪ W05-04 Water plan performance assessment and evaluation ▪ W06-01 Water plan development (coastal) ▪ W06-02 Water plan development (inland) ▪ W06-06 Development of water planning and regulatory framework	As for W04-01 and W04-02. In discussion with DPIE, it was also noted that entitlements are a stable measure compared to the fluctuations that occur for take, thereby providing more consistency and certainty over time.	Yes

Cost driver for current period	DPIE's proposed cost driver for future period	Recommendation from CIE report	CIE recommendation accepted by DPIE?	Affected W-codes and activities	DPIE's stated reason for proposed change	DPIE proposal accepted by Cardno
		▪ W06-07 Cross border and national commitments: Number of licences		▪ W06-07 Cross border and national commitments		
Water entitlement held by utilities and industry	Number of licences	▪ Maintain current driver (water entitlements held by utilities industry) with updated information where available	No	▪ W06-05 Regional planning and management strategies	For the 2016 regulatory period costs of regional planning and management strategies were allocated on the basis of water entitlement held by utilities and industry, due to the coastal focus of the Sydney metropolitan plan and the dominance of other coastal water sharing plans in this activity code. For the 2021 regulatory period, the focus of this activity will broaden to the whole state. As such, DPIE is proposing to change the cost driver from entitlements held by utilities and industry to number of licences. The number of licences is stated to best reflect the system-wide focus and the state-wide coverage of regional water strategies. Subsequent sensitivity analysis comparing the cost drivers is stated to confirm that changing the cost driver to number of licences results in a more cost-reflective distribution of activity costs across the valleys.	No[#]
Compliance risk profile	Number of licences	▪ Maintain current driver with updated information where available	No	▪ W08-03 Compliance management	For the 2016 regulatory period, costs of compliance and enforcement were allocated on a risk basis. That is, valleys with high non-compliance rates paid proportionately higher shares of the costs. A review of price impacts using the 2016 cost driver found that the cost driver was no longer representative of the underlying activity costs. Since metering policies have been introduced, DPIE considers that it may be more cost reflective to allocate the compliance and enforcement costs between valleys based on the number of licences. This reflects the higher proportion of metered water take and the emphasis on proactive compliance activities. This change is also stated to address	Yes[†]

Cost driver for current period	DPIE's proposed cost driver for future period	Recommendation from CIE report	CIE recommendation accepted by DPIE?	Affected W-codes and activities	DPIE's stated reason for proposed change	DPIE proposal accepted by Cardno
					stakeholder feedback received by DPIE. A sensitivity analysis comparing alternative cost drivers found that licence numbers are more reflective of the activity costs by water source and region.	
Number of customers	Number of licences	▪ Number of licences	Yes	▪ W10-01 Customer management	To ensure consistency with the cost drivers used by all three agencies in the delivery of WAMC services, DPIE proposes to use the number of licences to allocate the costs for this activity	Yes
Total water take	Transferred to overheads	▪ Transfer to overheads	Yes	▪ W10-02 Business governance and support		Yes

Notes:

* Surface water only for W04-01 and groundwater only for W04-02

^ Total water for W04-03 and W06-06, coastal water only for W06-01, inland water only for W06-02, and total water with double the weighting of allocation on activities in inland pricing water sources for W06-07

We recommend that volume of entitlements be maintained as the cost driver until more information is available that links costs to the outcomes delivered. Refer to the discussion following this table.

† If our recommendation in Section 8.18.5 is adopted, we consider that the number of licences is an appropriate cost driver for this activity. Refer to the discussion following this table.

A theme arising from Table 4-2 is that DPIE has not adopted CIE's recommendations for most activity codes (W04-01, W04-02, W04-03, W05-04, W06-01, W06-02, W06-06 and W06-07). There appears to be insufficient information available to DPIE to make these changes at this time, e.g. improved recording of staff time against valleys. DPIE should improve its cost recording in the future period to better determine valley-based differences in costs.

We provide the following opinions in relation to the cost driver changes proposed by DPIE:

- Volume of entitlements is proposed as the underlying cost driver for 7 out of the 12 activities for which change is proposed. Over preceding determinations, there has been a shift between water take and water entitlements and back again based on arguments of cost reflectivity, data reliability and variability. The main advantages that we see in using entitlements in place of water take as a cost driver is that it is simpler administratively to implement, more reliable and more reflective of the largely fixed costs of the WAMC activities. We therefore support the move to water entitlements as a cost driver in place of water take where proposed by DPIE.
- We support the move away from number of models to water entitlements as the cost driver for W04-01 and W04-02, as this will better reflect the scale and potential complexity of modelling required in different valleys while remaining relatively simple
- There is merit in the proposal for W06-05 to change the cost driver to the number of licences away from volume of entitlements, as planning activities need to consider all relevant licence holders and this effort is more proportional to the existence of the licence than the volume of the licence. However, as noted following, this results in a shift in expenditure away from unregulated sources to regulated and groundwater sources. We do not have information as to whether the planning effort varies for these different water sources. Therefore, we recommend that volume of entitlements be maintained as the cost driver until more information is available that links costs to the outcomes delivered.
- For W08-03 Compliance management, DPIE considers that increasing metering and a move to more proactive compliance means that costs should be more evenly spread across users by using number of licences as the driver. We consider that metering and enforcement is relatively immature and therefore retaining risk as a cost driver has merit. However, as is discussed in Section 8.18.5, we recommend that the level of efficient expenditure included in user charges for the future period reflects a more progressed metering and a more settled approach to compliance. If this recommendation is adopted, then we consider that the number of licences is an appropriate cost driver for this activity.

DPIE has performed a sensitivity analysis on its proposed cost driver changes. For each cost driver (current or proposed) and affected activity, DPIE has calculated the proportion of expenditure by water source type (regulated surface water, unregulated surface water or groundwater) and valley. The 2018/19 annual information return was used by DPIE as the basis for these calculations. The results of this sensitivity analysis are summarised in Table 4-3.

Table 4-3 Summary of results from sensitivity analysis performed by DPIE on proposed cost driver changes

W-code and activity	Cost driver for current period: Proportion by water source type			Proposed cost driver for future period: Proportion by water source type		
	Regulated	Unregulated	Groundwater	Regulated	Unregulated	Groundwater
W04-01 Surface water modelling	69.21%	30.79%	0.00%	81.71%	18.29%	0.00%
W04-02 Groundwater modelling	0.00%	0.00%	100%*	0.00%	0.00%	100%*
W04-03 Water resource accounting	56.90%	16.60%	26.50%	68.34%	15.29%	16.36%
W06-01 Water plan development (coastal)	12.40%	80.40%	7.20%	16.10%	60.34%	23.56%
W06-02 Water plan development (inland)	80.54%	5.15%	14.91%	75.97%	8.72%	15.31%

W-code and activity	Cost driver for current period: Proportion by water source type			Proposed cost driver for future period: Proportion by water source type		
	Regulated	Unregulated	Groundwater	Regulated	Unregulated	Groundwater
W06-05 Regional planning and management strategies^	9.40%	83.80%	6.80%	32.08%	40.26%	27.66%
W06-06 Development of water planning and regulatory framework	56.90%	16.60%	26.50%	68.34%	15.29%	16.36%
W06-07 Cross border and national commitments	61.47%	9.54%	28.99%	71.90%	12.23%	15.87%
W08-03 Compliance management^	13.55%	67.85%	18.59%	32.08%	40.26%	27.66%
W10-02 Business governance and support#	24.25%	43.28%	32.46%	32.08%	40.26%	27.66%

Notes:

* While the overall cost split between water source types remains the same (100% for groundwater sources), the cost split between inland and coastal water sources has changed. Previously, 91.00% of expenditure on this activity was allocated to inland water sources and 9.00% was allocated to coastal water sources. Under its sensitivity analysis, DPIE has proposed that 81.66% is allocated to inland water sources and 18.34% is allocated to coastal water sources.

^ DPIE also tested the impact of adopting "volume of entitlements" and "total water take" cost drivers for these activities. The adoption of both of these cost drivers saw significantly greater expenditure allocated to regulated water sources and significantly less expenditure allocated to unregulated water sources.

DPIE also tested the impact of adopting a "volume of entitlements" cost driver for this activity. The adoption of this cost driver saw significantly greater expenditure allocated to regulated water sources and significantly less expenditure allocated to unregulated water sources.

We make the following broad observations based on the results of the sensitivity analysis documented above:

- The proposed cost driver change for W04-01 results in significantly greater expenditure allocated to regulated water sources
- The proposed cost driver change for W04-03, W06-01, W06-02, W06-06 and W06-07 generally results in greater expenditure allocated to regulated water sources. An exception is W06-02, where a decrease in regulated water source expenditure is observed.
- The proposed cost driver change for W06-05 results in significantly less expenditure allocated to unregulated sources, with corresponding high increases in expenditure allocated to regulated and groundwater sources. A similar story is observed for W08-03.
- The proposed cost driver change for W10-02 results in small decreases in expenditure allocated to unregulated and groundwater sources, with a corresponding small increase in expenditure allocated to regulated water sources.

4.4.3 Cost drivers proposed by WaterNSW

WaterNSW states in its submission that while it supports valley-based regulatory reporting, it considers that:

> *…the current approach to modelling valley-based charges to be overly complicated with no improvement in achieving accurate cost reflective valley-based pricing.*

It also states that it has not been able to form an opinion based on the information available to it as to whether costs should vary by location. WaterNSW advised that it undertakes valley-based budgeting as part of its routine business and that this may be a basis for valley-based prices. We requested WaterNSW to provide supporting analysis for its valley-based budgeting but this information was not available for this

report. WaterNSW has indicated that the granularity and accuracy of its costing to valleys will improve in coming years following implementation of a new finance system.

Given the absence of an alternative approach and supporting information from WaterNSW we recommend that the cost drivers for WaterNSW expenditure are consistent with the 2016 Determination and any amendments made for DPIE activities.

4.4.4 Recommendations

We recommend that DPIE's proposed changed cost drivers be adopted with the exception of that proposed for W06-05 Regional planning and management strategies. In the absence of better information, we recommend that volume of entitlements be maintained as the cost driver until more information is available that links costs to the outcomes delivered, For W08-03, we consider that the DPIE proposal is appropriate if our recommended adjustment to scope for the future period is adopted.

For W07-01 Water management works, DPIE does not suggest a change to the cost driver. However, the proposed Gayini Nimmie-Caira project only benefits users in the Murrumbidgee Valley. Therefore, we recommend that costs for this project be assigned to this valley.

We recommend that DPIE improve cost recording to valleys for the activities where the consultant report identifies that these are opportunities for improving cost drivers.

Given the absence of an alternative approach and supporting information from WaterNSW we recommend that the cost drivers for WaterNSW expenditure are consistent with the 2016 Determination and any amendments made for DPIE activities.

5 Strategic review of WAMC submission

5.1 Summary

Total expenditure on WAMC activities in the current period exceeds that included in the 2016 Determination by 14% (excluding fee for service activities). The agencies responsible for delivering WAMC services cite the following reasons for the observed significant increases in costs:

- The 2016 Determination not reflecting the full costs of delivering WAMC services. WaterNSW considers that this is particularly relevant for the Water regulation and management, Water consent transactions and Business and customer services activities that it delivers.
- Increased scope and expectation of quality of the WAMC monopoly services compared to that forecast at the time of the 2016 Determination. This is evident in the creation of NRAR which represents a step change in activity compared with that forecast at the time of the determination.

We consider that there is evidence to support the above claims made by WaterNSW and DPIE. However, it is difficult to make clear comparisons between the 2016 Determination and the actual costs incurred by WaterNSW in the areas cited because WaterNSW has not adopted the activities code framework for recording and reporting costs. Also, increased scope and quality of service is only strongly evident in relation to compliance management and the creation of NRAR. Outside of this, the current period activities funded by users has largely been as envisaged at the time of the 2016 Determination.

As WAMC expenditure is predominantly operating expenditure, costs that have exceeded the 2016 Determination have been borne largely by the agencies that deliver WAMC services, not users.

Expenditure in the future period is proposed to remain at levels substantially higher than actual expenditure in the current period. For operating expenditure, the proposed increase is $12.8 million per year (22%) compared with actual expenditure in the current period, excluding fee for service activities. A small number of activity groupings are driving the increase: W06 Water management planning ($6.4 million per year) and W08 Water regulation management ($3.6 million per year)[29]. At the activity code level, the largest increases are for W08-03 Compliance management (NRAR) followed by W06-05 Regional planning and management ($3.5 million per year), and then W05-04 Water plan performance assessment and evaluation ($2.2 million per year).

Capital expenditure in the current and future periods has all been (or is proposed to be) delivered by WaterNSW. In the current period, capital expenditure on surface water and groundwater monitoring has been in line with the 2016 Determination. Corporate capital expenditure (largely for ICT) has greatly exceeded that included in the 2016 Determination. WaterNSW considers that the 2016 Determination substantially underestimates its corporate capital expenditure requirements. As noted, we agree that the 2016 Determination likely understated the corporate capital expenditure requirements for the WAMC business. We discuss this issue further in Section 7.

In the current period, WAMC has not met all of its output measures and performance targets. This appears to be in part because of WAMC reprioritising expenditure away from some activities. In our draft report we challenged the WAMC businesses in this area and DPIE responded that it is not appropriate to consider historical expenditure variances at the activity level as this does not allow businesses flexibility to reprioritise expenditure as the operating environment and priorities changes. Further, costs should be considered with respect to the service delivered. DPIE provided analysis to support its position. We accept DPIE's position and have not made any adjustments to proposed future expenditure on the basis of historical underperformance in this final report.

While the DPIE pricing proposal frequently cites that a driver for increased expenditure in the future period is a requirement to deliver an increased quality and/or quantity of service (largely to meet customer expectations) we consider that this argument is weak for many activities. This is because there has been

[29] Note that for the W08 activity grouping that two activities undertaken in the current period – W080-01 Regulation systems management and W08-99 Water consents overhead – are proposed to have costs allocated elsewhere in the future period which impacts the comparison for the W08 activity grouping. That these activities have no costs assigned to them in the future period makes the apparent increase for W08 lower than what it would be if these activities had continued in the future period at the same level as in the current period.

limited or no customer and stakeholder engagement at an activity level that would inform service and cost trade-offs and because there are few unambiguous new requirements on the WAMC business.

DPIE has developed its operating expenditure forecasts around resource estimates for each activity for the future period and an assessment of the average salary level required to deliver each activity. This approach of using an average salary is sound and transparent. However, we are concerned that the resource estimating undertaking is relatively immature across the business and needs to be improved such that there is a stronger link between expenditure and the objectives of the WAMC business and greater confidence that the levels of resourcing proposed are justified. WaterNSW has used a number of different approaches to forecast future operating expenditure including historic costs and bottom-up resource estimates. While these approaches are reasonable, we consider WaterNSW needs to improve the reliability and granularity of recording actual costs. This will provide stronger validation for its proposed costs.

We have undertaken benchmarking of WAMC's activities and costs where data is available. DPIE has used benchmarking of corporate overheads applied in the 2016 Determination to demonstrate the efficiency of the overheads included in its expenditure forecasts.

5.2 Overview of expenditure

Figure 5-1 displays the total expenditure (operating expenditure and capital expenditure) for each year of the current and future periods, aggregated across all activity groups. Overall, actual expenditure has exceeded the 2016 Determination in each year of the current period and exhibits a general upwards trajectory throughout the current period. A small (6%) decrease is seen between actual expenditure in the final year of the current period (2020/21) and proposed expenditure in the first year of the future period (2021/22). Proposed expenditure is observed to plateau throughout the future period, varying by no more than 5% year to year.

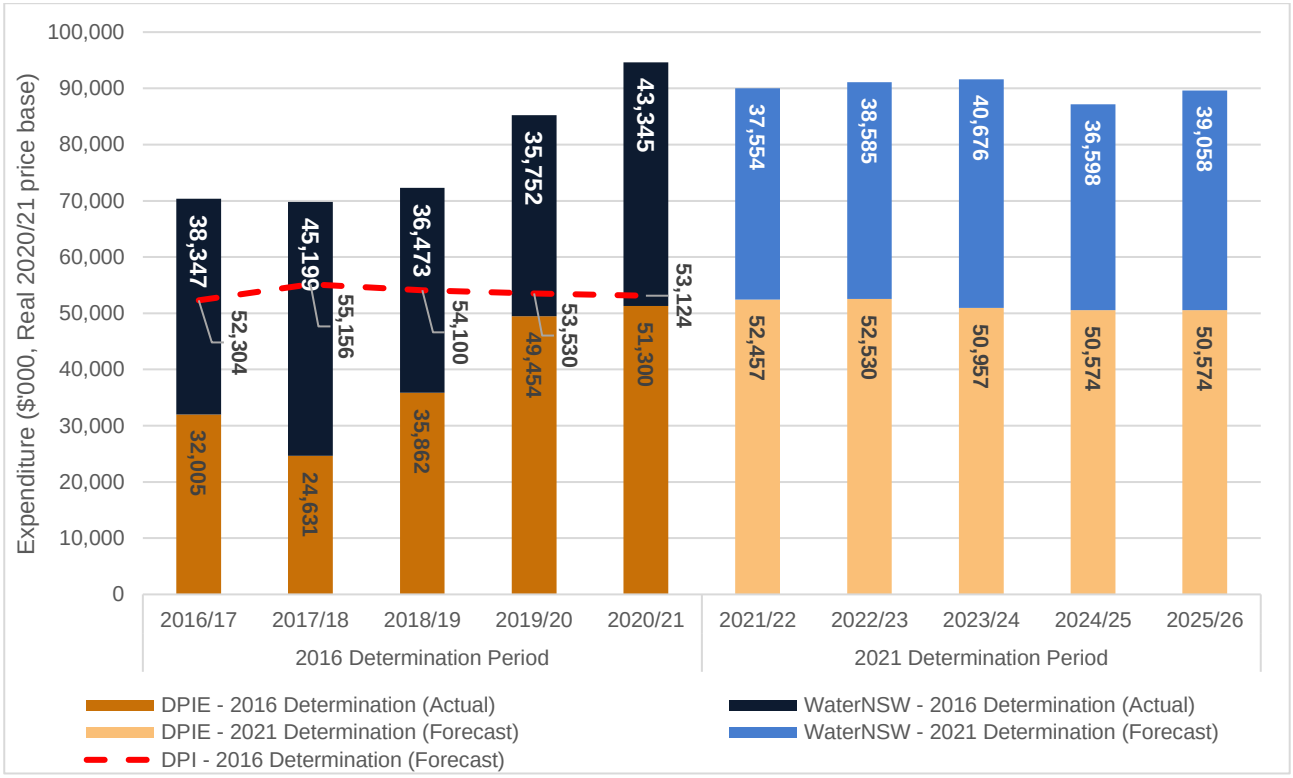

Figure 5-1 Overall comparison of 2016 and 2021 determination period actual/forecast expenditure - TOTEX

From this analysis it is clear that expenditure in the current has significant exceeded that forecast at the time of the 2016 Determination and is proposed to remain at levels similar to that in the later years of the current period for the future period.

The agencies responsible for delivering WAMC services cite the following reasons for the observed significant increases in costs:

> The 2016 Determination not reflecting the full costs of delivering WAMC services. WaterNSW considers that this is particularly relevant for the Water regulation and management, Water consent transactions

and Business and customer services activities that it delivers. We consider that there is basis for this concern and discuss this further in Section 8 for the relevant activities. However, it is difficult to make clear comparisons between the 2016 Determination and the actual costs incurred by WaterNSW in the areas cited because WaterNSW has not adopted the activities code framework for recording and reporting costs (noting that WaterNSW does use activity based costing in some areas but using its own activity and cost framework).

> Increased scope and expectation of quality of the WAMC monopoly services compared to that forecast at the time of the 2016 Determination. However, increased scope and expectations for quality of service is only strongly evident in relation to compliance management and the creation of NRAR. Outside of this, the current period activities funded by users has largely been as envisaged at the time of the 2016 Determination.

To provide perspective on the relative level of expenditure for which each agency is responsible for delivering, Figure 5-2 provides a breakdown of operating expenditure for 2021/22. This shows that DPIE accounts for 44% of operating expenditure, WaterNSW 34% and NRAR 22%. All capital expenditure in current and future periods are attributable to WaterNSW. DPIE has incurred capital expenditure in the current period but this has been funded external to the regulatory process and so does not impact prices.

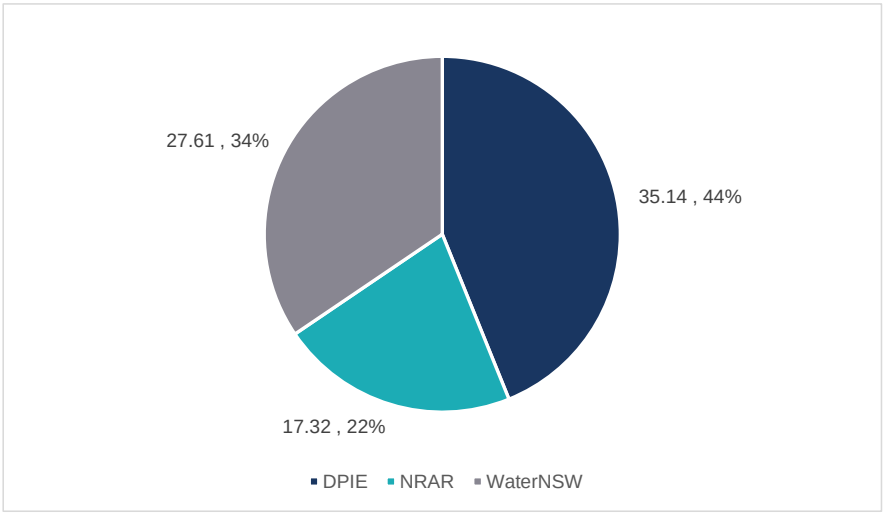

Figure 5-2 Split of 2021/22 operating expenditure between agencies ($ million)

5.2.2 Capital expenditure

Actual and forecast capital expenditure in the current and future periods is shown in Figure 5-3. Capital expenditure is only recorded against a small number of activity codes and almost entirely attributable to WaterNSW (as a consequence of the water reforms). Because of WaterNSW's approach to allocating costs to activity codes, costs for W01 Surface water monitoring and W02 Groundwater monitoring have been combined. W10-02 Business governance and support is used to report all of its corporate capital expenditure.

This figure shows that actual capital expenditure on surface water and groundwater monitoring assets was negligible in the first three years after the 2016 Determination before sharply increasing. WaterNSW detailed that when it first assumed responsibility for these assets its first objective was to understand the extent and condition of the asset based before committing to expenditure. Despite the initially slow start, capital expenditure in these areas was just under that forecast in the 2016 Determination ($13.8 million (Determination) v $12.5 million (actual); if it assumed that the 2020/21 Determination expenditure is equal to the prior year. In the future period, a step change in capital expenditure on the monitoring assets is proposed – proposed expenditure averaging $6.6 million per year compared with $2.5 million in the current period. We discuss capital expenditure for surface water and groundwater monitoring in more detail in Section 8.2.

WaterNSW's corporate capital expenditure greatly exceeds that included in the 2016 Determination: $29.8 million actual expenditure compared with $2.1 million in the Determination. In the future period, corporate expenditure is proposed to decrease compared with actual expenditure in the current period (an average of $3.9 million per year compared with the $5.5 million per year in the current period).

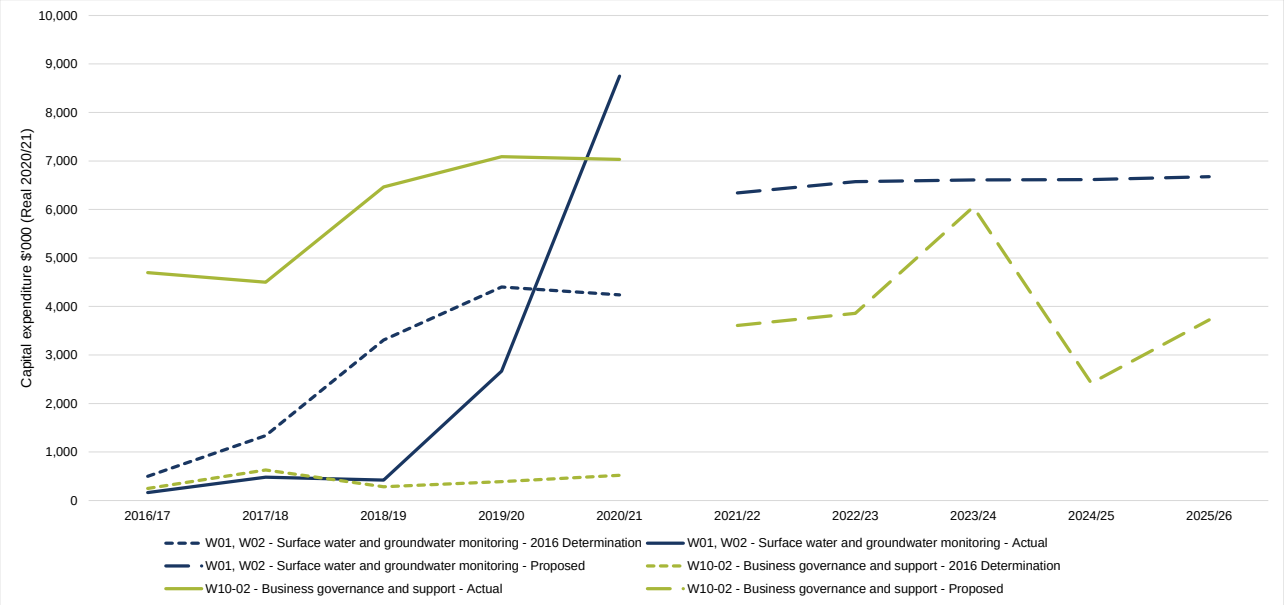

Figure 5-3 Actual and forecast capital expenditure 2016/17 to 2025/26

WaterNSW's pricing proposal states that "*The WAMC 2016 Determination did not contemplate and therefore did not provide, a sufficient capital expenditure allowance for ICT systems (including end of life systems) and corporate assets to support the transfer of WAMC functions into WaterNSW, including system consolidation*". WaterNSW's pricing proposal also identifies costs for office accommodation as a major driver for capital expenditure being above forecast.

Corporate capital expenditure is allocated by WaterNSW from its business-wide expenditure to the various regulated businesses (WAMC, Rural Valleys and Greater Sydney). IPART is separately conducting a review into WaterNSW's allocation of corporate costs in parallel to this expenditure review. We discuss the findings of this project relevant to capital expenditure further in Section 5.7.

5.2.3 Operating expenditure

Figure 5-4 shows the variance in average annual operating expenditure between that included in the 2016 Determination and actual expenditure in the current period. The consent transactions group (W09) and water take monitoring group (W03) are excluded from this figure as these activities are fee-for-service so a forecast for operating expenditure was not included in the 2016 Determination.

This analysis shows that the major drivers of actual expenditure exceeding the Determination were:

- W08 Water regulation management, which had an average annual exceedance of the Determination of $5.8 million per year
- W10 Business and customer services, which had an average annual exceedance of the Determination of $2.6 million per year

The relatively large increase in costs for W08 Water regulation management is attributable to the creation of NRAR and the step change in activity in this area.

Under the regulatory framework, prices are set to recover forecast operating expenditure (for relevant user groups). Therefore, where WAMC has exceeded the 2016 Determination level of operating expenditure, these costs are borne by the business, not users. Where costs are lower than included in the 2016 Determination, consideration needs to be given to whether the lower cost represents an efficiency (if outputs and customer service levels were maintained) or if the lower cost reflects activities not undertaken by the business and potentially lower levels of service. We discuss this further in Section 5.3.

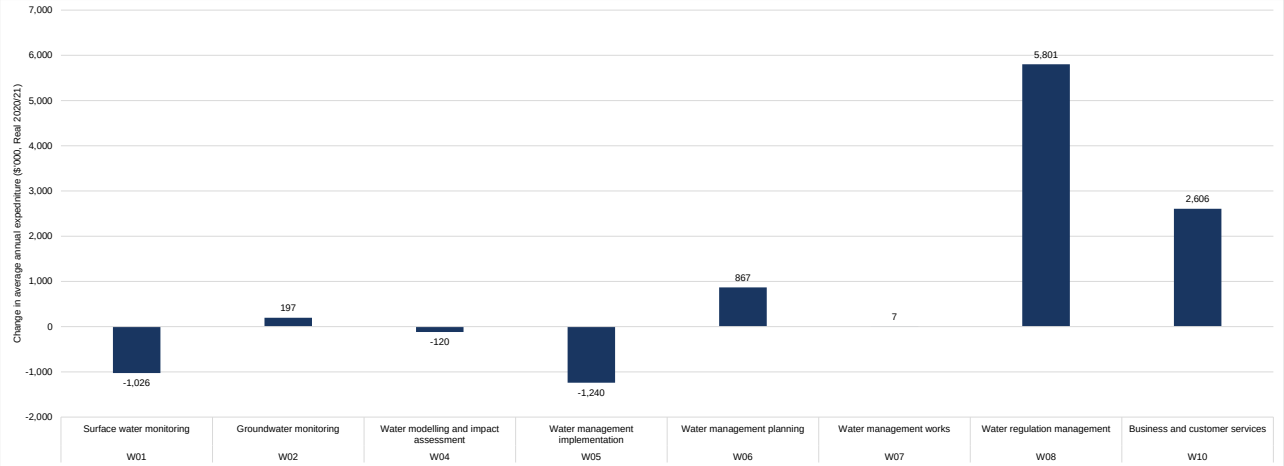

Figure 5-4 Variance of average annual actual operating expenditure to 2016 Determination

Operating expenditure proposed for the 2021 period exceeds actual operating expenditure in the current period by a total of $64.1 million, or $12.8 million per year (excluding fee for service activities). This is an increase of 22% between the two periods. A key consideration is to understand the driver for the increase in expenditure. The pricing proposals prepared by DPIE and WaterNSW point to increased outputs and stakeholder expectations as drivers for increased expenditure. We discuss at a summary level the increased expectations on the businesses in Section 5.4 and in detail in Section 8.

Figure 5-5 shows the change in average annual actual operating expenditure in the current period, and that forecast for the future period, at an activity group level with meter maintenance costs included in activity group W03. The main features of this analysis are:

> Decreased operating expenditure across the three field-based activity groups delivered by WaterNSW (W01, W02 and W03). The total average annual decrease in operating expenditure across these activity groups is $3.9 million per year, a 23% decrease on the current period.

> A large step change in expenditure on W06 Water management planning which averages $6.4 million per year, a 48% increase on the current period.

> A large increase also for W08 Water regulation management ($3.6 million per year, 26%) which is attributable to the creation of NRAR (W08-03 Compliance management). The increase for W08-03 is $4.2 million per year but this is offset by reductions in other activity codes.

> Negligible changes in operating expenditure are forecast for W09 and W10 compared with actual expenditure the current period, noting that expenditure for the W10 group is substantially above that included in the 2016 Determination.

This analysis demonstrates the materiality of a small number of activity groupings in driving the overall increase in expenditure. We have subjected these groupings to relatively more scrutiny than other groupings in our review activities.

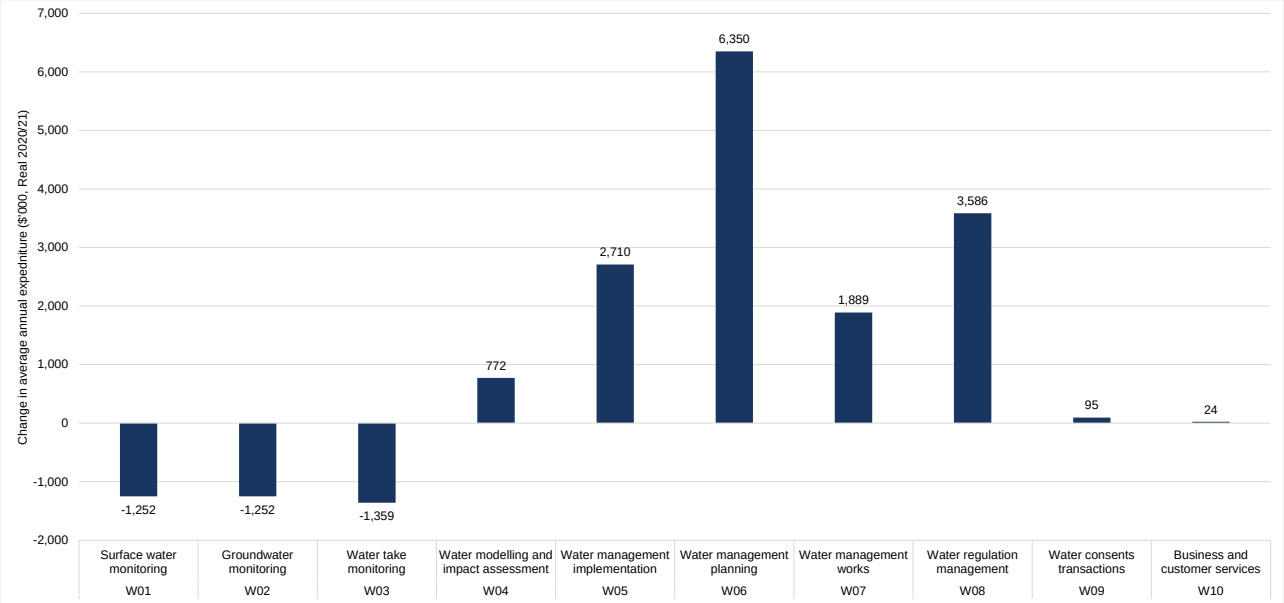

Figure 5-5 Variance of future period average annual operating expenditure to current period actual operating expenditure – Activity groups

Figure 5-6 shows the change in average annual actual operating expenditure, in the current period, and that forecast for the future period, at an activity code level. The activity codes shown are those with an average annual variance greater than $500,000. There are eleven activity codes (around one-third of all activity codes) that exceed this threshold which together comprise $18.6 million per year. This is more than the net aggregate increase in operating expenditure because it excludes activity codes for which reductions are observed.

This analysis shows that the largest increase between the current period actual and future period forecast is for W08-03 Compliance management. As detailed in Section 3, NRAR was created in response to significant stakeholder and community concerns regarding compliance and enforcement. The observed step change in expenditure is commensurate with the increase level of activity in this area. W06-05 Regional planning and management represent the next largest step change in expenditure at $3.5 million per year followed by W05-04 Water plan performance assessment and evaluation.

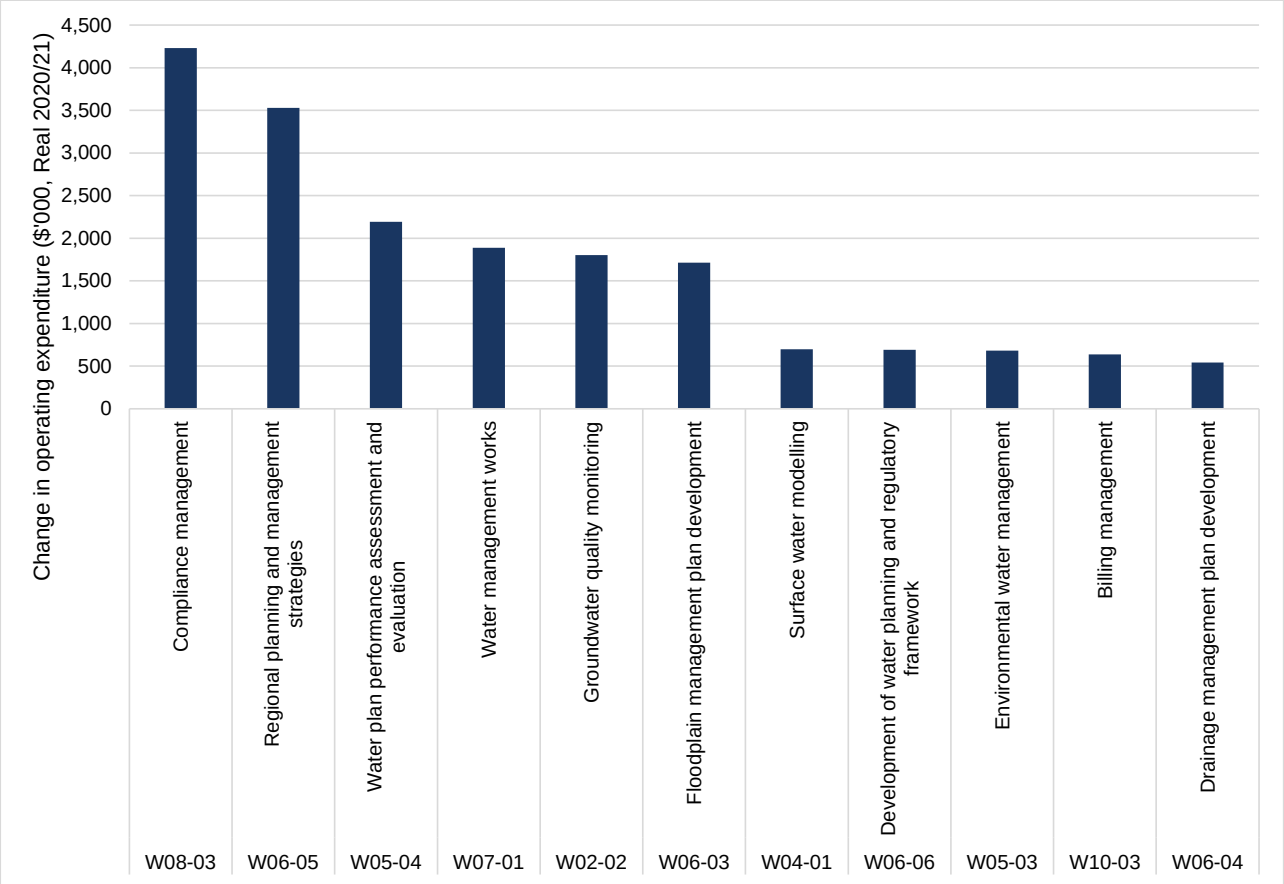

Figure 5-6 Variance of future period average annual operating expenditure to current period actual operating expenditure – Activity codes

5.3 Performance in the current period

This review of WAMC's expenditure is seeking to establish efficient levels of expenditure required to deliver the WAMC monopoly services. Efficiency is the relationship between inputs (labour and capital) to the outputs provided. IPART has specified output measures for the WAMC business for the current period as well as performance indicators that accompany the output measures. We are required for Task 4 of the expenditure review to assess WAMC's performance against the output measures for the current period and we present a summary of our findings for this Task following. In Section 8 we discuss historical performance against output measures at the activity level.

We are interested in outputs and performance to assist in understanding what is genuine efficiency: to achieve the same output with less input or more output with the same input represents an efficiency. Conversely, using less input to deliver less output doesn't necessarily represent an efficiency. Therefore, reduced expenditure by itself does not necessarily represent efficiency and increased expenditure may be driven by new output requirements.

However, there are challenges in using output measures in assessing efficiency. These include:

- We are rarely interested in the output measures as an end in themselves. These outputs typically enable a regulated business to achieve outcomes such as complying with statutory requirements, meeting customer and stakeholder expectations, and servicing increased demand.
- Outputs typically have a level of quality that is difficult to evaluate, and the level of quality expected can often change as a result of a change in regulatory requirements.

Also, output measures should not be seen as hard targets. It is to be expected that as circumstances change, a business will reprioritise its efforts between its different service areas. However, these changes and resulting variance in outputs should be able to be explained by the business and the actual expenditure and actual output achieved should be clear.

Table 5-1 provides a summary assessment of WAMC's performance against the output measures and performance indicators set in the 2016 Determination. This assessment is aggregated to an activity code level. As each activity code level typically has multiple output measures and performance indicators, there is necessarily some subjectivity in reaching an aggregated assessment. Where WaterNSW groups activity codes together into activity areas, these have also been grouped within the table. This assessment shows that in particular, WAMC has not met performance expectations for the W06 Water management planning activity group. Within this activity group, a common reason provided by DPIE for outputs measures not being met is that activity was reprioritised to deliver Basin Plan commitments.

Table 5-1 Assessment of WAMC performance in the current period at an activity code level

Code	Activity	Performance in current period	
W01, W02	Hydrometrics - operating expenditure	Output measures and performance indicators have largely been met in the current period or evidence exits that performance measure was not realistic	
W03	Water take assessment services	Performance measure not met due to large cohort of meters found in need of replacement or maintenance Total metered share below targets	
W04-01	Surface water modelling	Output measures and performance indicators have largely been met in the current period	
W04-02	Groundwater modelling	Output measures and performance indicators have largely been met in the current period	
W04-03	Water resource accounting	Output measures and performance indicators have largely been met in the current period	
W05-01	Systems operation and water availability management	Output measures and performance indicators have largely been met in the current period	
W05-02	Blue-green algae management	Output measures and performance indicators have largely been met in the current period	
W05-03	Environmental water management	Output measures and performance indicators have largely been met in the current period. Minor variation on delivery of daily flow target	
W05-04	Water plan performance assessment	The number of plan audits and evaluations not met Number of valleys assessed under performance strategy not met	
W06-01	Water plan development (coastal)	Targets were only partially met due to DPIE prioritising resources to deliver MDBA Water Resource Plans	
W06-02	Water plan development (inland)	Outputs to replace and review Water Sharing Plans were met. However, target of 22 Water Resource Plans being complete not met due to deferral of submission to MDBA	
W06-03	Floodplain management plan development	Output measures and performance indicators have largely been met in the current period	
W06-04	Drainage management plan development	No output measures or performance indicators were specified in the 2016 Determination	
W06-05	Regional planning and management strategies (Regional Water Strategies)	Two reviews of metropolitan water plans were targeted and only one completed. Six new regional water strategies were targeted but none were completed. However, substantial work was complete on eight strategies	

Code	Activity	Performance in current period	
W06-06	Development of water planning and regulatory framework	Output measures and target reported as not being met. However, these appear to be not completely relevant to assessing efficiency	
W06-07	Cross border and national commitments	Output measures and performance indicators have largely been met in the current period	
W07-01	Water management works	Targets for remediation of high priority erosion works not met (80% actual v 90% target)	
W08-01 W08-02 W08-99 W10-03	Account management and billing Regulation systems management Consents management and licence conversion Water consents overhead Billing management	Output measures and performance indicators have largely been met in the current period	
W08-03	Compliance management	Outputs and performance targets not fully met, particularly in first two years of period when WaterNSW was responsible for this activity.	
W09-01 W10-01	Licence advisory services Consent transactions Customer management	Output measures and performance indicators have largely been met in the current period	
W10-02	Business governance and support	Output measures and performance indicators have largely been met in the current period	

The output measures and performance indicators are based on the expected level of effort by WAMC in the current period and are accordingly reflected in existing prices for WAMC services. As a result, where targets have not been met, customers may have funded anticipated effort that did not occur at a sufficient level based on the information provided for the 2016 Determination. To understand the materiality of this issue, Table 5-2 details the activity codes for which output measures and performance targets were not met, the total expenditure included in the 2016 Determination, and the variance of expenditure in the current period to the 2016 Determination forecast. Note that this is not an issue for capital expenditure as, where an output is not delivered, the expenditure will ultimately not be included in the regulatory asset base and therefore will not impact prices. The table excludes fee for service activities. Also, this retrospective analysis is less concerned with areas of overspend and underperformance because a regulated business has to fund expenditure over its determined allowance from other sources or shareholder returns and it is therefore considered that there is strong incentive to avoid this scenario. Variance to the Determination and long term expenditure trends are considered in forward looking assessment of operating expenditure alongside changes to the level of service actually or forecast to be delivered.

Table 5-2 Activity codes where expenditure is material and performance not achieved

Code	Activity	Assessment	Determination	Variance to 2016 Determination operating expenditure (%)	Variance to 2016 Determination operating expenditure ($,000)
W05-04	Water plan performance assessment		13,176	-44%	-5,839
W06-01	Water plan development (coastal)		8,266	-16%	-1,355
W06-02	Water plan development (inland)		14,624	+30%	4,337

Code	Activity	Assessment	Determination	Variance to 2016 Determination operating expenditure (%)	Variance to 2016 Determination operating expenditure ($,000)
W06-05	Regional planning and management strategies (Regional Water Strategies)		9,491	+21%	1,973
W06-06	Development of water planning and regulatory framework		12,051	-34%	-4,109
W07-01	Water management works		4,941	+1%	34
W08-03	Compliance management		22,586	+158%	35,704

This assessment raises concerns with two activities in particular, W05-04 Water plan performance assessment ($5.8 million underspend compared with the 2016 determination) and W06-06 Development of water planning and regulatory framework ($4.1 million underspend). DPIE's pricing proposal states with respect to W05-04 Water plan performance assessment that outputs were not achieved because staff time was reprioritised to deliver Basin Plan activities, meaning that this activity was not able to completed as forecast. The Basin Plan activities were largely externally funded. The activities proposed for the 2021 period while including some additional requirements for socio-economic analysis appear to be largely business as usual. In the draft report, we proposed an adjustment to this activity as we felt that the expenditure forecast included an element of 'catch-up' for underperformance in the current period. For W06-06 Development of water planning and regulatory framework, the DPIE proposal highlights the lack of resources available to undertake the work, but also that the demand for service still remains. This is not a compelling reason for underspend – it instead suggests that the actual levels of expenditure better reflect the level of service the Department considers is appropriate to balance with costs and risks. In our draft report, we also recommended an adjustment for this activity.

In response to our draft report, DPIE responded that it is not appropriate to consider historical expenditure variances at the activity level as this does not allow businesses flexibility to reprioritise expenditure as the operating environment and priorities changes. Further, costs should be considered with respect to the service delivered. DPIE provided analysis to support its position which demonstrated how expenditure had been reprioritised between activities and the impact of external funding in delivering much higher levels of effort, particularly for the W06 Water management planning activity group. We accept DPIE's position and have not made any adjustments to proposed future expenditure for activity W05-04 Water plan performance and assessment on the basis of historical underperformance in this final report.

However, we consider that an adjustment to proposed expenditure for W06-06 Development of a water planning and regulatory framework is still valid as the observed level of expenditure reflects DPIE's position on the balance of service, cost and risk for this activity. Our recommended adjustment for this activity is set out in Section 6.2.2.

5.4 Changed requirements of WAMC in the future period

Following on from the preceding discussion regarding efficiency and outputs, WAMC has flagged in its pricing proposal areas where there are expectations for it to deliver more services or higher quality services in the future period. Some of these increased expectations have already occurred in the current period, such as the creation of NRAR. However, we are particularly interested where new requirements lead to changes in cost in the future period.

In making this assessment, it is important to note that changes to the quantity or quality of service provided should have an unambiguous justification and be material. This may be an implementation of a new government policy for example. However, citing that customers "expect more" should not be taken alone as grounds for increasing levels of service. We note that DPIE across many activity codes has employed this justification supported by reference to customer research. However, the customer research is almost without exception positioned at a higher level that the activity code and in no instances canvasses the specific service level improvements proposed. We acknowledge the customer research is challenging but this is a clear area where WAMC should seek improvement in the future period. As noted in the preceding section, addressing outputs not delivered in the current period is also not valid evidence of increased output requirements in the future period.

In Table 5-3 we document our assessment of whether the future period includes a change in output requirements for each of the WAMC activities. The highlighted activities are those for which we consider that output expectations are materially different to business as usual. Business as usual includes ongoing improvement and refinement of activities and outputs. This table excludes fee for service activities.

Table 5-3 Changes in WAMC output requirements in the future period

Code	Activity	Changes in output requirements in the future requirements	Future period variance to 2016 Determination operating expenditure (%) (annual)	Future period variance to 2016 Determination operating expenditure ($) (annual)
W01, W02	Hydrometrics - operating expenditure	Largely business as usual in the future period	-3,334	-22%
W04-01	Surface water modelling	Largely business as usual in the future period	252	+8%
W04-02	Groundwater modelling	Largely business as usual in the future period	261	+32%
W04-03	Water resource accounting	Increased requirements for environmental reporting, water trading reporting requirements, and sustainable diversion limit obligations as well as providing information to NRAR	140	+30%
W05-01	Systems operation and water availability management	Largely business as usual in the future period	44	+2%
W05-02	Blue-green algae management	Largely business as usual in the future period	129	+26%
W05-03	Environmental water management	Largely business as usual in the future period. However, external funding is forecast to cease requiring increase in cost recovery	271	+26%
W05-04	Water plan performance assessment	Largely business as usual in the future period other than the creation of a socio-economic evaluation framework	1,026	+39%
W06-01	Water plan development (coastal)	Largely business as usual in the future period	99	+6%
W06-02	Water plan development (inland)	Largely business as usual in the future period	51	24%
W06-03	Floodplain management plan development	Largely business as usual in the future period. However, external funding is forecast to cease requiring increase in cost recovery	Not considered material at 2016 Determination	N/a
W06-04	Drainage management plan development	Proposed implementation of new planning framework. (However, DPIE has now accepted that no expenditure should be allowed for in the future period due to uncertainty over the framework design and timing)	Not considered material at 2016 Determination	N/a
W06-05	Regional planning and management strategies (Regional Water Strategies)	Requirement to implement stated wide integrated regional planning	3,922	+207%

Code	Activity	Changes in output requirements in the future requirements	Future period variance to 2016 Determination operating expenditure (%) (annual)	Future period variance to 2016 Determination operating expenditure ($) (annual)
W06-06	Development of water planning and regulatory framework	Largely business as usual in the future period	-132	-5%
W06-07	Cross border and national commitments	Increased activity for Basin Salinity Management Strategy	1,044	109%
W07-01	Water management works	Largely business as usual in the future period in terms of expectations but increased scope relating to the Salt Interception Schemes	1,895	+192%
W08-01 W08-02 W10-03	Account management and billing Regulation systems management Consents management and licence conversion Billing management	Largely business as usual in the future period	-958	-23%
W08-03	Compliance management	Step change in activity compared with 2016 Determination but largely reflected in current period	11,372	+252%
W10-01	Customer management	Largely business as usual in the future period	3,279	+174%

5.5 Development of expenditure forecasts

5.5.1 DPIE and NRAR

The operating expenditure forecasts developed by DPIE and NRAR for the future period are based on the estimated level of resourcing required to deliver the activity, multiplied by average salary costs for the activity. Other operating expenditure (e.g. travel, consultancies etc.) are then added. Labour costs are the most significant component of DPIE's and NRAR's forecast operating expenditure, comprising 84% of operating expenditure. Figure 5-7 provides an overview of the process used by DPIE and NRAR to develop their expenditure forecasts. This demonstrates that following parameters drive the future estimate of operating expenditure for each activity:

- The forecast of resources required for each activity
- The average salary for the resources proposed to deliver each activity
- Salary on-cost
- Corporate overheads.

We discuss each of these four items following.

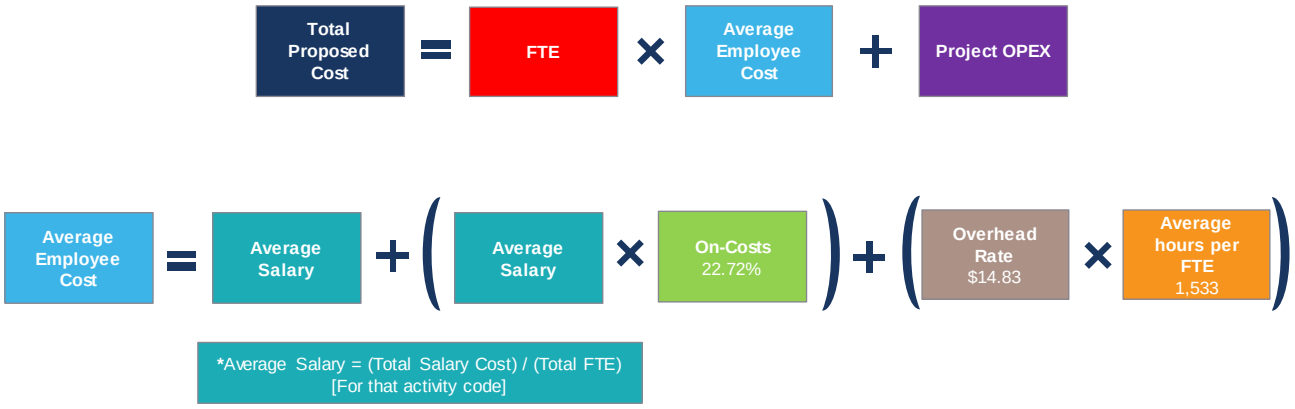

Figure 5-7 Overview of expenditure forecast development process

Resources and salaries

In developing its pricing proposal, DPIE has estimated the number of full-time-equivalent staff required for each activity by salary grade. The number of estimated full-time-equivalent staff for the activity is then multiplied by the weighted average salary of the grading to arrive at the forecast salary costs.

Three groupings of salary grades have been adopted by DPIE (Department Officers Award, Department Professional Officers Award, and Engineer), with a total of 14 salary grades across all groups. Figure 5-8 and Figure 5-9 illustrate, for the future period, the overall resource mix across all activities undertaken by DPIE, shown in terms of the total annual salary cost by salary grade and the total annual number of full-time-equivalent staff by salary grade, respectively. The overall resource mix is dominated by Clerk 7/8, Clerk 9/10 and Clerk 11/12, which collectively account for 72% of the total annual salary cost and 73% of the total number of full-time-equivalent staff.

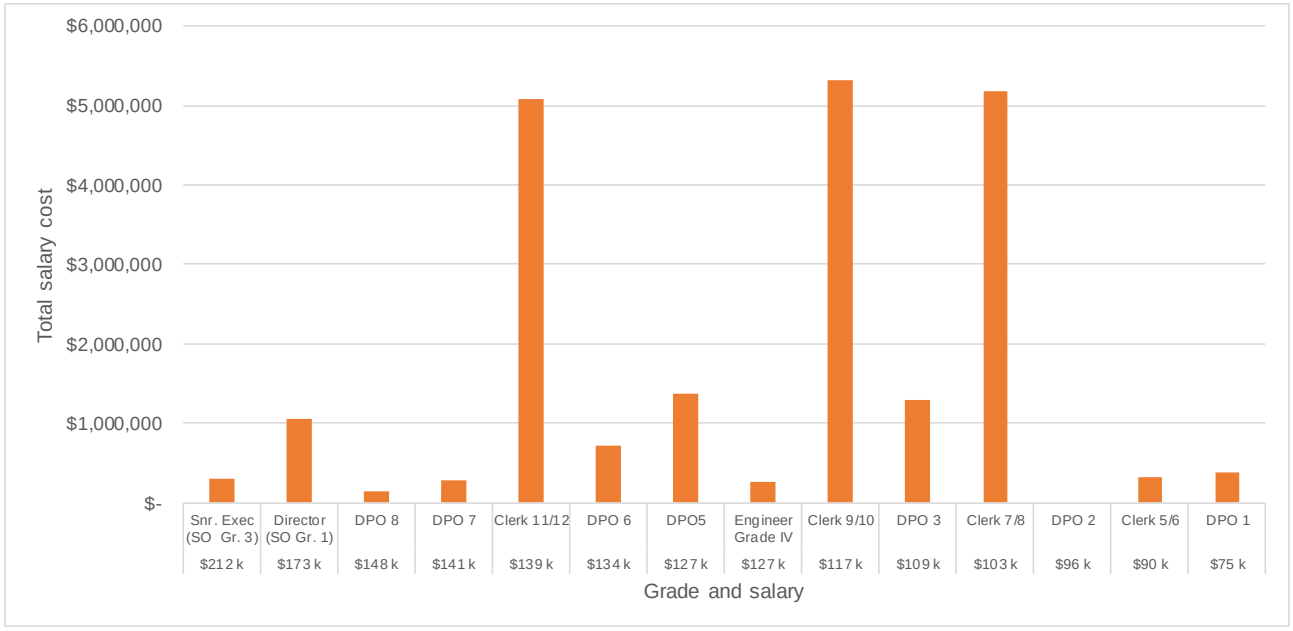

Figure 5-8 Overall salary cost by salary grade for 2021 determination period (DPIE)

A notable feature in Figure 5-8 is the spike in expenditure for Clerk 11/12 with annual salary of $139,000 and the gap between this spike and the preceding spike for Clerk 9/10 with annual salary of $117,000. This distribution of assumed salaries is in part artificially created by DPIE's cost model using less gradings than are actually present within the award, preferring to use a central figure instead. While this assumption may be valid if staff are evenly distributed across the gradings, it highlights the opportunity for DPIE to potentially realise efficiency gains through optimising the mix of resources used to deliver activities. This also requires a commitment to staff identification, development and retention. We discuss further in Section 6.2.3 the potential for efficiencies to be realised through improved resource planning in the future period.

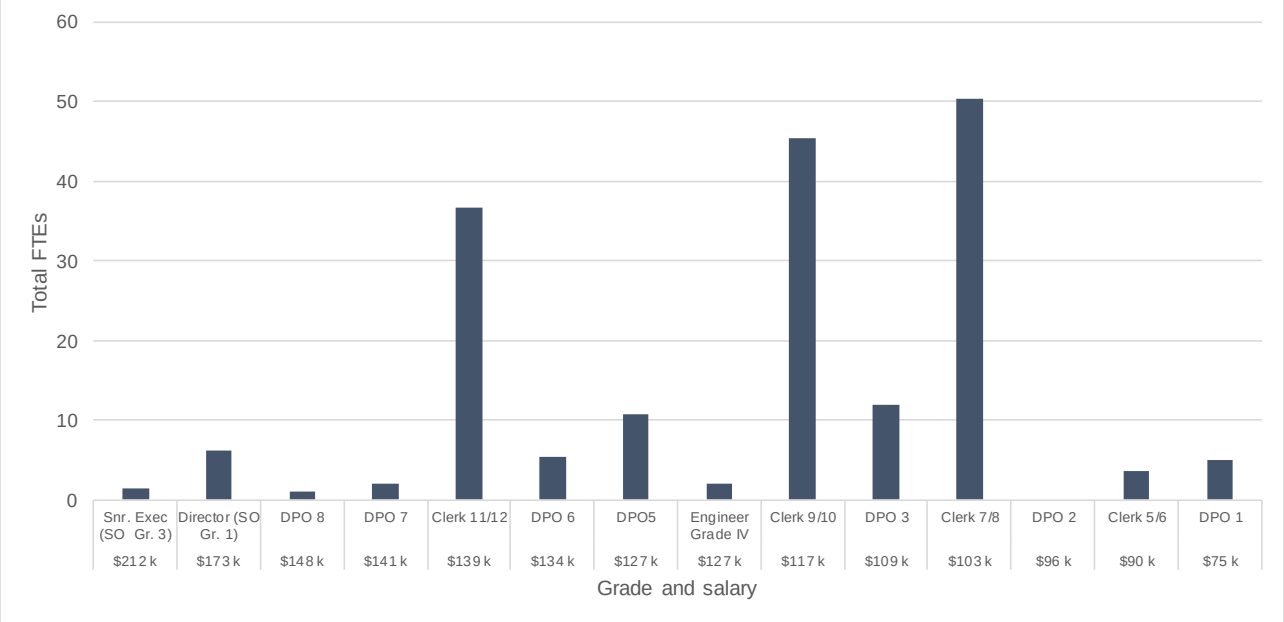

Figure 5-9 Overall number of full-time-equivalent staff by salary grade for 2021 determination period (DPIE)

On-costs

Once the average annual salary for each activity is determined, an on-cost is applied to account for the following additional contributors to the average employee cost:

- Superannuation
- Payroll tax
- Leave loading
- Long service leave
- Workers' compensation
- Higher duties
- Maternity leave.

DPIE and NRAR have applied a singular on-cost mark-up for all activities, equating to an annual average mark-up of 22.72% over the future period and representing a slight decrease from the mark-up applied by IPART in the 2016 Determination (22.96%) on the advice of its expenditure consultant. Of the contributors listed above, the majority remain constant over the future period. However, superannuation is projected to increase from 10% in 2021/22 to 11.5% in 2024/25 due to impending changes to superannuation under Commonwealth legislation (the *Superannuation Guarantee (Administration) Act 1992 (Cth)*). The adoption of a singular on-cost mark-up assumes that all DPIE and NRAR staff involved in the delivery of WAMC services equally incur these costs. We consider that the on-costs applied by DPIE in developing its expenditure forecast are sound.

Overheads

In contrast to on-costs, which are applied by DPIE as a percentage mark-up to the average annual salary for each activity, overheads are applied as an hourly monetary rate to the number of full-time-equivalent staff required for the activity. The overhead rate applied comprises the indirect expenses that support the delivery of WAMC services and consists of the following three components:

- Corporate services
- Accommodation
- Business and governance (formerly W10-02 Business and governance).

In a similar manner to on-costs, a singular overhead rate has been applied by DPIE and NRAR for all activities, equating to $14.83/hour/full-time-equivalent staff member. This rate, which equates to

approximately 12% of the total associated operating expenditure, marks a decrease from the rate applied by IPART in the 2016 Determination ($26.94 in a real 2020/21 price base, equating to 20% of the total associated operating expenditure). The rate of $14.83 also results in overheads as a proportion of total operating expenditure more in line with the industry benchmarks documented by IPART and its consultant as part of the 2016 Determination (7 – 14% of total operating expenditure).

In light of the Rural Water Cost Shares review completed by IPART in 2019[30], as well as a review into WAMC cost allocations completed by a consultant in 2019[31], DPIE and NRAR have proposed to remove W08-99 (Water consent overheads) and W10-02 (Business and governance support). These activities are instead proposed to be incorporated into overheads. However, as WaterNSW is responsible for the bulk of W08-99, NRAR has proposed that it does not seek revenue for these overheads in order to mitigate the risk of double-recovery between agencies.

We consider that DPIE's approach to developing its operating expenditure forecasts is sound noting that it has increased direct costing to activities compared with the 2016 Determination and has benchmarked its overhead rate and total proportion of costs against those set out in the 2016 Determination.

5.5.2 DPIE's efficiency challenge

DPIE has subject its proposed expenditure for the 2021 period to an internal efficiency challenge of around $9 million per year with the intent that the pricing proposal reflects only the efficient costs of delivering WAMC monopoly services. All expenditure included in DPIE's pricing proposal is net of this efficiency challenge.

DPIE states that it employed the following high level principles for identifying efficiencies:

- Total expenditure must be acceptable to customers and defensible. Where total expenditure exceeded an internally set upper limit, additional costs were included in the efficiency challenge
- Potential duplication of effort between DPIE and WaterNSW for delivering activities have been removed. DPIE states that if there was any uncertainty over potential duplication it has been cautious and removed costs.
- Where the business case for delivering new services were not fully developed or uncertain, costs were excluded.

A breakdown of the items included in DPIE's internal efficiency challenge is provided in Table 5-4. DPIE has provided the reason for the inclusion of each item which we have summarised into four categories as shown in the last column of this table.

Table 5-4 Breakdown of DPIE applied efficiency challenge

		Employee operating expenditure ($,000)	Other operating expenditure ($,000)	Total (per year)	Reason
W01-05	Surface water ecological condition monitoring	80.55	-	80.55	Insufficient justification
W02-01	Groundwater quantity monitoring	592.32	627.68	1,220.00	Potential duplication
W02-02	Groundwater quality monitoring	-	2,100.00	2,100.00	Potential duplication
W04-01	Surface water modelling	501.58	-	501.58	Costs exceed defensible level
W04-01	Surface water modelling	480.68	70.00	550.68	Potential for efficiency and re-prioritisation of effort
W04-02	Groundwater modelling	293.22	80.00	373.22	Costs exceed defensible level
W04-02	Groundwater modelling	295.97	105.00	400.97	Potential for efficiency and re-prioritisation of effort
W04-02	Groundwater modelling	380.56	-	380.56	Costs exceed defensible level

[30] IPART 2019, *Rural Water Cost Shares*, Final Report: Water, ISBN 978-1-76049-286-1
[31] The Centre for International Economics 2019, *WAMC Activity Cost Allocation*

		Employee operating expenditure ($,000)	Other operating expenditure ($,000)	Total (per year)	Reason
W05-01	System operation and water availability	435.16	0	435.16	Costs exceed defensible level
W05-04	Water plan performance assessment and evaluation	970.71	-	970.71	Costs exceed defensible level
W06-07	Cross border and national commitments	-	724.00	724.00	Potential duplication
W06-07	Cross border and national commitments	-	1,430.00	1,430.00	Costs exceed defensible level
	Total	**4,030.75**	**5,136.68**	**9,167.43**	

Table 5-5 provides a summary of DPIE's efficiency challenge by category. This shows that costs exceeding the defensible level is the main reason that costs have been excluded, being 45% of the total. Potential duplication is marginally less of the total, accounting for 44% meaning that the other two drivers account for only 11% of the total.

Table 5-5 Summary of DPIE applied efficiency by category

Reason category	Employee operating expenditure ($,000)	Other operating expenditure ($,000)	Total (per year)	Proportion of total
Insufficient justification	80.55	-	80.55	1%
Potential duplication	592.32	3,451.68	4,044.00	44%
Costs exceed defensible level	2,581.23	1,510.00	4,091.23	45%
Potential for efficiency and re-prioritisation of effort	776.65	175.00	951.65	10%
Total	**4,030.75**	**5,136.68**	**9,167.43**	

The preceding analysis shows that of the costs included in the efficiency challenge, 44% are for employee costs and 56% are for other operating costs. It is notable that these relative proportions are quite different to the proportions for all costs included in the pricing proposal which are 85% for employee costs and 15% for other operating costs. This suggests that the efficiency challenge is not reflective of the overall cost to deliver WAMC services. Most evident are the Groundwater monitoring costs ($2.7 million) which were excluded to avoid duplication and the $1.4 million for cross border and national commitments which we understand are for regional water strategy consultation costs.

Figure 5-10 shows the impact of the efficiency challenge on forecast FTEs for each of the activity codes delivered by DPIE. The efficiency challenge is particularly significant for the modelling activities (W04-01 and W04-02). The 11.75 FTE excluded from these activities represent just over half of the total efficiency challenge applied through employee costs.

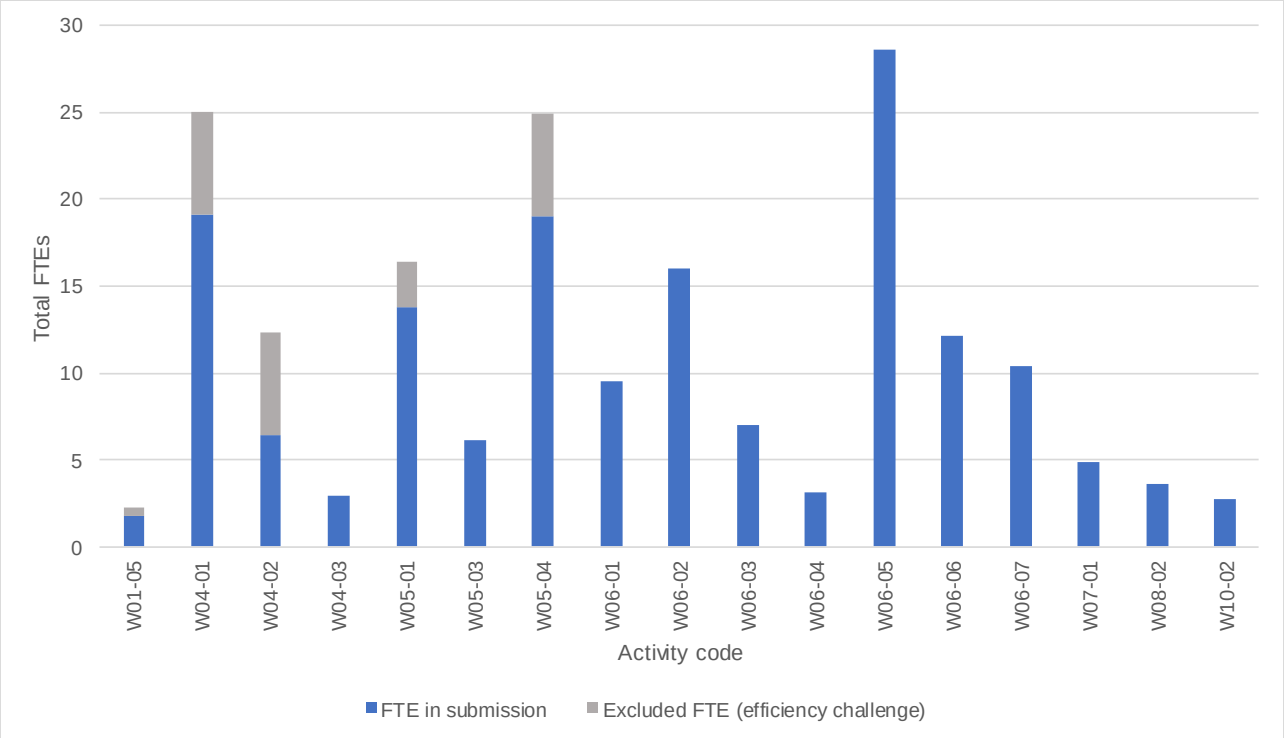

Figure 5-10 Number of full-time-equivalent staff by activity (DPIE) included in efficiency challenge

DPIE notes that while this efficiency challenge has been incorporated in its pricing proposal, how it achieves this level of efficiency in practice may differ and that work is underway to identify potential efficiencies across the Department, particularly in interfaces with the Department and with WaterNSW.

The analysis in Table 5-5 also shows that a substantial proportion of the applied efficiency challenge is not consistent with the nature of the efficiency applied by our review methodology. Most notably, duplication of costs for activities delivered by WaterNSW (44% of the total) which we don't consider to be a genuine efficiency but rather an appropriate alignment of scope with the monopoly services that DPIE is responsible for delivering.

The costs that have been excluded because total costs exceed a defensible level represent DPIE trying to balance service, risk and customer affordability. The adjustments are coarse in that they appear to be based on factors other than a clear link between customer expectations and costs at the activity code level. Nevertheless, they attempt to reduce expenditure while still allowing DPIE to meet the requirements on it. The lack of clarity regarding the quality and quantity that DPIE needs to deliver for many of its monopoly services means that testing these trade-offs is an ongoing need. We recommend that DPIE seek to reduce subjectivity in this area in the future price path by better documenting service quality and quantity expectations, and testing these with customers and stakeholders. This needs to be performed at a more granular level where possible as much of the stakeholder feedback included in the pricing proposal is at too high a level to be informative.

We have identified that improved effort prioritisation based on a more informed understanding of customer service priorities and costs is an area in which DPIE may achieve catch-up efficiencies in the future period (see Section 6.2.3). To avoid double-counting of potential efficiency gains in the future period, we have not applied any catch-up efficiency adjustment to the activity codes to which DPIE has applied its own challenge, except for those for potential duplication as we do not consider these to be valid efficiencies. We consider that this is a conservative position with respect to the catch-up efficiencies that DPIE may be able to achieve as our assessment of costs and approach has been made after DPIE's own adjustments.

The activity codes excluded from the catch-up efficiency adjustment are:

- W04-01 Surface water modelling
- W04-02 Groundwater modelling
- W05-01 System operation and water availability
- W05-04 Water plan performance assessment and evaluation

> W06-07 Cross border and national commitments.

5.5.3 WaterNSW

WaterNSW has developed its operating expenditure forecasts for the future period using a range of approaches as set out in Table 5-6. This table includes WaterNSW's proposed expenditure for the 2021/22 year to demonstrate the materiality of each approach.

Table 5-6 Basis of WaterNSW operating expenditure forecasts

Activity areas	2021/22 operating expenditure ($'000)	Proportion of total 2021/22 operating expenditure (%)	Notes
Water monitoring	11,635	42%	Forecasts are based on estimated resource requirements and then resources costs are allocated to monitoring sites. Sites are then allocated to the regulated businesses
Water take assessment services	858	3%	Analysis of historic costs
Account management and billing services	2,630	10%	Allocation of pooled costs to the WAMC business and this activity
Licence advisory services – consent transactions	7,228	26%	Assumed that future period costs will be reflective of 2018/19 year costs noting that this is a fee-for-service activity
Licence advisory services – customer management	4,385	16%	Allocation of pooled costs to the WAMC business and this activity
Meter maintenance services	699	3%	Contract in place with service provider
Function of NRAR	172	1%	Undisclosed
Total	**27,607**		

Water monitoring costs comprise the largest component of expenditure and have been based on bottom-up resource estimates which are then allocated between the regulated businesses based on the nature of the monitoring sites. Consent transactions is the next most material activity area. WaterNSW has forecast these costs in the future period to be equal to those incurred in the 2018/19 period. This is a fee-for-service activity meaning that potential revenue is not based on the forecast costs but actual demand.

For Licence advisory services – customer management and Account management and billing services (together which comprise 26% of all operating costs in 2021/22) direct costs are allocated from pooled costs across WaterNSW. This allocation of pooled costs means that there is less certainty over the relationship between the expenditure and the activity that it is allocated to. This is in part a result of WaterNSW not adopting the WAMC activity code framework and also in part because of WaterNSW not currently recording costs at a granular level.

While DPIE and NRAR have applied an overhead to staff costs as an assessed hourly rate, WaterNSW allocates overhead costs based on its corporate allocation methodology. The different approaches are reflective of the different operating circumstances -WAMC activities delivered by DPIE and NRAR are delivered within wider Departmental activities and WaterNSW is a standalone corporation. The allocated "corporate support costs" which include costs for the following functions:

> Customer and community
> Safety, people and performance
> Finance and commercial services
> Legal, governance and risk
> Business systems and information.

The customer and community function involves activities that directly deliver WAMC services: billing and account management and customer management. The other functions are corporate overheads. These allocated corporate costs comprise around 31% of all WAMC expenditure or around 22% if the customer and

community costs are excluded. We consider that this level of allocated overheads is high (e.g. for Sydney Water allocated corporate costs form 15% of all operating expenditure) and we agree with the findings of the separate review of WaterNSW's corporate cost (see Section 5.7) that there is an opportunity for WaterNSW to reduce this figure through greater direct costing of activities. This aligns with our observations regarding WaterNSW not adopting the WAMC activity code framework. There is likely benefit in increased direct costing and at a more granular level better aligned with the WAMC activity code framework.

5.6 Benchmarking of WAMC's costs

The value of benchmarking is that it can provide insights into the relative costs and performance of agencies and identify areas for further scrutiny. The challenge in undertaking benchmarking is being able to gain confidence that the observed relativities reflect the question being explored and are not reflective of other factors such as the operating context or inconsistent data. A further challenge to benchmarking WAMC's costs is that New South Wales is the only jurisdiction in Australia to consistently subject water planning and management activities to regulatory oversight. There is very little information available on the activities, costs, and performance of water planning and management activities undertaken by other agencies and in other jurisdictions. Notwithstanding the above limitations, benchmarking has been used to inform the findings of this report in a number of areas as detailed in the following sections. We also have undertaken benchmarking of compliance management activities. This is included in Section 8.18.

5.6.1 Corporate overheads

The consultant's report for the 2016 Determination relied upon a report into benchmarking of Commonwealth and State Government corporate services[32]. DPIE has used this report as a reference point to demonstrate the efficiency of the overheads applied to staff costs in order to develop its operating expenditure forecasts for the future period. We discussed this further in Section 5.5.1.

WaterNSW has included corporate overheads in its pricing proposal through allocation of corporate costs to the WAMC monopoly services. Some costs are directly allocated but many are allocated using a cost driver.

5.6.2 Water planning and management activities

There are a small number of publicly available sources of costs for water planning and management in other Australian jurisdictions. We have drawn on information available for Western Australia from a 2011 review[33] by the economic regulator, the Economic Regulation Authority of Western Australia, and in South Australia from material published by the then Department of Environment, Water and Natural Resources[34]. Three comparisons of WAMC's costs with those of the comparator agencies are included in Table 5-7 where it was found that the grouping and description of water planning and management activities were found to be broadly consistent. Costs are total costs for the activity and all costs are shown in a consistent price base of $2020/21. No normalisation of total costs has been undertaken (e.g. by using a cost driver such as number of licenses) as we consider that this would imply refinement of the analysis.

Table 5-7 Comparison of WAMC water planning and management activity costs with other jurisdictions

WAMC activity	2020/21 proposed operating expenditure ('000) ($2020/21)	Comparator	Year	Comparison activity	Annual cost ('000) ($2020/21)
09-01 Consent transactions	8,555	Department of Water (WA)	2011/12	Processing and assessment of application for water licences and permits	9,600
09-01 Consent transactions, 10-01 Customer management	13,526	Department of Environment and Water (SA)	2015/16	Managing water licensing, permitting, compliance and trading systems	8,500

[32] PwC, Sustainable productivity – Benchmarking of Commonwealth and State Government corporate services, 2014.
[33] ERAWA, Inquiry into Water Resource Management and Planning Charges, 2011.
[34] DEWNR, What does DEWNR spend on water planning and management?, 2016.

WAMC activity	2020/21 proposed operating expenditure ('000) ($2020/21)	Comparator	Year	Comparison activity	Annual cost ('000) ($2020/21)
06-03 Floodplain management plan development	2,172	Department of Water (WA)	2011/12	Providing advice on flood plain management	700

This analysis shows that WAMC's consent transaction costs are broadly in line with the assessed efficient costs of Department of Water (WA), but when considered together with 10-01 Customer management are markedly higher than the reported costs of the then Department of Environment, Water and Natural Resources. A potential reason for this difference is that there are approximately 15,000 licence holders in South Australia and approximately 38,000 for WAMC. If normalised by the number of licences then WAMC would have relatively lower costs than Department of Environment, Water and Natural Resources. The final comparison is for floodplain management costs.

This comparison is limited as it cannot be known with confidence that the scope of the cost categories are the same and that there are not any other factors specific to the jurisdiction that materially impact costs. This high level benchmarking has been considered as one input in arriving at our conclusions but we have placed more weight on our assessment of the maturity of the WAMC agencies' business processes and cost forecasts because of the limitations of the benchmarking.

5.7 Findings from review of WaterNSW corporate costs

In parallel to this review of WAMC expenditure, IPART is conducting a review into the efficiency and allocation of WaterNSW's corporate costs. The project includes the following tasks:

- Task 1 – a detailed review of WaterNSW's corporate operating and capital costs for efficiency
- Task 2 – a review of how WaterNSW's efficient corporate costs should be allocated between its business units and functions.

The findings from this project are relevant to this review of WAMC expenditure as WaterNSW uses its corporate systems and resources to enable it to deliver WAMC monopoly services. Therefore, the recommendations arising from the review of WaterNSW's corporate costs will be considered for adoption for this review where relevant. Before adopting a recommendation and applying it to this review, we will consider whether there is information arising from our review of WAMC expenditure that justifies a different recommendation.

WaterNSW's corporate cost areas that are relevant to the delivery of WAMC expenditure are:

- Capital expenditure for ICT, buildings and fleet
- Operating expenditure for the following activities which are undertaken to directly deliver WAMC services:
  - Account management and billing services
  - Licence advisory services
  - Water consent transaction services
- Operating expenditure for support services (e.g. legal, financial) which indirectly support the delivery of WAMC services. These support costs are allocated across all of WaterNSW's regulated businesses.

Within corporate business units, direct costing to a regulated activity is undertaken where the systems and processes are in place and the business is able to link staff time to the regulated activity. This is difficult for WaterNSW in some areas. For example, when WaterNSW responds to customer queries, it uses the same staff and systems to deal with all queries and customers may receive service from more than one of WAMC's regulated businesses. A consistent theme in the review of WaterNSW's corporate costs is that direct costing to activities can be improved. WaterNSW intends to improve in this area and has recently implemented a financial system which allows costs to be recorded in more detail. There is an opportunity for WaterNSW to align improved direct costing codes with the WAMC activity code framework which will improve transparency and traceability of costs for future expenditure reviews (refer to Section 4.2.3).

This review made the following conclusions and recommendations relevant to this review of WAMC expenditure:

Capital expenditure

- Overall, the office accommodation consolidation strategy in the current period was managed in line with good practice and was prudent and efficient
- Corporate capital expenditure in the future period is dominated by ICT projects where costs are allocated across the regulated businesses. Atkins reviewed the allocation of ICT project expenditure and recommended that expenditure should be reallocated to better align with the regulated business that is driving expenditure. The recommended reallocation results in a reduction of corporate capital expenditure of $0.8 million per year.
- Review of the business case for Integrated Business Systems project concluded that expenditure allocated to WAMC should be increased by $60k per year.
- Expenditure for vehicle procurement should be moderated to be in line with the medium term trend. This results in a recommended reduction in expenditure of $2.56 million in 2023/24 and an increase of $20k in 2024/25.

The cumulative impact of these findings is a reduction of $5.32 million in recommended capital expenditure compared with that proposed by WaterNSW.

Operating expenditure

- Material scope adjustments to operating expenditure relevant to the WAMC business have been recommended in the following areas:
  - Removal of increase in direct labour costs after 2019/20 except for customer support and billing where WaterNSW is facing additional obligations
  - Change to allocation of Corporate Overheads between Determinations and Valleys (alternative methodologies were identified for this adjustment).
- There is scope for ongoing efficiencies to be achieved in future operating expenditure through the following:
  - A greater focus of monitoring costs against the three main determinations;
  - A greater internal challenge on increasing FTEs and costs to test whether additional obligations can be met through prioritising workload to limit cost increases;
  - A program to drive efficiencies across the business units – the finance teams have a key role here;
  - A drive for greater direct activity-based costing with a focus on reducing the extent of allocated overheads where there is potential for further efficiencies;
  - A closer look at the business structure with a greater focus on service delivery with supporting business units. Some form of service provision arrangements may be appropriate for support from BIS and some functions of people, legal and finance;
  - Whether a change to rationalise the business structure would enable the earlier bullet point objectives to be achieved.

The potential efficiencies identified above were considered in arriving at an assessed level of catch-up efficiency to apply to WaterNSW's future operating expenditure. We have adopted the same level of catch-up efficiency to apply to WaterNSW's future corporate operating expenditure in recognition that it uses the same systems, processes and resources to deliver these activities. This level of catch-up efficiency for operating expenditure also applied to WaterNSW's rural valleys business (see Section 5.8).

Corporate cost allocation

Regarding the allocation of WaterNSW's corporate costs to the regulated businesses, this review made the following conclusions and recommendations relevant to this review of WAMC expenditure:

- There is an opportunity to reduce the value of allocated costs in both corporate and overheads through greater direct costing to appropriate activity codes.

- There is over-allocation of operating expenditure to capital expenditure, and a lower level of allocation is recommended. This does not materially impact WAMC expenditure as it comprises only a small proportion of WaterNSW's total capital expenditure.
- Some expenditure items have been allocated across all businesses on the basis of a general cost driver when there exists information that the benefits of the expenditure flow to only one or two regulated businesses. Therefore, a more targeted allocation of these costs is considered appropriate. Of relevance to WAMC is the Water Markets ICT project where the benefits are for the rural valleys and WAMC businesses yet the costs are allocated across the three businesses (i.e. including Greater Sydney). It is recommended that the expenditure currently allocated to Greater Sydney be reallocated to rural valleys and WAMC.
- To address any material inconsistencies in allocation of costs, large projects or programs (>$2 million) should have costs allocated at business plan stage based on the assets and benefits provided, and this allocation should not change over the period.
- Cost allocation should be based on IPART guidance which clearly requires the causality principle to be applied. The method needs to be clearer, more transparent, simplified and quality controlled so that it can be readily understood by regulators, customer groups and other interested parties.
- The impact of using a direct cost allocation approach that better aligns with IPART guidance for allocation of corporate operating to the regulated business was tested for two different cases. The first case (Option A) excludes non-core expenditure and the second case (Option B), includes non-core expenditure. These alternative approaches if adopted would adjust the basis of WaterNSW's expenditure proposal.

Application of findings between reviews

The review of WaterNSW's corporate costs assessed costs by functional team to arrive at recommended efficient costs. The review then considers how these costs should be allocated to the regulated businesses (WAMC included). In contrast, this review of WAMC expenditure delivered by WaterNSW takes as its starting point the WAMC activity codes. These activity codes include a number of corporate functions (e.g. customer management and billing) that directly provide WAMC services and corporate functions that provide support services to all of the WAMC business (e.g. finance, legal). Therefore, while the two review approaches are largely consistent, they are applied to different cost breakdowns.

Where relevant, we have adopted the findings of the review of WaterNSW's corporate costs for this review of WAMC expenditure. For corporate capital expenditure, the recommendations of the separate review have been fully adopted for this review of WAMC expenditure. For corporate operating expenditure, the separate review recommended two scope adjustments in addition to adjustments for catch-up and continuing efficiency. The two proposed scope adjustments were for changed cost reallocation to the Greater Sydney business resulting in a reduction of $200k per annum and an additional activity (additional regulation resource) resulting in a recommended increase of $180k per annum. Therefore, the two scope adjustments have a net impact of a $20k per annum reduction.

These recommendations were made through an analysis of corporate teams and functions which is at a higher level than the analysis in this report which is at the activity code level. For activity W10-01 Customer management, we have recommended a scope adjustment reduction of $1,251k per annum. To avoid any potential double counting, we have only applied this scope adjustment in arriving at our recommended expenditure for W10-01 Customer management. To achieve consistency, this recommendation should be reflected in the findings of the review of WaterNSW corporate expenditure as set out in Table 5-8.

Table 5-8 Scope adjustment to be applied to recommendations for WNSW corporate expenditure review

	2021/22	2022/23	2023/24	2024/25	2025/26
Scope adjustment to corporate opex for W10-01 Customer management	-1,251	-1,251	-1,251	-1,251	-1,251

As noted, the review of WaterNSW's corporate costs investigated the impact of a different approach to allocating costs to the regulated businesses. We have been requested to apply the result of "Option B", which includes non-core expenditure in the allocation approach, to our final recommendations for WAMC operating expenditure delivered by WaterNSW. The impact of this changed approach to allocation is to increase operating expenditure allocated to the WAMC business by $2.06 million over the first four years of the regulatory period. These additional, allocated costs, have been subject to evaluation in the separate

review of WaterNSW's corporate costs. Therefore, we have applied these additional costs to our recommendations after the application of our own efficiency challenge.

We have relied on WaterNSW to allocate the costs to activity codes to achieve consistency with its costing approach. However, as WaterNSW does not disaggregate costs for the W01 and W02 activity groups, we have assigned costs for these groupings to activity codes in proportion to operating expenditure. Also, the findings from the review of WaterNSW's corporate costs only makes recommendations for the four year period to 2024/25. As we have made recommendations for the five year period to 2025/26, we have averaged the preceding years to arrive at a recommendation for 2025/26. The resulting additional costs applied to each activity code is set out in Table 5-9.

Table 5-9 Additional overhead operating expenditure allocated to WAMC arising from review of WaterNSW corporate costs

		21/22	22/23	23/24	24/25	25/26	Total (21/22 to 24/25)	Total (21/22 to 25/26
W01-01	Surface water quantity monitoring	87	128	117	302	159	634	793
W01-02	Surface water data management and reporting	8	12	11	28	15	60	75
W01-03	Surface water quality monitoring	19	28	26	66	35	139	174
W01-04	Surface water algal monitoring	12	17	16	41	21	86	107
W02-01	Groundwater quantity monitoring	10	15	14	35	19	74	93
W02-02	Groundwater quality monitoring	40	59	54	140	73	293	367
W08-02	Consents management and licence conversion	11	17	15	38	20	81	102
W10-03	Billing management	29	40	34	88	48	190	238
W10-01	Customer management	67	101	93	227	122	487	609
W08-03	Compliance management	3	4	3	9	5	19	23
	Total	**285**	**422**	**383**	**975**	**516**	**2,065**	**2,581**

5.8 Findings from review of WaterNSW rural valleys capital and operating expenditure

In parallel to this review of WAMC expenditure, IPART is conducting a review into the efficiency of WaterNSW's capital and operating expenditure for its rural valleys business.

The findings from this project are relevant to this review of WAMC expenditure as WaterNSW uses largely the same systems and resources to plan and deliver capital expenditure across its three regulated businesses. Therefore, the findings of this review regarding the scope for efficiencies in capital and operating

expenditure have been considered by us in making recommendations for the efficiency of WAMC capital expenditure.

As set out in Section 6.2.3.3, we have applied the same level of catch-up efficiency to WaterNSW's corporate operating expenditure for its WAMC business as that applied in the review of the rural valleys expenditure.

Also, as set out in Section 7.3.3, we have applied the same level of catch-up efficiency to WaterNSW's capital expenditure for its WAMC business as that applied in the review of the rural valleys expenditure. No scope adjustments identified in the review of the rural valleys expenditure (except for corporate expenditure which is discussed separately above) are relevant to the WAMC business.

5.9 Findings from review of contributions to MDBA and BRC

IPART is conducting a review into the contributions made by New South Wales to MDBA and the Barwon-Dumaresq Border Rivers Commission in parallel to this review of WAMC expenditure. This review was not finalised at the time of issue of this Final Report.

6 Efficiency of operating expenditure

6.1 Overview

As set out in Section 2.2, our methodology for determining efficient costs comprises the following three steps:

1. Review of changes in activities and costs to identify any inefficient activities or costs. On the basis of this review, a scope adjustment may be made.
2. Review of the effectiveness of business processes relative to a benchmark frontier company. Where we identify improvements that can be made relative to the benchmark, a catch-up adjustment is applied to forecast expenditure.
3. Review of available data on the frontier shift based on broad productivity trends, and application of a continuing efficiency adjustment based on this analysis.

A check is also undertaken to make allowance for the efficiencies applied by the business to its own forecasts. If appropriate, the business' own efficiency adjustments are netted from those applied by us.

This is a structured methodology which applies scope adjustments before the application of catch-up and continuing efficiency adjustments, and which also recognises the efficiency challenges applied by the business and hence avoids potential double-counting of potential efficiency gains.

The efficiency methodology is only applied to WAMC's operating expenditure forecasts for the future period.

The recommendations in this chapter only apply to activities included in water management changes. Our recommendations for expenditure for water consent transaction services are included in Section 9 and our recommendations for water take measurement services are included in Section 10.

6.2 Application of efficiency methodology

6.2.1 Considerations for application of efficiency methodology

The application of the efficiency methodology is impacted by separate agencies (DPIE and WaterNSW) delivering the WAMC services. As each agency has different business processes, systems, and resources used to develop and deliver proposed expenditure, catch-up efficiency will be considered separately for each agency. We also considered whether there was grounds for applying different levels of catch-up efficiency for the various activities within an agency and have accordingly applied different levels of catch-up efficiency to different activities delivered by the same agency.

Continuing efficiency, which is applies to all firms within an industry, will be applied consistently between both DPIE and WaterNSW. Scope adjustments are specific to the activity or project being considered and so will vary between activities and projects.

A further consideration is that this review of WAMC expenditure is being conducted in parallel to a review of WaterNSW's expenditure in its rural valleys. Because WaterNSW generally uses consistent and integrated processes, systems, and resources to deliver its rural valleys and WAMC services, the catch-up efficiencies applied to WaterNSW's expenditure for WAMC services are consistent with the catch-up efficiencies applied for the rural valleys expenditure review.

Lastly, in addition to the rural valleys expenditure review, IPART is also conducting a review of WaterNSW's allocation of expenditure between its regulated businesses (WAMC, rural valleys and Greater Sydney). For WaterNSW's corporate capital expenditure there is little or no direct costing to the WAMC business; it is allocated from across the whole business. Similarly operating expenditure for some corporate functions are allocated to the WAMC business. Therefore, the recommendations for efficient expenditure made within this review are necessarily interlinked with the findings from the WaterNSW rural valleys expenditure review and the findings from the cost allocation project.

6.2.2 Adjustments to proposed expenditure

We undertook detailed reviews of expenditure at an activity code level through review of information, analysis, and two rounds of interviews with staff from the agencies responsible for delivering service under the activity. These detailed reviews are documented in Section 8 of this report.

Arising from these detailed reviews, we recommend scope adjustments for four activity codes to achieve what we consider to be efficient operating expenditure for the future period that is consistent with the definition of WAMC monopoly services. These basis for these adjustments are summarised in Table 6-1.

Table 6-1 Basis for recommended adjustments to operating expenditure

Code	Activity	Justification	Adjustment
W04-01	Surface water modelling	In the absence of a clear need for increased outputs, efficient expenditure should be consistent with the 2016 Determination efficient level (noting the impact of external funding)	A reduction of $252,000 per year
W04-02	Groundwater modelling	In the absence of a clear need for increased outputs, efficient expenditure should be consistent with actual expenditure in the current period noting the sound resource planning for this activity	A reduction of $147,000 per year
W05-04	Water plan performance assessment	The main driver for expenditure is ten-yearly review of plans. This is a legislative requirement and is unchanged between the current and future periods. In the absence of a clear need for increased outputs, efficient expenditure should be consistent with the 2016 Determination efficient level	A reduction of $1,026,000 per year
W06-04	Drainage management plan development	There is no clear policy position regarding the nature of drainage management planning in the future period. A number of options are being considered some of which have lower cost than that included in the pricing proposal. Given the uncertainty as to what efficient costs may be, the likelihood that any costs would be lower than proposed and uncertainty as to if there will even be work undertaken in this area in the future period, we recommend that no costs for this activity be considered efficient WAMC costs. In its response to the draft report DPIE accepted this proposed scope adjustment.	Exclude all proposed costs for the drainage management activity
W06-05	Regional planning and management strategies (Regional Water Strategies)	There is a clear need for this activity and strong stakeholder support for improved planning. The Auditor-General report also raises concerns over the lack of state-wide regional planning. However, given stakeholder concerns over the need for increased engagement and better integration with local water utility planning, we recommend that expenditure for this activity be reprofiled so that stakeholder engagement is prioritised in the first two years and consequently planning work is deferred until the remaining years of the future period. This is not to diminish the importance of the planning but to allow sufficient time so that a better overall outcome is reached.	We recommend that expenditure for the activity be reprofiled by reducing expenditure in the first two years of the forward period be reduced by 25% to reflect less planning effort and to prioritise stakeholder engagement.
W06-06	Development of water planning and regulatory framework	Significant effort has been undertaken to improve the justification for work undertaken under this activity including better control over needs identification,	We recommend a reduction in proposed activity levels to reflect the level of effort in the current

Code	Activity	Justification	Adjustment
		prioritisation of effort and resource planning for delivery of work. However, the evidence in the current period is that the required level of service is being delivered with lower levels of expenditure. In addition, a proportion of work is reactive and while there will always be a need for flexibility and agility in policy response, a more proactive and planned response to policy and regulation development should achieve objectives more efficiently.	period (a reduction of $3.4 million)
W06-07	Cross border and national commitments	Around one-quarter of the effort for intergovernmental activities is more consistent with "policy development" than implementation of policy. Policy development is not within the scope of WAMC monopoly services. The Claydon review had identified that the existing governance arrangements are inefficient	Reduce proposed expenditure for intergovernmental activities by one-quarter. Reduce the scope of expenditure by 5% for potential scope efficiency gains
W08-03	Compliance management	While we consider that NRAR justified for its proposed expenditure, it appears that the level of expenditure is in large part due to an ineffective approach by Government to compliance and the length of time taken to progress metering reform. When compared with Victoria which has more extensively implemented metering reform, NRAR's level of resourcing is three to four and a half times higher across a range of benchmarks including volume of entitlements, area of land watered, and number of licences. Therefore we recommend that NRAR's proposed $77.6 million of expenditure for the five years of the future period should be adjusted to $74.0 million to account for potential catch-up and continuing efficiency. Of this total, we recommend that $27.7 million be included in the calculation of user charges based on the benchmarking undertaken and the balance ($46.3 million) be funded by Government.	Reduce expenditure included in the calculation of user charges by 62% consistent with the upper limit of resourcing estimated through the comparative benchmarks. Note, we recommend that Government fully fund the balance of NRAR costs net of efficiency adjustments
W10-01	Customer management	WaterNSW has provided additional information to verify its actual costs however link between expenditure and activity is still not clear. Recommend that costs for the future period be aligned with forecast outturn for the current period. For NRAR, apply the same rationale as for compliance management costs and only pass to customers costs that represent the steady state level of effort.	Reduce WaterNSW forecast by $1.2 million per year For NRAR include $283k per year in efficient costs and Government to fund balance of $275k per year (average)

A further, administrative, adjustment has been made for the costs DPIE has included in its AIR/SIR against the W10-02 Business governance and support activity code. As noted in Section 4, DPIE is no longer using this activity code as these costs have been included in overheads allocated across all activities. However, DPIE has included the allocated costs against code W10-02 in its AIR/SIR for transparency. As the AIR/SIR

is our starting point, these costs need to be removed to avoid duplication. The impact of these adjustments is summarised in Table 6-2.

Table 6-2 Recommended adjustments to operating expenditure

Code	Activity	2021/22	2022/23	2023/24	2024/25	2025/26	Total
W04-01	Surface water modelling	-252	-252	-252	-252	-252	-1,258
W04-02	Groundwater modelling	-147	-147	-147	-147	-147	-734
W05-04	Water plan performance assessment and evaluation	-1,026	-1,026	-1,026	-1,026	-1,026	-5,131
W06-04	Drainage management plan development	-543	-543	-543	-543	-543	-2,713
W06-05	Regional planning and management strategies (Regional Water Strategies	-1,323	-1,323	0	0	0	-2,646
W06-06	Development of water planning and regulatory framework	-688	-688	-688	-688	-688	-3,438
W06-07	Cross border and national commitments	-392	-390	-390	-389	-389	-1,950
W08-03	Compliance management	-9,863	-9,863	-9,592	-9,592	-9,592	-48,504
W10-01	Customer management	-1,545	-1,536	-1,526	-1,518	-1,509	-7,633
W10-02	Business governance and support (administrative adjustment only)	-561	-644	-1,451	-1,112	-1,112	-4,879

6.2.3 Catch-up efficiency

6.2.3.1 *General approach*

Catch-up efficiency is the improvement required of a business to achieve the performance of a company operating at the frontier (refer to Section 2.2). There is a lack of comparable entities to the WAMC businesses and data sets on cost and performance to enable catch-up efficiency to be determined quantitatively. Instead, our recommendations regarding catch-up efficiencies are based on our experience and informed by the efficiencies achieved by other utilities at a similar position in their transition towards the efficiency.

At the 2016 Determination, the expenditure review consultant reduced expenditure by 5% for activities where a scope adjustment had not been made. While not explicitly using the concepts of continuing and catch-up efficiency, this reduction equates to a total efficiency of 1.5% per year. If continuing efficiency is assumed to be 0.7% per year[35], this equates to catch-up efficiency of 0.8% per year. However, the scope adjustments applied in the 2016 Determination should also be considered in part analogous with the catch-up efficiency applied under our methodology given that no other efficiency is applied to activities with scope adjustments. Under this approach, the total efficiency applied was equivalent to 4.03% per year which equates to a catch-up efficiency of 3.33% per year (where continuing efficiency is assumed to be 0.7% per year). We therefore conclude that the catch-up efficiencies applied in the 2016 Determination has a lower bound of 0.8% per year and an upper bound of 3.3% per year.

In its current review of the WaterNSW's rural valleys business, Atkins has undertaken similar analysis of the efficiency applied to and achieved by Hunter Water and Sydney Water at their 2009 and 2012 Determination periods respectively. This timing was selected as it was felt to be in line with the level of maturity seen in the review of WaterNSW at this time. This analysis suggests that total efficiency gains of 1.80% and 2.13% p.a. or greater are achievable. Net of assumed continuing efficiency of 0.7%, the catch-up efficiency achieved by these two businesses was 1.1% per year by Hunter Water and 1.63% per year by Sydney Water.

We have used our experience in assessing the efficiency gains in regulated businesses and the empirical evidence of the level of catch-up efficiency which can be achieved by businesses as they mature to inform our view of the level of catch-up efficiency to apply to the WAMC businesses.

[35] An assumption of continuing efficiency of 0.7% per annum is based on IPART's analysis of long term efficiency trends

6.2.3.2 DPIE

Based on strategic review (Section 5) and our detailed review of proposed operating expenditure at the activity level (Section 8), we have identified areas where we consider that DPIE will be able to realise catch-up efficiencies in the future period to move towards the frontier. There are two areas where we consider that catch-up efficiencies will be able to achieved:

- Resource planning. For many activities, WAMC uses internal staff time to deliver its monopoly services. In developing its forward period estimates we found that for most activities DPIE's approach was relatively immature compared to frontier practice. In particular:
    a. Poor quantification of the desired outputs and the timing of the outputs
    b. Limited identification of the risks in preparing these outputs and how methodologies would be implemented to mitigate these risks
    c. Limited evidence of optimisation of resource mix to achieve efficiency
    d. Limited allowance for ongoing improvement. While most activity areas were able to identify various implemented and planned improvements the assessment of impact on delivery efficiency was qualitative only.
    e. Use of top down approaches and resource estimating based on existing resource supply rather than demand for services.

- Effort prioritisation. For many monopoly services, the quantity of the output to be delivered or the quality of the output to be delivered is not rigidly defined and therefore subjective. Generally, DPIE has allowed for the quantity and quality of outputs in these cases to be at least in line with what has been prepared in the past, but also to increase in quality to meet its understanding of increased customer expectations. While DPIE has sought stakeholder and customer feedback, this is often at a higher level than what could be applied to a specific activity code. As a consequence, it is not clear that WAMC has arrived at an appropriate balance between cost and the level of service delivered.

  DPIE and WaterNSW are aware of the need to make these trade-offs but are generally at an early level of maturity in decision making criteria. Improved decision making criteria (e.g. aligned with the objectives of the *Water Management Act 2000* or risk to Departmental or organisational objectives) in the future period will help WAMC justify where to draw the line in its efforts to deliver its monopoly services. In doing so, it will be able to justify the deferral or omission of activities on a clearer understanding that they are not necessary at this time to achieving WAMC objectives.

While these two areas for opportunity were evident across DPIE activities, it was also clear that justification and development of operating expenditure forecasts for some activities was more mature than for others. Therefore, we recommend that catch-up efficiency be applied to activity level forecasts in two steps – level 1 for the more mature activities and level 2 for the less mature activities. The intent of this two-tiered approach is to recognise the relative efficiency in some areas of the business without being unduly specific. The WAMC services have many interrelationships and there will remain opportunities for efficiencies to be realised at the whole of organisation level, e.g. resource utilisation and workflow improvement between activities.

Table 6-3 Recommended operating expenditure catch-up efficiency levels – DPIE

Level of catch-up efficiency	2021/22	2022/23	2023/24	2024/25	2025/26
Catch-up efficiency – Level 1 (in each year)	-0.90%	-0.90%	-0.90%	-0.90%	-0.90%
Catch-up efficiency – Level 1 (cumulative)	-0.90%	-1.79%	-2.68%	-3.55%	-4.42%
Catch-up efficiency – Level 2 (in each year)	-1.40%	-1.40%	-1.40%	-1.40%	-1.40%
Catch-up efficiency – Level 2 (cumulative)	-1.40%	-2.78%	-4.14%	-5.48%	-6.81%

Our assessment of the relative maturity of the activities delivered by DPIE and the corresponding level of catch-up efficiency to be applied is summarised in Table 6-4. As detailed in Section 5.5.2, DPIE has applied its own efficiency challenge. To avoid double counting of potential efficiencies that may be gained in the future period, we have excluded the activity codes included in this efficiency challenge from the catch-up efficiency applied by us.

Table 6-4 Application of catch-up efficiency levels for DPIE delivered activities

Code	Activity	Level of catch-up efficiency to apply
W01-05	Surface water ecological condition monitoring	Level 1
W04-01	Surface water modelling	No catch-up applied to recognise DPIE's own efficiency challenge
W04-02	Groundwater modelling	No catch-up applied to recognise DPIE's own efficiency challenge
W04-03	Water resource accounting	Level 1
W05-01	Systems operation and water availability management	No catch-up applied to recognise DPIE's own efficiency challenge
W05-02	Blue-green algae management	Level 1
W05-03	Environmental water management	Level 2
W05-04	Water plan performance assessment and evaluation	No catch-up applied to recognise DPIE's own efficiency challenge
W06-01	Water plan development (coastal)	Level 2
W06-02	Water plan development (inland)	Level 2
W06-03	Floodplain management plan development	Level 2
W06-04	Drainage management plan development	Level 2
W06-05	Regional planning and management strategies	Level 2
W06-06	Development of water planning and regulatory framework	Level 2
W06-07	Cross border and national commitments	No catch-up applied to recognise DPIE's own efficiency challenge
W07-01	Water management works	Level 1
W08-01	Regulation systems management	Level 1
W08-02	Consents management and licence conversion	Level 2
W08-03	Compliance management	Level 1

The overall impact of applying these different levels of catch-up efficiency (including no catch-up efficiency in some areas) equates to an overall catch-up efficiency of 0.84% per year for DPIE's operating expenditure. This is in line with the lower bound level of catch-up efficiency applied to the total WAMC business in the 2016 Determination and substantially lower than the catch-up efficiency achieved by the two comparator businesses. We did not apply catch-up efficiency to activities where WAMC had applied its own efficiency adjustments to avoid any potential for double-counting. We consider that this is a cautious approach as WAMC's own efficiency challenge is different in nature and includes items which we don't consider are genuine efficiencies, such as duplication of costs for activities delivered by WaterNSW which comprise 44% of its total efficiency challenge. On the basis of the above analysis, we consider that the catch-up efficiency applied by us is conservative and achievable by DPIE. The scope adjustments are proposed based on insufficient justification for the levels of expenditure proposed to meet the required levels of outputs and performance.

6.2.3.3 WaterNSW

WAMC operating expenditure delivered by WaterNSW falls in to two broad categories:

- Field based services for surface water and ground water monitoring and water take assessment (W01, W02 and W03 activity groups)
- Customer and corporate activities including licensing, billing and customer service (W08, W09 and W10 activity groups).

For the field based services (W01, W02 and W03), there is considerable evidence in the savings made in these areas in recent years and factored into forecast expenditure that WaterNSW is approaching the frontier for these services. We discuss this further in Section 6.2.5.

Concurrent with this review, a review into the efficiency of WaterNSW's expenditure for its rural valleys regulated business is being conducted. Given that WaterNSW largely uses the same systems, processes, and resources to deliver both its WAMC and rural valley activities, it is appropriate that a consistent catch-up efficiency adjustment is applied across both reviews. Based on a joint consideration by both review teams of the evidence for catch-up efficiencies that WaterNSW will be able to achieve, the catch-up efficiency adjustments detailed in Table 6-5 are recommended. This catch-up efficiency is based on a cumulative 1.1% per year target. This is based on the total efficiency assessed by Atkins of 1.8% net of continuing efficiency of 0.7% per year.

Table 6-5 Recommended operating expenditure catch-up efficiency levels – WaterNSW

Level of catch-up efficiency	2021/22	2022/23	2023/24	2024/25	2025/26
Catch-up efficiency (in each year)	-1.10%	-1.10%	-1.10%	-1.10%	-1.10%
Catch-up efficiency (cumulative)	-1.10%	-2.19%	-3.26%	-4.33%	-5.38%

The overall impact of applying this catch-up efficiency but excluding the W01, W02 and W03 activity groups equates to an overall catch-up efficiency of 0.55% per year. This is materially lower than the catch-up efficiency achieved by the comparator businesses and applied to WAMC at the 2016 Determination. We consider the catch-up efficiency applied is conservative and achievable by WaterNSW.

6.2.4 Continuing efficiency

Continuing efficiency, or frontier shift, relates to the ability of even the most efficient firms in the sector, those at the efficiency frontier, to become more efficient over time. In this regulatory context, a frontier shift estimate should reflect the pressures to become more efficient that utilities face in an open market. It reflects the continuing efficiencies being gained across all major sectors through process innovation and new systems and technologies that all well-performing businesses should achieve.

The continuing efficiency adjustment applied by us has been supplied by IPART and is based on its review and analysis of various data sets. The continuing efficiency adjustment applied to WAMC's forecast operating expenditure is 0.7% per year. The cumulative impact of this level of continuing efficiency is shown in Table 6-6.

Table 6-6 Recommended continuing efficiency

	2021/22	2022/23	2023/24	2024/25	2025/26
Continuing efficiency (cumulative)	-0.70%	-1.40%	-2.09%	-2.77%	-3.45%

6.2.5 Allowance for business' own efficiency adjustments

Our efficiency methodology makes allowance for the efficiency adjustments that have been included by each business into forward forecasts. This is to provide due recognition for where the business has been proactive in pursuing efficiency and to avoid double counting of potential catch-up efficiencies that have been recognised by both us and the business. However, the efficiency adjustments applied by the business have to be credible otherwise there is created an incentive for pre-efficiency forecasts to be artificially inflated.

We have discussed DPIE's internal efficiency challenge in Section 5.5.2. and set out in Section 6.2.3 the activity codes which we have excluded from the catch-up efficiency adjustment to avoid double counting of potential efficiencies.

As noted for WaterNSW's expenditure in the W01 and W02 and W03 activity groups, increased efficiency in delivery of these services apparent in the current period and has been included in the forecasts for the future period. Expenditure across these three activity groups is forecast for the future period to be marginally less than that included in the 2016 Determination and 18% less than actual expenditure in the current period. Accordingly, in arriving at our recommended level of operating expenditure for the future period, we have excluded these three activity groups from application of the catch-up efficiency adjustment.

6.3 Recommended efficient operating expenditure

Based on the preceding methodology, the recommended efficient operating expenditure to be included in the calculation of user charges for activities delivered by DPIE is set out in Table 6-7. Note that this excludes expenditure for fee for service activities.

Table 6-7 Recommended efficient operating expenditure - DPIE

	2021/22	2022/23	2023/24	2024/25	2025/26
Proposed operating expenditure	51,130	51,203	49,630	49,246	49,246
Adjustments	-15,087	-15,159	-14,364	-14,014	-14,005
Proposed expenditure net of adjustments	36,043	36,044	35,266	35,232	35,241
Catch-up efficiency ($)	-304	-604	-870	-1,147	-1,425
Proposed expenditure net of adjustments and catch-up efficiency	35,739	35,440	34,396	34,085	33,816
Continuing efficiency ($)	-252	-498	-723	-952	-1,176
Recommended efficient expenditure	35,487	34,941	33,673	33,133	32,640

The recommended efficient operating expenditure for each activity delivered by DPIE is set out in Table 6-8.

Table 6-8 Recommended efficient operating expenditure by activity code - DPIE

		21/22	22/23	23/24	24/25	25/26
W01	Surface water monitoring					
W01-01	Surface water quantity monitoring	-	-	-	-	-
W01-02	Surface water data management and reporting	-	-	-	-	-
W01-03	Surface water quality monitoring	-	-	-	-	-
W01-04	Surface water algal monitoring	-	-	-	-	-
W01-05	Surface water ecological condition monitoring	309	304	299	264	260
W02	Groundwater monitoring					
W02-01	Groundwater quantity monitoring	-	-	-	-	-
W02-02	Groundwater quality monitoring	-	-	-	-	-
W02-03	Groundwater data management and reporting	-	-	-	-	-
W03	Water take monitoring					
W03-01	Water take data collection	-	-	-	-	-
W03-02	Water take data management and reporting	-	-	-	-	-
W04	Water modelling and impact assessment					
W04-01	Surface water modelling	3,283	3,260	3,237	3,215	3,192
W04-02	Groundwater modelling	918	911	905	898	892
W04-03	Water resource accounting	593	583	574	565	556
W05	Water management implementation					
W05-01	Systems operation and water availability management	2,736	2,717	2,698	2,679	2,660
W05-02	Blue-green algae management	-	-	-	-	-
W05-03	Environmental water management	1,105	1,082	1,059	1,037	1,016
W05-04	Water plan performance assessment and evaluation	2,617	2,598	2,580	2,562	2,544
W06	Water management planning					
W06-01	Water plan development (coastal)	1,716	1,680	1,645	1,610	1,577
W06-02	Water plan development (inland)	2,914	2,853	2,793	2,735	2,678
W06-03	Floodplain management plan development	2,127	2,082	1,452	1,350	1,322
W06-04	Drainage management plan development	-	-	-	-	-
W06-05	Regional planning and management strategies	5,180	5,072	4,967	4,863	4,761

		21/22	22/23	23/24	24/25	25/26
W06-06	Development of water planning and regulatory framework	1,557	1,525	1,493	1,462	1,431
W06-07	Cross border and national commitments	1,578	1,559	1,548	1,603	1,592
W07	Water management works					
W07-01	Water management works	2,119	2,085	2,052	2,019	1,987
W08	Water regulation management					
W08-01	Regulation systems management	-	-	-	-	-
W08-02	Consents management and licence conversion	630	617	604	591	579
W08-03	Compliance management	5,824	5,731	5,485	5,397	5,311
W08-99	Water consents overhead	-	-	-	-	-
W09	Water consents transactions					
W09-01	Water consents transactions	-	-	-	-	-
W10	Business and customer services					
W10-01	Customer management	283	283	283	283	283
W10-02	Business governance and support	-	-	-	-	-
W10-03	Billing management	-	-	-	-	-
	Total	35,487	34,941	33,673	33,133	32,640

Based on the preceding methodology, the recommended efficient operating expenditure to be used for the calculation of user charges for activities delivered by WaterNSW is set out in Table 6-9. This table also shows the impact of the inclusion of reallocated corporate costs as described in Section 5.7. Note that this excludes expenditure for fee for service activities.

Table 6-9 Recommended efficient operating expenditure - WNSW

	2021/22	2022/23	2023/24	2024/25	2025/26
Proposed operating expenditure	18,821	19,365	19,318	18,920	20,008
Adjustments	-1,251	-1,251	-1,251	-1,251	-1,251
Proposed expenditure net of adjustments	17,570	18,113	18,067	17,668	18,757
Catch-up efficiency ($)	-74	-153	-225	-284	-380
Proposed expenditure net of adjustments and catch-up efficiency	17,496	17,961	17,842	17,385	18,377
Continuing efficiency ($)	-122	-251	-372	-482	-634
Reallocation of WaterNSW overheads to WAMC	285	422	383	975	516
Recommended efficient expenditure	17,659	18,132	17,852	17,878	18,259

The recommended efficient operating expenditure for each activity delivered by WNSW is set out in Table 6-10.

Table 6-10 Recommended efficient operating expenditure by activity code - WNSW

		21/22	22/23	23/24	24/25	25/26
W01	Surface water monitoring					
W01-01	Surface water quantity monitoring	5,417	5,563	5,539	5,587	5,682
W01-02	Surface water data management and reporting	512	525	521	527	534
W01-03	Surface water quality monitoring	1,189	1,221	1,214	1,229	1,245
W01-04	Surface water algal monitoring	732	752	748	757	767

		21/22	22/23	23/24	24/25	25/26
W01-05	Surface water ecological condition monitoring	-	-	-	-	-
W02	Groundwater monitoring					
W02-01	Groundwater quantity monitoring	577	593	589	742	763
W02-02	Groundwater quality monitoring	2,512	2,578	2,564	2,577	2,626
W02-03	Groundwater data management and reporting	-	-	-	-	-
W03	Water take monitoring					
W03-01	Water take data collection	-	-	-	-	-
W03-02	Water take data management and reporting	-	-	-	-	-
W04	Water modelling and impact assessment					
W04-01	Surface water modelling	-	-	-	-	-
W04-02	Groundwater modelling	-	-	-	-	-
W04-03	Water resource accounting	-	-	-	-	-
W05	Water management implementation					
W05-01	Systems operation and water availability management	-	-	-	-	-
W05-02	Blue-green algae management	605	608	598	579	592
W05-03	Environmental water management	177	178	175	143	174
W05-04	Water plan performance assessment and evaluation	-	-	-	-	-
W06	Water management planning					
W06-01	Water plan development (coastal)	-	-	-	-	-
W06-02	Water plan development (inland)	-	-	-	-	-
W06-03	Floodplain management plan development	-	-	-	-	-
W06-04	Drainage management plan development	-	-	-	-	-
W06-05	Regional planning and management strategies	-	-	-	-	-
W06-06	Development of water planning and regulatory framework	-	-	-	-	-
W06-07	Cross border and national commitments	-	-	-	-	-
W07	Water management works					
W07-01	Water management works	-	-	-	-	-
W08	Water regulation management					
W08-01	Regulation systems management	-	-	-	-	-
W08-02	Consents management and licence conversion	745	755	743	728	688
W08-03	Compliance management	171	173	169	169	163
W08-99	Water consents overhead	-	-	-	-	-
W09	Water consents transactions					
W09-01	Water consents transactions	-	-	-	-	-
W10	Business and customer services					
W10-01	Customer management	3,144	3,370	3,332	3,166	3,328
W10-02	Business governance and support	-	-	-	-	-
W10-03	Billing management	1,877	1,816	1,660	1,672	1,672
	Total	17,659	18,132	17,852	17,878	18,259

7 Efficiency of capital expenditure

7.1 Overview

For capital expenditure, we are required to recommend the efficient levels of capital expenditure in the current period and for the future period. For actual capital expenditure, the requirement is to assess retrospectively whether the costs incurred are efficient. For capital expenditure proposed for the future period, our methodology to arrive at efficient forecasts follows the same three steps as outlined for operating expenditure:

1. Review of changes in activities and costs to identify any inefficient activities or costs. On the basis of this review, a scope adjustment may be made.
2. Review of the effectiveness of business processes relative to a benchmark frontier company. Where we identify improvements that can be made relative to the benchmark, a catch-up adjustment is applied to forecast expenditure.
3. Review of available data on the frontier shift based on broad productivity trends, and application of a continuing efficiency adjustment based on this analysis.

As for operating expenditure, a check is also undertaken to make allowance for the efficiencies applied by the business to its own forecasts. If appropriate, the business' own efficiency adjustments are netted from those applied by us.

7.2 Historical capital expenditure

7.2.1 Expenditure in 2015/16

IPART requested that we also consider the efficiency of WAMC capital expenditure in 2015/16. This was the last year of the regulatory period before the current period. At the time of the 2016 Determination, this expenditure was forecast only. Table 7-1 summarises the forecast and actual capital expenditure for 2015/16 as well as the variance between the two. The forecasts were prepared early in 2015/16 and were subject to the expenditure review held in November of that year. Therefore, we expect that the forecasts should be reasonably robust. Note that all expenditure in the table and in this section of the report are in $2015/16.

Table 7-1 Forecast and actual WAMC capital expenditure for 2015/16 ($2015/16)

		Forecast	Actual	Variance	Reccom. efficient
W01-01	Surface water quantity monitoring	0	80	80	80
W01-02	Surface water data management and reporting	370	347	-23	347
W01-03	Surface water quality monitoring	150	150	-	150
W01-04	Surface water algal monitoring	27	18	-9	18
W01-05	Surface water ecological condition monitoring	0	8	8	8
W02-02	Groundwater quality monitoring	155	1,156	1,001	155
W03-02	Water take data management and reporting	100	-	-100	-
W08-01	Regulation systems management	150	-	-150	-
W10-01	Customer management	200	405	205	405
	Total	**1,152**	**2,164**	**1,012**	**1,162**

This table shows that actual capital expenditure was $2.16 million which was $1.00 million (88%) higher than forecast. Almost all of the variance is attributable to W02-02 Groundwater quality monitoring. We queried DPIE regarding this variance and DPIE responded that the variance is attributable to costs for decommissioning groundwater bores which should not be recorded as capital expenditure in the regulated asset base. We recommend that only the $155k of capital expenditure for W02-02 Groundwater quality monitoring forecast in 2016 be considered efficient.

7.2.2 Expenditure in the current period

In the current period, WaterNSW's actual and forecast capital expenditure for surface water and groundwater monitoring totals $12.4 million. This is $1.3 million or 10% lower than that forecast as efficient at the time of the 2016 Determination as shown in Table 7-2.

Table 7-2 Water monitoring capital expenditure in the current period

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	499	1,337	3,307	4,401	4,238	13,781	2,756
Actual	132	479	421	2,668	8,750	**12,450**	**2,490**
Variance	-367	-858	-2,886	-1,733	4,512	-1,332	-266

We have completed a detailed review of WaterNSW's capital expenditure for surface water and groundwater monitoring in Section 8.2. On the basis of this detailed review and the forecast outturn in expenditure for the current period, we accept WaterNSW's expenditure on water monitoring in the current period as efficient.

In the current period, WaterNSW's actual and forecast corporate capital expenditure totals $29.8 million. This is $26.4 million higher than that forecast as efficient at the time of the 2016 Determination as shown in Table 7-3.

Table 7-3 Corporate capital expenditure in the current period

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	520	900	553	660	791	3,424	685
Actual	4,697	4,500	6,465	7,087	7,031	29,780	5,956
Variance	4,177	3,600	5,911	6,427	6,240	26,356	5,271

WaterNSW submission argues that:

> *The WAMC 2016 Determination did not contemplate and therefore did not provide, a sufficient capital expenditure allowance for ICT systems (including end of life systems) and corporate assets to support the transfer of WAMC functions into WaterNSW, including system consolidation".*

We have revisited the 2016 Determination and agree that the allowance for corporate capital expenditure is very likely lower than required to deliver the WAMC functions. The expenditure proposed by DPI Water made no allowance for accommodation whereas WaterNSW has identified consolidating accommodation as a notable driver of expenditure in the current period. DPI Water's proposed expenditure for ICT totalled $1.6 million ($2015/16) with the most significant item being the replacement of the Water Access Licensing system ($1.2 million). There was no allowance for the other ICT systems that are required to deliver WAMC services.

Corporate capital expenditure has been subject to a separate review, as set out in Section 5.7. This review concluded that there was no grounds to challenge the prudence and efficiency of corporate capital expenditure in the current period. While we acknowledge the findings of this review, we note that WaterNSW's historic capital expenditure for the WAMC business is a result of its cost allocation methodology. When WaterNSW assumed responsibility for WAMC monopoly services, it did not on day one procure replacement ICT systems or invest in its office accommodation. Our conclusion is that WaterNSW will have taken time to build up its understanding of the WAMC business and the long term capital expenditure requirements. It will have then planned for the procurement of this capital expenditure and has then, and continues to, progressively deliver this expenditure. Accordingly, in the draft report we recommend that the prudent and efficient level of capital expenditure allocated to the WAMC business be profiled over a four year period as shown in Table 7-4.

Table 7-4 Recommended prudent and efficient corporate capital expenditure

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
Corporate capital expenditure	4,697	4,500	6,465	7,087	7,031	29,780	5,956
Prudent and efficient allocation to WAMC	25%	50%	75%	100%	100%		
Recommended prudent and efficient capital expenditure	1,174	2,250	4,848	7,087	7,031	22,391	4,478

WaterNSW disagreed with this approach in the draft report, noting that the approach fails to:

- Account for the nature of the corporate capital expenditure in the early years if the current period. The majority of the expenditure was for the consolidation of staff into the Parramatta office. WaterNSW provided a project level breakdown of corporate capital expenditure in the current period which supports this.
- Recognise the regulatory framework which recognises capital expenditure in the regulatory asset base on an as incurred basis which is not necessarily when the benefits from expenditure are obtained.

WaterNSW further noted that the corporate capital expenditure and cost allocation for the accommodation strategy has been reviewed as part of the 2020 review of its expenditure for its Greater Sydney business and found to be prudent and efficient. Therefore, WaterNSW considers that any capital expenditure not deemed prudent for inclusion in the WAMC regulatory asset base should be included in the Greater Sydney regulatory asset base.

We believe that WaterNSW's position regarding corporate expenditure is reasonable. The crux of the issue is whether capital expenditure be included in the regulatory asset base on an as incurred basis or in proportion to the benefits received. For this particular circumstance, we consider that there is clear reason why the WAMC proportion of expenditure should not be borne by customers in the timeframe proposed. We therefore recommend that the balance of expenditure ($7.39 million) be included in the regulatory asset base of WaterNSW's other regulated businesses.

Our total recommended prudent and efficient capital expenditure for the current period is summarised in Table 7-5.

Table 7-5 Corporate capital expenditure in the current period

	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
Recommended prudent and efficient water monitoring capital expenditure	132	479	421	2,668	8,750	12,450	2,490
Recommended prudent and efficient corporate capital expenditure (phased profile)	1,174	2,250	4,848	7,087	7,031	22,391	4,478
Total	1,306	2,729	5,270	9,755	15,780	34,840	6,968

7.3 Application of efficiency methodology to future capital expenditure

7.3.1 Considerations for application of efficiency methodology

As capital expenditure is only forecast to be delivered by WaterNSW in the future period, the catch-up efficiency applied will only relate to our assessment of WaterNSW's processes, systems and resources. However, as noted for operating expenditure, this review is being conducted in parallel with a review of WaterNSW's expenditure in its rural valleys. Because WaterNSW generally uses consistent and integrated processes, systems, and resources to deliver its rural valleys and WAMC services, the catch-up efficiencies applied to WaterNSW's capital expenditure for WAMC services are (will be) consistent with the catch-up efficiencies applied for the rural valleys expenditure review.

Further, we will adopt the recommendations arising from the review of WaterNSW's corporate costs for capital expenditure in the future period. This is because the corporate capital expenditure supports all of

WaterNSW's regulated businesses. The allocation of total capital expenditure to the regulated businesses has also been considered in this review of WaterNSW's corporate costs.

The continuing efficiency adjustment applied to capital expenditure is consistent with that applied to operating expenditure.

7.3.2 Adjustments to proposed expenditure

Based on the analysis and investigation undertaken for this review, we do not propose any adjustments to WaterNSW's proposed capital expenditure for water monitoring for the future period.

We have reviewed the findings of the separate review of WaterNSW's corporate expenditure (see Section 5.7) and consider that the recommendations from this review are appropriate to be adopted for this review. Therefore, we make the following adjustments to arrive at our recommended efficient capital expenditure:

- Reduction in capital expenditure for ICT projects of $0.8 million per year to reflect reallocation of expenditure to the regulated businesses driving the expenditure
- Reallocation of $60k per year to the WAMC business for the Integrated Business Systems project following an assessment of the drivers for the project. WaterNSW had allocated none of the $1.62 million expenditure to WAMC but the Atkins assessment was that 16% of expenditure should be allocated to WAMC.
- Adjustment of expenditure for vehicle procurement to be in line with the medium term trend resulting in a reduction in recommended expenditure of $2.56 million in 2023/24 and an increase of $200k in 2024/25.

The cumulative impact of these findings is a reduction of $5.32 million in recommended capital expenditure compared with that proposed by WaterNSW. Note that the review of corporate expenditure only makes recommendations for a four year period to 2024/25.

7.3.3 Catch-up efficiency

As set out in Section 5.7 and Section 5.8, concurrent with this review, reviews into the efficiency of WaterNSW's expenditure for its rural valleys regulated business and its corporate costs is being conducted. Given that WaterNSW largely uses the same systems, processes and resources to deliver its WAMC and rural valley capital expenditure, it is appropriate that a consistent catch-up efficiency adjustment is applied across both reviews.

The catch-up efficiencies applied for the WaterNSW rural valleys review are based on a business process review and analysis of sample projects representative of the capital program as a whole. The catch-up efficiencies have also been determined based on the findings of the 2020 review of WaterNSW's Greater Sydney business as the overarching business processes are comparable. Four key areas have been identified where WaterNSW should be able to make material improvement to its processes to move towards the efficiency frontier utility level over time and deliver material efficiencies over the next Determination period. These are:

- Improvements to capital program development, optimisation and prioritisation
- Improvements to value engineering
- Improvements in cost estimating and the management of contingencies
- The impact of new procurement processes and the likely savings from more effective program management.

The review of WaterNSW rural valleys expenditure considers the scope for efficiencies in each of these areas in more detail.

The catch-up efficiencies applied have been calibrated against utilities that we have previously by the Atkins and Cardno review teams in Australia, the United Kingdom and other jurisdictions. Relative catch-up efficiencies provide an incentive for utilities to catch up to industry peers. Table 7-6 provides a comparison of the catch-up efficiency challenges recommended by Atkins (generally supported by Cardno) in recent expenditure reviews. Note that the review of WaterNSW

Table 7-6 Comparative catch up efficiency challenges for previous expenditure reviews in New South Wales

Utility Review	Catch-up efficiency applied (cumulative %)			
	Year1	Year2	Year3	Year4
WaterNSW Greater Sydney Review (2020)	2.1	4.1	6.7	7.3

Utility Review	Catch-up efficiency applied (cumulative %)			
	Year1	Year2	Year3	Year4
Sydney Water Review (2016)	2.9	5.8	7.2	8.6
Central Coast Council Review (2019)	3.25	7.5	10.75	13
Sydney Water Review (2012)	1.3	4.4	9.6	12

The range of catch-up efficiencies applied to WaterNSW in this review is comparable to that which we recommended for Sydney Water in 2016 and who have demonstrated of achievability of these in both its current and previous determination periods. The recommended catch-up efficiencies to be applied to WaterNSW capital expenditure are detailed in Table 7-7.

Table 7-7 Recommended capital expenditure catch-up efficiency levels

Cumulative efficiency challenge (%)	2021/22	2022/23	2023/24	2024/25
Catch-up efficiency (cumulative in year)	2.11%	4.22%	6.83%	7.44%

7.3.4 Continuing efficiency

The continuing efficiency adjustment applied to capital expenditure is consistent with that applied to operating expenditure, being 0.7% per year. The cumulative impact of this level of continuing efficiency is shown in Table 7-8.

Table 7-8 Recommended continuing efficiency – capital expenditure

	2021/22	2022/23	2023/24	2024/25	2025/26
Continuing efficiency (cumulative)	-0.70%	-1.40%	-2.09%	-2.77%	-3.45%

7.3.5 Allowance for business' own efficiency adjustments

Our efficiency methodology makes allowance for the efficiency adjustments that have been included by the businesses into forward forecasts. However, WaterNSW has not incorporated any internal efficiency challenge within its capital expenditure forecasts for WAMC capital expenditure.

7.4 Recommended efficient capital expenditure

Based on the preceding methodology, the recommended efficient water monitoring capital expenditure for the future period is set out in Table 7-9. This table includes recommended expenditure by Activity code.

Table 7-9 Recommended efficient water monitoring capital expenditure

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Proposed capital expenditure	6,339	6,572	6,610	6,615	6,676	32,813
Adjustments	0	0	0	0	0	0
Proposed capital expenditure net of adjustments	6,339	6,572	6,610	6,615	6,676	32,813
Catch-up efficiency ($ thousand)	-134	-277	-451	-492	-751	-2,106
Proposed capital expenditure net of adjustments and catch-up efficiency	6,206	6,295	6,159	6,122	5,925	30,707
Continuing efficiency ($)	-0.70%	-1.40%	-2.09%	-2.77%	-3.45%	0
Recommended efficient capital expenditure	-43	-88	-128	-170	-205	-634
Recommended capital expenditure by activity code						
W01-01 Surface water quantity monitoring	2,307	2,325	2,260	2,231	2,145	11,268
W02-01 Groundwater quantity monitoring	3,855	3,882	3,771	3,722	3,576	18,806

The recommended level of corporate capital expenditure for the WAMC business is that recommended by the separate review of WaterNSW's corporate expenditure as referred to in Section 5.7. This review used the

same methodology to determine efficient expenditure, applying scope adjustments, catch-up efficiency and continuing efficiency. The catch-up and continuing efficiency applied to corporate capital expenditure is as set out in Table 7-7 and Table 7-8. Scope adjustments have been applied based on the findings of the review in two areas – allocation of costs between the regulated businesses and to the scope of activities. The adjustments applied and their impact are detailed in Table 7-10.

Table 7-10 Adjustments applied to corporate capital expenditure

	2021/22	2022/23	2023/24	2024/25	Total
ICT expenditure reallocation on a project expenditure basis	-0.80	-0.80	-0.80	-0.80	-3.22
Integrated Business Systems business case – reallocate a proportion of expenditure from rural valleys to WAMC based on expected benefits	0.06	0.06	0.06	0.06	0.26
Vehicle procurement scope adjusted to match trend	0.00	0.00	-2.56	0.20	-2.36
Total Scope adjustments and reallocation	**-0.74**	**-0.74**	**-3.30**	**-0.54**	**-5.32**

The recommended efficient corporate capital expenditure following application of adjustments and catch-up and continuing efficiency is set out in Table 7-11.

Table 7-11 Recommended efficient corporate capital expenditure

	2021/22	2022/23	2023/24	2024/25	Total
Proposed capital expenditure	3,609	3,857	6,051	2,418	15,935
Adjustments	-740	-740	-3,301	-540	-5,321
Proposed capital expenditure net of adjustments	2,869	3,117	2,749	1,878	10,614
Catch-up efficiency (%)	-2.1%	-4.2%	-6.8%	-7.4%	
Catch-up efficiency ($)	-61	-132	-188	-140	-520
Proposed capital expenditure net of adjustments and catch-up efficiency	2,808	2,986	2,562	1,739	10,094
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	0
Continuing efficiency ($)	-20	-42	-53	-48	-163
Recommended efficient corporate capital expenditure (all W10-02 Business governance and support)	**2,789**	**2,944**	**2,508**	**1,690**	**9,931**

The recommended efficient capital expenditure for all activities is summarised in Table 7-12.

Table 7-12 Recommended efficient capital expenditure for all activities

	2021/22	2022/23	2023/24	2024/25	Total
W01-01 Surface water quantity monitoring	2,307	2,325	2,260	2,231	9,123
W02-01 Groundwater quantity monitoring	3,855	3,882	3,771	3,722	15,230
W10-02 Business governance and support	2,789	2,944	2,508	1,690	9,931
Total	**8,951**	**9,151**	**8,539**	**7,643**	**34,284**

8 Detailed analysis of activities

8.1 W01 Surface water monitoring and W02 Groundwater monitoring – Operating expenditure

WaterNSW provides a number of services that contribute to WAMC's overall operations, including undertaking water monitoring services on behalf of DPIE. These functions support DPIE in the discharge of its WAMC functions related to long-term water stewardship.

These water monitoring activities are captured under the following activity codes:

- W01 Surface water monitoring
  - W01-01 Surface water quantity monitoring (undertaken by WaterNSW)
  - W01-02 Surface water data management and reporting (undertaken by WaterNSW)
  - W01-03 Surface water quality monitoring (undertaken by WaterNSW)
  - W01-04 Surface water algal monitoring (undertaken by WaterNSW)
  - W01-05 Surface water ecological condition monitoring (undertaken by DPIE)
- W02 Groundwater monitoring
  - W02-01 Groundwater quantity monitoring (undertaken by WaterNSW)
  - W02-02 Groundwater quality monitoring (undertaken by WaterNSW)
  - W02-03 Groundwater data management and reporting (undertaken by WaterNSW)

In addition to the water monitoring activities provided by WaterNSW, activities related to surface water ecological condition monitoring are carried out by DPIE and recorded against the W01-05 activity code. These are included under the W01 reporting.

As there is significant overlap between the work activities for WaterNSW's water monitoring services, we have combined these activity codes into a single section in this final draft report.

8.1.1 Background

The scope of activities undertaken by WaterNSW against the W01 Surface water monitoring activity group code are the provision, operation and maintenance of a surface water quantity monitoring system. This includes the design and calibration of monitoring stations, as well as the collection, processing, encoding, quality assurance, reporting and archiving of monitoring data. As part of this activity, near-real-time height and/or flow data is delivered from all telemetered sites to a corporate database.

Similarly, for the groundwater monitoring activities recorded under the W02 activity group code, the overall scope of activity is the provision of a groundwater level, pressure and flow monitoring system. This includes system design and site calibration, as well as the collection, entry, audit, quality assurance, reporting and archiving of monitoring data.

An overview of the current and future period expenditure for each individual activity code is set out in the following sections. This analysis is undertaken at the activity group level because of the uncertainties noted regarding WaterNSW's allocation of costs to the activity code level. However, we also note that allocation of costs between activity groups includes uncertainty and comparisons of expenditure across time may be misleading. There is no better information available to us on which to base this assessment.

8.1.1.1 W01 Surface water monitoring current and future period expenditure

Figure 8-1 shows operating expenditure for W01 surface water monitoring group activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown.

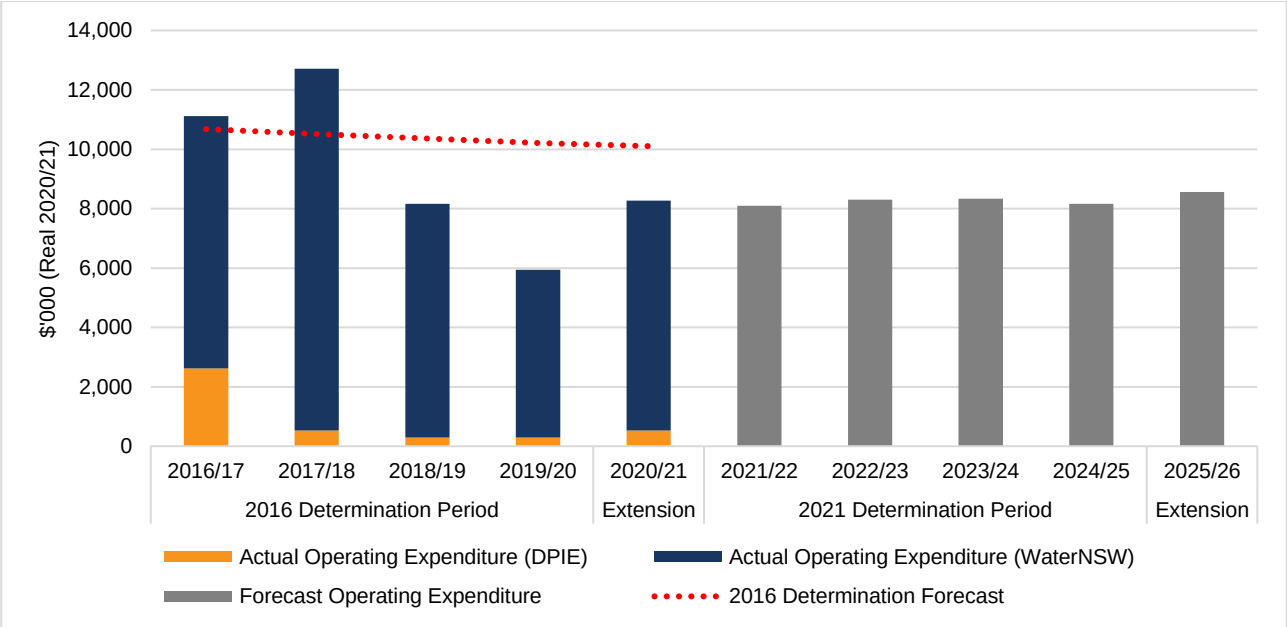

Figure 8-1 Current and future period expenditure for W01 Surface water monitoring

Table 8-1 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-1 Current period expenditure for W01 Surface water monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	10,882	10,713	10,554	10,400	10,297	52,845	10,569
Actual	11,118	12,710	8,158	5,942	8,272	46,200	9,240
Variance	237	1,997	-2,395	-4,458	-2,025	-6,645	-1,329

Table 8-2 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-2 Future period expenditure for W01 Surface water monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	8,092	8,300	8,334	8,163	8,566	41,454	8,291

Actual expenditure in the current period has averaged $9,240,000 per year. This is $1,329,000 per year (13%) lower than allowed for in the 2016 Determination, which averaged $10,569,000 per year.

The proposed expenditure for the future period averages $8,291,000 per year. This is $2,278,000 per year (22%) lower than the average annual expenditure allowed for in the 2016 Determination, and $949,000 per year (10%) lower than the average annual expenditure incurred during the current period.

8.1.1.2 W02 Groundwater monitoring current and future period expenditure

Figure 8-2 shows the expenditure for W02 groundwater monitoring activity group in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown.

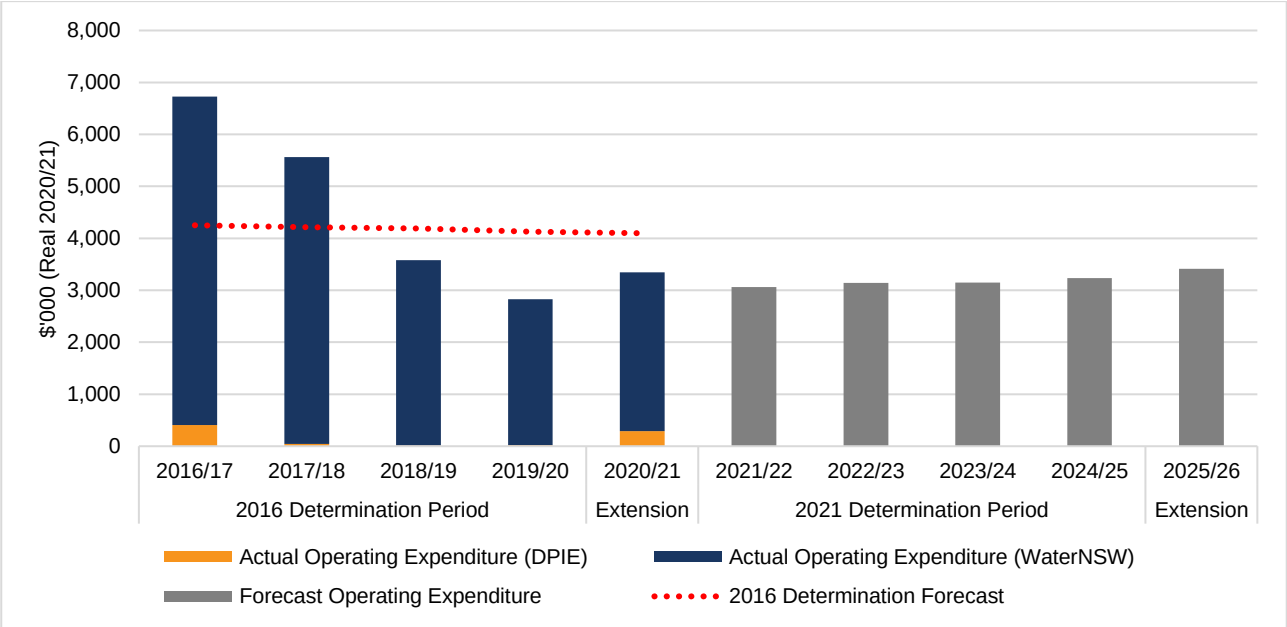

Figure 8-2 Current and future period expenditure for W02 Groundwater monitoring

Table 8-3 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-3 Current period expenditure for W02 Groundwater monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	4,332	4,293	4,267	4,206	4,176	21,275	4,255
Actual	6,728	5,565	3,583	2,828	3,345	22,049	4,410
Variance	2,396	1,273	-684	-1,378	-831	774	155

Table 8-4 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-4 Future period expenditure for W02 Groundwater monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	3,060	3,140	3,150	3,233	3,415	15,998	3,200

Actual expenditure in the current period has averaged $4,410,000 per year. This is $155,000 per year (4%) higher than allowed for in the 2016 Determination, which averaged $4,255,000 per year.

The proposed expenditure for the future period averages $3,200,000 per year. This is $1,055,000 per year (25%) lower than the average annual expenditure allowed for in the 2016 Determination, and $1,210,000 per year (27%) lower than the average annual expenditure incurred during the current period.

8.1.2 Driver for expenditure

The functions for WAMC-related water monitoring transferred from DPIE to WaterNSW in 2016 and, apart from a small number of changes to the scope of works, WaterNSW has continued to provide the same functions as were undertaken prior to the transfer.

The main driver for WaterNSW's water monitoring activities is DPIE's requirements. DPIE resources its planning documents and informs WaterNSW of the monitoring that is needed.

The water monitoring services WaterNSW undertakes on behalf of DPIE are set out in three schedules in the *Deed of Business Transfer* covering the requirements for surface water monitoring, groundwater monitoring, and water quality monitoring activities. The schedules are standalone documents that provide information

about each monitoring site as well as the monitoring frequency and what is required to be monitored at each location. These schedules form what would be a service level agreement.

However, these schedules have not yet been signed off and WaterNSW has been continuing to provide the services at the locations and to the standard to which they were undertaken prior to the transfer of the functions and assets to WaterNSW.

In addition, the Murray-Darling Basin Authority has put out a review of monitoring in all its jurisdictions. Although this external stakeholder initiative may end up in changes to WaterNSW's water monitoring functions, they will only be adopted if they are revenue neutral or if external funds are made available to carry out any changes in scope.

8.1.3 Output measures and performance

The output measures and performance indicators that have been established for WaterNSW's water monitoring activities were set by DPIE during the previous determination process. WaterNSW considers that some of the measures appear to be aspirational and as it did not have the transparency for how they were set by DPIE, it essentially looked to perform to the same level as when the assets were handed over in the 2016 period.

Since the handover of the water monitoring assets, WaterNSW has gained a better idea of how the network works and who pays for the activities. As a result of one organisation undertaking all of the water monitoring activities across the State, it has been able to establish a clearer breakdown of the activities. This has led to identifying a number of the output measures and performance indicators as not being fit for purpose for the water monitoring activities undertaken through WAMC.

As an example, WaterNSW has identified that the target of 1,245 surface water sites subject to data management meeting specific criteria under W01-02 (OM2) does not relate to the number of WAMC surface water sites. There are 1,006 WAMC surface water sites, in the region of 200 co-funded sites, and some externally (e.g. Council) funded sites.

Similarly for the number of sites subject to data management under W02-03 (OM8), all of the water monitoring sites are subject to data management but there can be issues related to the time taken to transfer information recorded in field operator notebooks or stored in an Excel spreadsheet into the database. This has caused WaterNSW to not meet the target in some years of the 2016 period but a new key performance indicator has been developed to establish timeframes in which to update the database, essentially eliminating the issues that have been experienced.

With regard to water quality and surface water monitoring, WaterNSW considers that DPIE has been generally satisfied with the services that it has been provided over the 2016 determination period. However, there have been some ongoing issues regarding access to the data and WaterNSW are working with DPIE to facilitate a better understanding, and to get the information in the correct format required by the department.

For the 2021 period, DPIE has not set, so far, any materially changed requirements for WaterNSW's water monitoring activities.

DIPE is currently undertaking a review to investigate monitoring stations in order to determine how accurate the station needs to be in performing its function. As the monitoring data goes to multiple users, DPIE's review has included the criticality of specific sites and how important a monitoring station is depending on its required accuracy. The review may result in operational changes to some monitoring sites. WaterNSW has worked with DPIE on this review in relation to the price determination and any expenditure impacts. DPIE and WaterNSW has agreed that any outcomes from the review should be cost neutral, and that if external funds are required but not available, any unfunded expenditure will form the basis of the next pricing submission.

As a result, WaterNSW's water monitoring operating expenditure proposals for the 2021 period are based on future budget and forecasts to meet DPIE's future requirements.

WaterNSW anticipates that its WAVE program will improve its performance with regard to providing monitoring data to DPIE in the most useable format to meet the department's needs.

Groundwater monitoring services have been recognised as having been more of a challenge across the current period, due to the large number of bores that are monitored. WaterNSW and DPIE are still in discussions to develop an agreed list of bores.

8.1.4 Current period

WaterNSW has spent significant time and resources during the 2016 determination period undertaking a detailed assessment of what it has inherited from DPIE through the transfer of the water monitoring functions and how the resources, assets, and monitoring schedules map to the service delivery model. This has been driven by WaterNSW looking to provide the water monitoring services to DPIE as efficiently as could be provided by the market.

WaterNSW considers that when the WAMC water monitoring functions were transferred to the business, it was not provided with the necessary level of documentation associated with the activities. As a result, it took time to comprehensively understand the full extent of the services it had taken over, including how the resources that were transferred worked for the different monitoring locations and where the costs were booked to.

These issues have been attributed in part to the 2017/18 spike in expenditure above the IPART determination. WaterNSW considers that issues with identifying which monitoring activities were for WAMC meant that it was possible some non-WAMC monitoring was being coded to these activities at this time. In addition, WaterNSW considers it is also possible that as DPIE did not have a legacy of asset management - type work activities, and that consequentially there might have been mis-coding between operating and capital expenditure and how this was allocated. In addition, operating expenditure in 2017/18 was also driven by drought response work. More ad hoc work was required at this time, e.g. for algal bloom activities and as WaterNSW could not resource all of the activities required, some work was contracted out. During the drought there was increased pressure to ensure that water releases from storages reached the water users, and at times WaterNSW allocated staff resources to follow water releases down the river to undertake manual gauging as part of the management of getting the water to where it was needed. Although the worsening drought meant there was a drop off on WAMC monitoring activities due to no water in some rivers, there continued to be monitoring related to WaterNSW's Catch Store Release (CSR) activities. New and changed administrative costs also impacted on WaterNSW's water monitoring costs, with changes to the processes for collecting and publishing data (prior to new laboratory contracts) and the introduction of NRAR's compliance requirement in this period. However, although the submission includes information on algal monitoring and gauging activities, there is no reliable data to quantify the other potential drivers of operating expenditure to explain the 2017/18 spike above the IPART determination.

Over the course of the 2016 determination period, WaterNSW has better incorporated the transferred functions into its works management system to better manage the monitoring work. This has allowed WaterNSW to be in a better position to develop the forecasts for the 2021 determination period. In addition, the WAMC monitoring activities are now captured under the WaterNSW's certified quality management system.

WaterNSW comparative analysis of market costs and its derivation of efficiency targets for its monitoring activities have been set out in its Water Monitoring Review Project - Derivation of Efficiency Targets paper, which had an objective '*to demonstrate that our operating model is comparable in cost and service level to alternative operating models, such as outsourcing. If we can show this then we are efficient and effective*.' As part of the project, WaterNSW approached a range of comparable organisations with the objective of gathering data to facilitate direct external benchmarking. In order to complete the assessment, WaterNSW:

- Confirmed the ability to model the costs of undertaking monitoring in-house
- Applied the model to the Greater Sydney Monitoring Network (outsourced at that time)
- Compared the modelled Greater Sydney Monitoring cost with the established outsourced contract.

Based on the analysis completed, WaterNSW determined that the costs of undertaking Water Monitoring in-house using the resourcing levels, structure and work practices in place in 2018 was 12% above the market rate. Therefore, an efficiency target of 12% was agreed with staff, with a range of opportunities identified to bridge the gap. This outcome was used as the basis for the business case, and the Board Paper, which supports the water monitoring expenditure included in WaterNSW's Pricing Submission for the 2021 determination period.

Further analysis completed by WaterNSW to identify and quantify efficiencies included developing heat maps of each of its monitoring sites to inform where its staff were located and how many were at each location. This information was used to optimise staff at various locations where feasible, assess the multi-skilling potential of staff carrying out the required tasks, and identify where there were opportunities for better technology and improved data management to allow the monitoring tasks to be completed more efficiently. This included scoping roles within the teams to remove administrative roles and make the management layers more efficient.

Duplication of monitoring around the Greater Sydney borders, due to the monitoring functions in Greater Sydney being carried out by a different organisation prior to the transfer of functions to WaterNSW, meant that in some locations there were two lots of monitoring being carried out. This has led to rationalisation of the work to remove this duplication, with improved efficiency allowing the previously required work effort to be spread out to other activities and locations.

Drought has also played a role in the water monitoring that has been required during the current period, especially in relation to the algal monitoring requirements. Increased blue-green algae outbreaks that occur during drought periods require a step-up from the default monthly sampling, resulting in increased monitoring activities and laboratory work and subsequently increasing the incurred expenditure during these times.

The end result of the assessment was that for the Greater Sydney area served by WaterNSW, there were no major efficiencies to be gained as the water monitoring functions provided were as efficient as the market could deliver. The main efficiencies that have been realised over the 2016 determination period and have been taken into the 2021 determination period relate to the water monitoring services provided outside the Greater Sydney area.

WaterNSW has also gained some cost efficiencies during the current period through the process of rationalising its contracts with the laboratories who undertake the analysis on its behalf, resulting in there now being three contracts with two laboratory companies.

We challenged WaterNSW as to what extent the lower than forecast costs in the current period possibly reflect lower activity rather than efficiency gains. WaterNSW responded that the only area where 100% of the activity expected was not completed was for the groundwater bore monitoring (under W02-01) due to the requirements not being fully established when the assets were transferred. However, as this only makes up part of the overall water monitoring activities, this is not considered to have had a material impact on the lower costs during the 2016 period. The majority of operating costs for water monitoring activities are for salaries, and although there have been some savings in travel due to the rationalisation of site visits, this is not considered to be a material difference.

There have been definitive savings in the laboratory costs over the 2016 period, with rationalisation of laboratory contracts and elimination of duplicated work for the same sites resulting in reduced expenditure for the same monitoring activities. Previously, when WaterNSW was using the Department of Industry laboratories for its sample analysis, it was paying a total of $520,000 a year for its services. For 2018/19 and 2019/20, when WaterNSW has contracted the analysis services to an outside laboratory. This has resulted in lower operating costs respectively for the same suite of analytes. Therefore, WaterNSW is able to demonstrate that its water monitoring laboratory costs for SWAMP sampling, groundwater quality sampling and MDBA and DBBRC water quality lab analyses are now in the region of a third of what was being incurred by DPIE prior to the transfer of the water monitoring assets and after the activities were initially transferred to WaterNSW.

8.1.5 Future period

The forward costs that WaterNSW has developed for the 2021 determination period mirror the current year expected expenditure. WaterNSW has developed its forecasts based on how it operates the business, with difficulties encountered when trying to retrofit the expenditure to DPIE's W-code framework. Therefore, although the 2021 determination period shows a reduction on the 2016 determination period actuals, WaterNSW has not provided a detailed breakdown of the costs for the water monitoring service activities for each year of the forward period that aligns with the W-code framework.

WaterNSW has provided a detailed breakdown of the water monitoring operating costs for each year of the 2021 period, broken down by account code (e.g. payroll allocations, overhead salaries, corporate overheads). We confirmed that this reconciles with the expenditure proposed in the pricing submission.

The scope of work required to deliver the WAMC water monitoring function is substantially unchanged, in terms of the sites being monitored that were included in the program being included in the 2016 determination period. The existing levels of service as determined by DPIE-W and NRAR and as currently provided by WaterNSW remain unchanged.

As noted in the previous section, substantial efficiencies have been gained and factored into the forward period forecasts, through an efficiency review which looked at staffing, technology and processes.

Key efficiencies that were identified and developed by WaterNSW for its water monitoring include the following:

- Some efficiencies have been realised by removing duplication of monitoring work at some sites around the Greater Sydney borders

- The location of staff was reviewed and optimised for efficiency, including increasing staff levels at the Orange office. The heat mapping analysis to assess where water monitoring staff were located and locating them to where they were needed has also resulted in a new office being located in Coffs Harbour. A 3% efficiency gain was estimated for these changes.
- The transfer of water monitoring assets to WaterNSW included some State Water sites. This has allowed WaterNSW to bring in the same data management systems and also gain efficiencies from rationalising co-located and adjacent sites. Additionally, due to a lack of confidence in its data at some of its older sites, State Water were getting WaterNSW staff to monitor these stations. The data improvements, site rationalisation, and the removal of the additional work that was being carried out on State Water's behalf has resulted in efficiencies of 2-3% being estimated.
- Trialling new technology logging devices and working with staff as to possible time-savings from improved data management has been estimated to achieve an efficiency of around 1.5%
- Remote controlled devices for gauging have been introduced to replace more time-intensive manual gauging activities (e.g. having to wade through rivers to reach the gauging boards). Although these improvements do not apply at every location, WaterNSW's analysis has showed that a 2% efficiency can be achieved if the technological improvement is implemented at all sites where it is an option.
- Back office improvements to streamline processes and avoid re-work have been estimated to achieve efficiencies of 2%.

Collectively through implementing these improvements, WaterNSW identified that efficiencies in the region of 11-12% could be achieved and could be measured and modelled to assess the level of success.

In addition, efficiencies have been achieved during the 2016 determination and will be able to be carried across into the 2021 determination period through the reduction of laboratory contracts.

As part of its optimisation work across the 2016 determination period, WaterNSW has also added three full time planner positions into the organisation structure to forecast the workload that needs to be delivered. This workload has been mapped into the future and also programmed to be as efficient as can be delivered based on the optimisation and rationalisation work that has been completed during the current period. The three planners have replaced six previous positions.

Whereas DPIE had separate teams for different tasks, WaterNSW has looked to multi-skill its monitoring staff so that one person can do the surface, groundwater and take monitoring rather than having to send out a different person to complete each type of monitoring activities. Additional team efficiencies have been realised through the introduction of Team Leader positions to improve staff resource management.

These efficiencies have been incorporated into WaterNSW's forecasts for its water monitoring activities in the 2021 determination period.

WaterNSW uses a master planning schedule to develop its monitoring program, with the resource, time and frequency requirements for each site being used to build the costs using a bottom-up approach. The overall cost forecast is then split out for monitoring requirements for the different parts of WaterNSW's overall business, with all WAMC-related costs being assigned to the WAMC budgets. In addition, WaterNSW also considers that there is now a better understanding with DPIE related to deviations from the routine monitoring schedules and how these variations are costed for the forecasts.

Further water monitoring efficiencies are expected to be gained through the WAVE program, which includes improvements to WaterNSW's telemetry and SCADA systems. These efficiencies are expected to be reflected going into the 2025 determination period.

One major issue yet to be agreed is the potential future costs for monitoring of the impacts of coal seam gas extraction. A total of 70 new bores for monitoring the impacts of coal seam gas extraction have been funded outside of WAMC but once these bores have been developed and implemented, the ongoing operations and maintenance costs will be incorporated into the WAMC costs. WaterNSW considers that it is DPIE's intention that these assets will be transferred to WaterNSW. WaterNSW has also inherited a number of bores from an external entity. In total there are 78 bores that will need instrumentation and ongoing operating and maintenance expenditure.

WaterNSW has estimated indicative annual costs of $5,500 per bore for activities including visiting bores, collecting samples and sample analysis based on a schedule provided by DPIE. However, the testing requirements have not yet been formally agreed with DPIE and the suite of analytes may not be the same for each bore site. Potentially, these could be substantial costs (around $750k per year for all bores). As the requirements for the bores were not certain at the time of its proposal, WaterNSW did not included these costs. However, it now considered that the costs are sufficiently well known to be included within its WAMC

expenditure requirements. We note that the date for an agreement and the timing of the transfer has been delayed an a formal agreement is still not in place. Given the uncertainty relating to the scope and timing for expenditure for Coal Seam Gas bores, we have not made any allowance for this item in our recommended future operating expenditure.

8.1.6 Conclusion

Over the 2016 determination period, WaterNSW has demonstrated significant operating cost efficiencies in the water monitoring functions that were transferred to the business from DPIE.

The material gains have been realised as WaterNSW now does all the water monitoring state-wide, allowing it to operate as one entity and not three different organisations, to cover the monitoring requirements for WAMC, Greater Sydney and the rural valleys.

The efficiencies have been realised through the optimisation and rationalisation of staffing resources and locations, re-scoping of roles within teams, multi-skilling, improved technology and data management, and a proactive assessment of the workload to actively seek where the monitoring functions could be delivered better. Duplication of monitoring work has also been removed where this had been identified as an issue.

Although there are overall reductions in operating expenditure for the WAMC water monitoring services, as WaterNSW has aligned its costs to DPIE's W-code activities using best endeavours, its activities may not directly align with DPIE's activity structure. As a result, there may be some apparent movement between the 2016 and 2021 expenditure for individual activity codes that may not be fully comparable, for example the large decrease in expenditure for groundwater quantity monitoring between the two periods.

As the scope of work across the current and future periods is generally the same, the expenditure savings that have been identified to be carried across into the 2021 determination period may also suggest that the operating expenditure in the past was not efficient.

Further operating cost efficiencies are also expected to be realised across the 2021 period and into the following determination period as a result of the implementation of WaterNSW's capital expenditure WAVE program. This is expected to result in savings through improved data management and reporting. The WAVE program is intended to include a self-help portal which will allow data users to access their own data rather than making requests to the specific WaterNSW data team to provide the data.

8.2 W01 Surface water monitoring and W02 Groundwater monitoring – Capital expenditure

8.2.1 Background

For the capital expenditure for its water monitoring functions aligned to DPIE's W01 Water surface monitoring, W02 Groundwater monitoring, and W03 Water take monitoring activities, WaterNSW has recorded its actual 2016 determination period expenditure and 2021 determination period forecasts against the first activity code in each group. However, the 2016 IPART determination forecasts have been distributed between the individual ten activity codes that lie under the three overall W-codes. This is a different approach than has been done for the operating expenditure, where the 2016 IPART allowance, 2016 determination period actuals and 2021 forecasts are recorded for each individual activity within the group.

As such, at this time it is not possible to make any comparable analysis between the 2016 allowance, the 2016 determination period actuals, and the 2021 forecasts at the individual activity code level; this can only be done at the overall W-code group level.

8.2.1.1 W01 Surface water quantity monitoring current and future period capital expenditure

Figure 8-3 shows the expenditure for this activity group in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown.

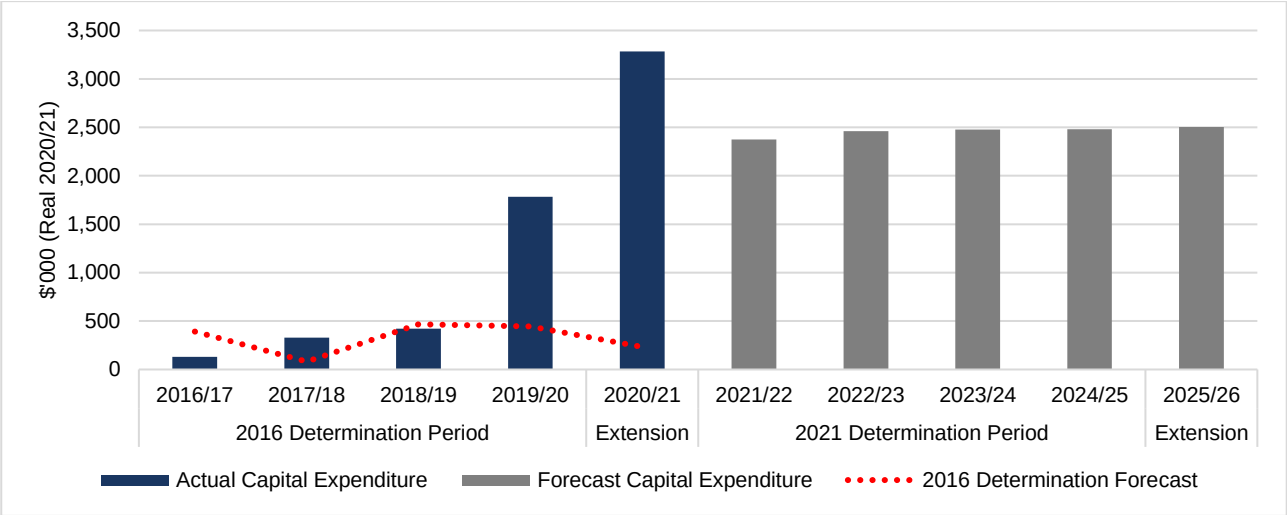

Figure 8-3 Current and future period capital expenditure for W01 Surface water monitoring

Table 8-5 presents the current period expenditure for this activity group, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-5 Current period expenditure for W01 Surface quantity monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	398	83	476	454	238	1,648	330
Actual	132	330	421	1,782	3,284	5,949	1,190
Variance	-267	247	-54	1,328	3,046	4,301	860

Table 8-6 presents the future period expenditure for this activity group, including the average annual expenditure across all years.

Table 8-6 Future period expenditure for W01 Surface quantity monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,374	2,462	2,477	2,479	2,503	12,294	2,459

Actual expenditure in the current period has averaged $1,190,000 per year. This is $860,000 per year (261%) higher than allowed for in the 2016 Determination, which averaged $330,000 per year.

The proposed expenditure for the future period averages $2,459,000 per year. This is $2,129,000 per year (646%) higher than the average annual expenditure allowed for in the 2016 Determination, and $1,269,000 per year (107%) higher than the average annual expenditure incurred during the current period.

8.2.1.2 W02 Groundwater monitoring current and future period expenditure

Figure 8-4 shows the expenditure for this activity group in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown.

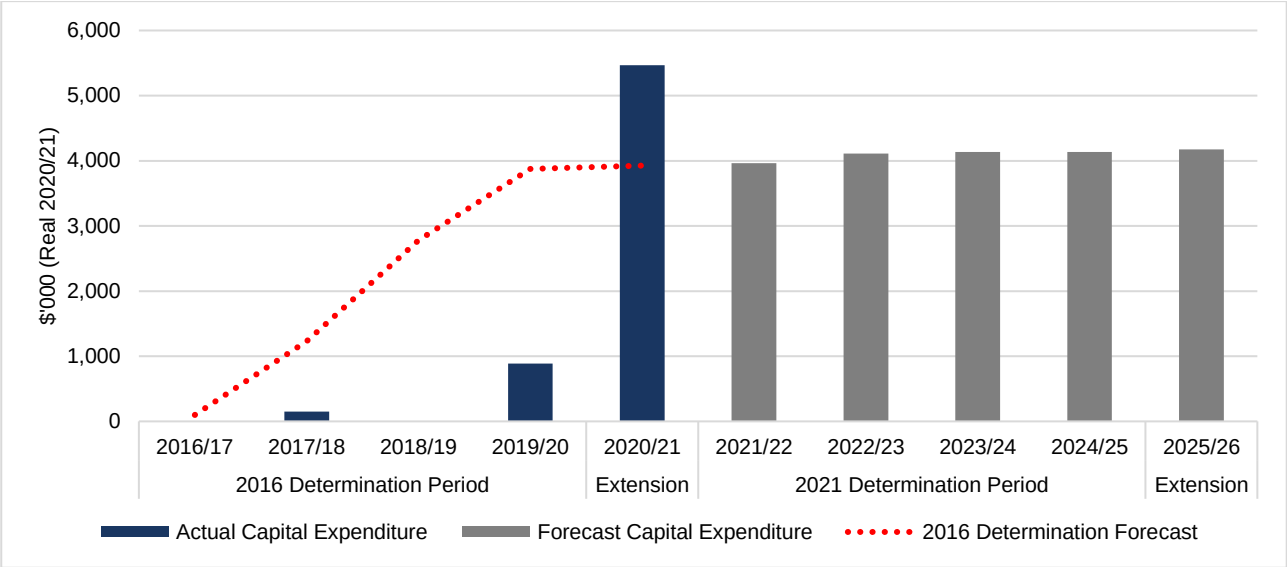

Figure 8-4 Current and future period expenditure for W02 Groundwater monitoring

Table 8-7 presents the current period expenditure for this activity group, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-7 Current period expenditure for W02 Groundwater monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	101	1,254	2,831	3,947	4,000	12,133	2,427
Actual	-	149	-	886	5,465	6,500	1,300
Variance	-101	-1,105	-2,831	-3,061	1,465	-5,633	-1,127

Table 8-8 presents the future period expenditure for this activity group, including the average annual expenditure across all years.

Table 8-8 Future period expenditure for W02 Groundwater monitoring

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	3,966	4,110	4,134	4,135	4,173	20,518	4,104

Actual expenditure in the current period has averaged $1,300,000 per year. This is $1,127,000 per year (46%) lower than allowed for in the 2016 Determination, which averaged $2,427,000 per year.

The proposed expenditure for the future period averages $4,104,000 per year. This is $1,677,000 per year (69%) higher than the average annual expenditure allowed for in the 2016 Determination, and $2,804,000 per year (216%) higher than the average annual expenditure incurred during the current period.

8.2.2 Driver for expenditure

The main driver for WaterNSW's water monitoring activities is DPIE's requirements. The associated capital expenditure on monitoring assets supports the water monitoring functions that WaterNSW is responsible for. The extent of the water monitoring asset base is relatively stable. Therefore drivers for expenditure include end of life renewal, obsolescence and potential increased remote monitoring of sites.

8.2.3 Output measures and performance

WaterNSW's output measures for the 2016 determination period for the water monitoring activity groups require a maintained network of monitoring bores providing the data necessary for surface, groundwater and water take management. Therefore, capital expenditure on monitoring assets is required to deliver the required outputs under each activity code.

8.2.4 Current period

The monitoring assets were handed over from DPIE when the responsibilities for these activities were transferred to WaterNSW in 2016.

However, WaterNSW did not receive all of the documentation that it expected to receive in order to be able to establish a detailed understanding of the expenditure items that made up the 2016 IPART allowance for capital expenditure on the monitoring assets. This included not being provided with business case documentation that sufficiently identified the projects and programs needed and the justified the expenditure requirements. Decisions for assets renewals, as well as data capture, could not be made with full confidence and local knowledge was found to be variable and could not be universally relied on for developing the capital program.

As a result, WaterNSW underspent in capital for its water monitoring services. Although there was an IPART allowance for completing water monitoring-related capital projects and programs across the 2016 determination period, WaterNSW considered it prudent to withhold expenditure until it had a better understanding of the assets that had been transferred and had identified the work needed to renew, replace, and upgrade the assets. This underspend against the IPART allowance was significant in the first three years of the 2016 determination period but expenditure ramped up in 2019-20 and is expected to exceed the annual allowance and make up some of the overall underspend by 2020-21.

An asset register was included in the *Deed of Business Transfer* documents received by WaterNSW from DPIE that provided information on the monitoring assets that were transferred. WaterNSW spent time reviewing and updating the asset register in order to confirm the asset information and establish a single source of truth. Initial condition assessment work identified that the generally the assets were in reasonable condition. However, additional and more detailed modelling work and validation through a small review of a specific area identified that of the 2,000 loggers, 600 were being considered as being in a poor condition. This resulted in a business case being prepared within 12 months of the monitoring assets being transferred to WaterNSW and allowed the financial impacts of renewing and replacing these loggers to be developed.

WaterNSW used a prioritisation approach to its assessment activities, taking into account the current condition, the priority of the actual monitoring location, the age of the infrastructure and whether the installed field equipment was still supported by the manufacturers. In some cases assets that were working satisfactorily, or where only certain components failed and needed to be replaced, were swapped out if they had become obsolete and were no longer supported. WaterNSW prepared an Approval To Spend business case for obsolete groundwater monitoring equipment in 2018 that was approved by the Management Committee on Investment Renewals, with works completed by the end of that year.

As the performance of the monitoring assets is not usually visually observable, bore material, condition and age have been used to develop the program of works for the monitoring assets. Steel-cased bores have been targeted over more modern PVC-lined bores and dip tests and camera inspections have been used to assess the condition of the bores along their total extent. The age of failing assets has also been used to develop the forward renewals program. There is a 2-3 year program of calibration, and data validation is also being recorded during regular site visits. The maintenance history recorded in WaterNSW's Computerised Maintenance Management System, including unscheduled visits, is also being used to develop the future capital works program.

WaterNSW did not have any of this asset data when it inherited the assets, making it prudent to improve its asset information before making significant asset expenditure decisions.

The key outcomes of the asset inspections and performance monitoring that WaterNSW completed during the first few years of the 2016 determination period were that although the surface water monitoring assets were in fairly good condition, and there was little need for rapid replacements of the infrastructure, there were issues with the groundwater monitoring assets. WaterNSW's asset assessments identified that there was urgent work required to upgrade and renew the groundwater monitoring network. This need had been driven, at least in part, by pre- asset transfer assessments in 2012 that identified that investment in the groundwater monitoring assets was needed but which was not actioned until post-transfer in 2017. The issues that were originally identified in 2012 compounded over this five year period. As only approximately 10% of the groundwater bores transferred to WaterNSW have instrumentation, detailed assessment work was needed post-transfer in order to quantify the issues and develop the renewal requirements.

8.2.5 Future period

WaterNSW's Water Monitoring Renewals Program is a rolling program of works and will continue into the 2021 determination period. WaterNSW is proposing an increase in the capital expenditure for water

monitoring infrastructure for the 2021 determination period, from the 2016 allowance and what it has spent across the 2016 determination period, to meet the needs that the program has identified.

A traditional asset management lifecycle is generally difficult to apply to an entire water monitoring site but can be applied to individual components. As a result, the asset management approach at a site level is a mix of 'run to fail' components and assets that are subject to monitoring/calibration, with repairs to extend the useful life.

The lifecycle strategy for the surface water and groundwater monitoring assets is based on a nominal useful life of seven years for electronic components, but also taking into account the component's condition and the environment. As the assets can be located in harsh environments, often some components fail before seven years. In addition, due to the technological nature of some of the assets, instrumentation infrastructure can become obsolete before the nominal end of life. Obsolescence has been an issue during the 2016 determination period, especially in water quality monitoring where technological improvements have taken place in short periods of time. Although these issues may mean that WaterNSW cannot replace on a model-by-model basis, like-for-like replacements are generally able to be facilitated. Some monitoring components are 'run to fail' based on a low consequence of failure and cost, e.g. loggers and level sensors are regarded as cheap, disposable, and easy to replace components. Calibration and repair of components is undertaken where applicable, with replacement undertaken when it becomes economically beneficial, e.g. when motherboard and firmware issues become cost prohibitive to repair compared to the cost to replace the components.

The development of WaterNSW's capital program for its water monitoring assets has been carried out in accordance with its Asset Class Strategy for water monitoring assets. WaterNSW's suite of Asset Class Strategy documents specify planning guidelines and asset requirements for related sets of assets. They consolidate technical knowledge regarding the long-term care of the relevant type of equipment and systems. An annual renewals budget for its water monitoring assets is developed based on asset condition, criticality information, and instrument data; and includes the expected life span of an asset before its failure. This also takes into account continuous development of the planned maintenance and renewals strategies through an annual review of the risk profile for the assets. This risk assessment is consistent with the corporate risk matrix and the financial model matrix.

Monitoring sites used for flood forecasting and operational purposes, which relates to any surface water site, have the highest criticality. Criticality is site-specific and can depend on other monitoring sites in the locality, e.g. if there is an outage at one station, this may not be an issue. Across the network, the criticality affects the design of the site.

The criticality for flood warning sites is defined by Bureau of Meteorology requirements. The requirements include two sites for communication purposes although these can be two monitoring stations close to each other rather than needing to be separate sites. Typically there are multiple approaches at major sites to manage any asset failures, including the use of manually-read gauge boards or installing temporary equipment, for example after bushfire damage, while replacement infrastructure is procured.

Groundwater network monitoring sites have a lower criticality due to groundwater being a slower-moving resource, and with the purpose of the monitoring being longer-term resource assessment. Groundwater assets generally have a longer asset life due to the environments they are located in but can also include considerably more expensive asset components, e.g. bore casings. The requirements for groundwater site visits are set by DPIE, with the criticality for these assets aligned with both DPIE's and WaterNSW's risk appetite.

The risk appetite of the water monitoring sites is assessed through reviews of the sites, although generally this does not result in any major changes to the operations at any location.

DIPE is currently undertaking a review to investigate monitoring stations in order to determine how accurate the station needs to be in performing its function. As the monitoring data goes to multiple users, DPIE's review has included the criticality of specific sites and how important a monitoring station is depending on its accuracy. The review may result in operational changes to some monitoring sites. WaterNSW has worked with DPIE on this review in relation to the price determination and any expenditure impacts. DPIE and WaterNSW has agreed that any outcomes from the review should be cost neutral and that if external funds are required but not available, any unfunded expenditure will form the basis of the next pricing submission.

Typically, the renewals included in the program of works are considered to be like-for-like replacements, and are based on asset condition or if the assets have already failed. In addition WaterNSW is increasing the installation of telemetry through its program of works, with any sites visited more than four times per year for manual meter reads being telemetered. The increase in telemetry, with approximately 2,000 sites requiring this function, will be included as part of the WAVE program.

The increased real-time remote monitoring of the sites will reduce the operating costs involved with manual reads. These operating cost savings will not be realised until after the new capital infrastructure is in place and are expected to impact the later years of the 2021 determination period as well as influence the following pricing submission.

Higher levels of service and improved data reporting and management are also expected through the provision of continuous real-time data from the increased number of sites with telemetry. In addition, there are safety benefits from reducing the number of site visits and manual reads.

The forward capital program expenditure is set out in WaterNSW's Water Monitoring Asset Renewal – All in One Business Case. We confirmed that the proposed expenditure reconciled with the information that has been included in the AIR/SIR and WaterNSW's pricing submission.

The Water Monitoring Asset Renewal – All in One Business Case sets out that the forward forecasts have been based on contemporary pricing arrangements. WaterNSW's procurement strategy has been to engage all water monitoring suppliers under contract, with a preferred instrument list created to ensure consistency and costs savings for bulk buy. The contracts came into effect last year and run for three years. WaterNSW's forward estimates are based on current market prices, with these required to be reviewed on a three year basis in accordance with the corporate procurement process. Supplier contracts are not able to be extended without a market review being completed. Although these arrangements came into place during 2019/20, no analysis has been completed to assess whether costs savings in water monitoring assets have been achieved in comparison to previous years.

WaterNSW considers that it has incorporated efficiencies into the forward forecasts for surface water monitoring and groundwater monitoring capital expenditure. In part these have been realised based on economies of scale through WaterNSW undertaking all of the water monitoring for the State, with this resulting in both operating and capital expenditure efficiencies. New technology has also been identified as resulting in more efficient capital expenditure, with Water NSW using trials of new equipment in the field to confirm improvements before rolling the equipment out to a broader area.

However, generally the changes and improvements in the equipment do not lead to reduced capital expenditure but with a trade-off to reduce the operating costs. Technology changes have a direct impact on the water monitoring work that is undertaken by WaterNSW and the way the activities are undertaken, with savings achieved through not having to visit sites as often as before. The WAVE program is also part of the capital improvements leading to more efficient operating expenditure for the activities that WaterNSW is undertaking during the 2021 determination period.

8.2.6 Conclusion

Although WaterNSW initiated its Water Monitoring Renewals Program in 2017, as identified in the previous section, significant asset information gaps meant that there was a need to undertake a detailed review of the assets that had been transferred in order to be able to make prudent and efficient decisions for the renewal of its water monitoring infrastructure.

This has impacted on the capital expenditure of WaterNSW over the 2016 determination period, with an overall underspend against the IPART allowance driven by the very limited spend in the first three years of the period. Expenditure in the last year of the period has been closer to the allowance for the year and it is expected to significantly exceed the allowance in 2020-21. The proposed capital expenditure in each year across the 2021 determination period is below the total that WaterNSW expects to spend in 2020-21.

We consider that under the circumstances, WaterNSW's approach to improve its information to better inform its decision-making has been sensible, and subsequently allowed it to adopt a more prudent approach to the renewals program for its water monitoring infrastructure. This would be expected to lead to a more efficient program of works than if it had not completed the upfront detailed assessment of the asset base it had inherited from DPIE in 2016.

Although the capital expenditure is forecast to increase in the 2021 determination period over the 2016 allowance and the actual spend incurred over that period, the combined operating and capital costs for the water monitoring activity groups show a significant overall decrease in expenditure from the current period into the future period. This suggests that substantial efficiencies have been gained by transferring the WAMC water monitoring functions to WaterNSW in 2016. Additional operating expenditure efficiencies are expected to be realised for WaterNSW's water monitoring activities into the 2025 determination period from the proposed capital expenditure on the WAVE program.

8.3 W04 Water Modelling (surface and groundwater)

8.3.1 Background

We have combined the discussion for activities W04-01 Surface water modelling and W04-02 Groundwater modelling because of the similarities in their scope and the resources used by DPIE to deliver these activities. The scope of each modelling activity is the development, upgrade, and application of water resource management models. These models are used to inform water planning, performance assessment against statutory requirements, interstate agreements, regional water supply optimisation and third-party impacts on stakeholders in New South Wales. This activity is undertaken by DPIE.

Figure 8-5 shows the operating expenditure for the surface water modelling activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

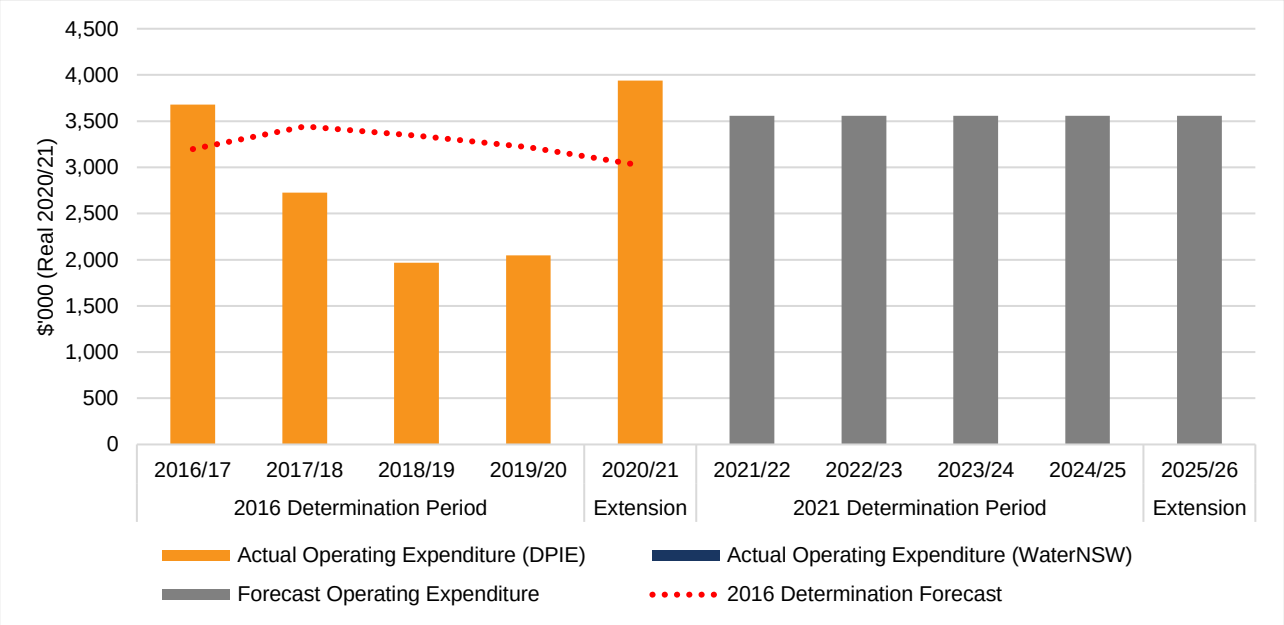

Figure 8-5 Current and future period expenditure for W04-01 Surface water modelling

Table 8-9 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-9 Current period expenditure for W04-01 Surface water modelling

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	3,259	3,508	3,406	3,279	3,080	16,531	3,306
Actual	3,680	2,726	1,967	2,046	3,939	14,359	2,872
Variance	421	-782	-1,438	-1,233	859	-2,172	-434

Table 8-10 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-10 Future period expenditure for W04-01 Surface water modelling

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	3,558	3,558	3,558	3,558	3,558	17,789	3,558

Actual expenditure in the current period has averaged $2,872,000 per year. This is $434,000 per year (13%) lower than allowed for in the 2016 Determination, which averaged $3,306,000 per year.

The proposed expenditure for the future period averages $3,558,000 per year. This is $252,000 per year (8%) higher than the average annual expenditure allowed for in the 2016 Determination, and $686,000 per year (24%) higher than the average annual expenditure incurred during the current period.

8.3.1.2 W04-02 groundwater modelling

Figure 8-6 shows the expenditure for the groundwater modelling activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

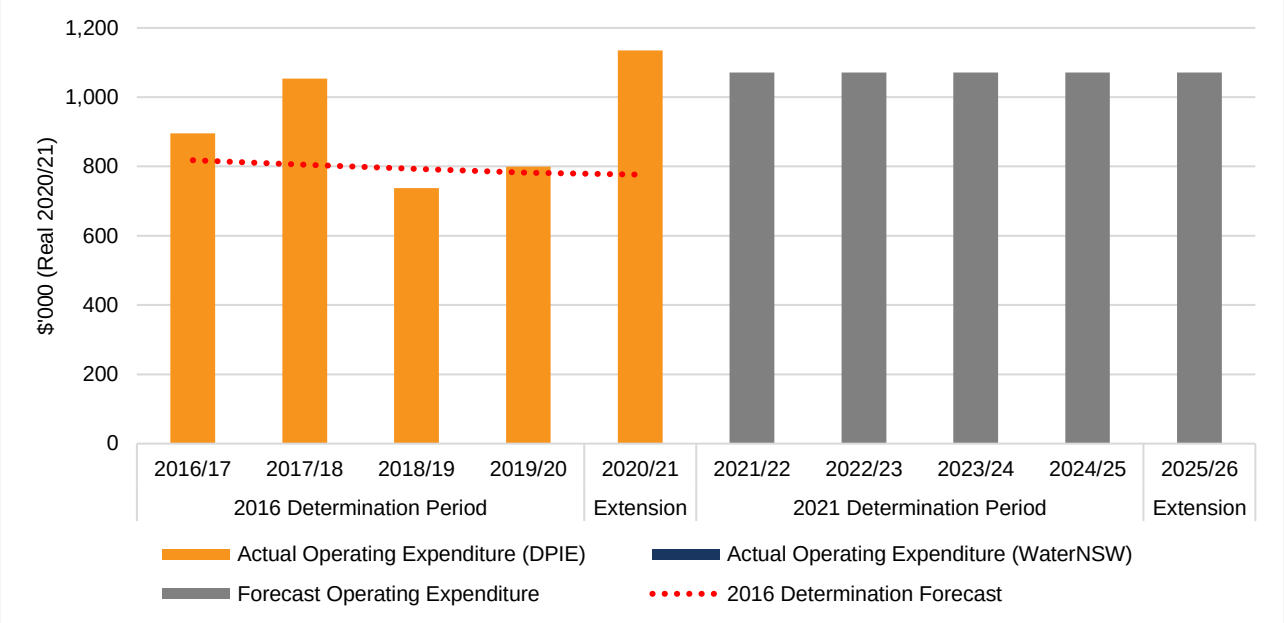

Figure 8-6 Current and future period expenditure for W04-02 Groundwater modelling

Table 8-11 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-11 Current period expenditure for W04-02 Groundwater modelling

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	834	820	808	797	791	4,050	810
Actual	896	1,054	737	799	1,135	4,621	924
Variance	62	233	-71	2	344	571	114

Table 8-12 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-12 Future period expenditure for W04-02 Groundwater modelling

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	1,071	1,071	1,071	1,071	1,071	5,354	1,071

Actual expenditure in the current period has averaged $924,000 per year. This is $114,000 per year (14%) higher than allowed for in the 2016 Determination, which averaged $810,000 per year.

The proposed expenditure for the future period averages $1,071,000 per year. This is $261,000 per year (32%) higher than the average annual expenditure allowed for in the 2016 Determination, and $147,000 per year (16%) higher than the average annual expenditure incurred during the current period.

8.3.2 Driver for expenditure

Surface water and groundwater modelling is fundamental for establishing water planning and management arrangements and also measuring the effectiveness of these arrangements. These activities underpin water management implementation (W06) and water management planning (W06).

8.3.3 Output measures and performance

W04-01 surface water modelling and W04-02 groundwater modelling had similar output measures in the current period and for both activity codes the output measures and performance targets have been met in the current period. The first output measure across the codes was that models would be in place (measured by a count of model) and the volume of modelling analyses undertaken. We discussed with DPIE the subjectivity in defining a modelling analysis and the difficult in quantifying these measures as the target output for each activity runs into the thousands. A count of the number of analyses does not convey the varying level of effort associated with analysis or the varying level of value derived.

The performance indicators for both activity codes is the coverage of the models across regulated rivers (100% target) and unregulated rivers (50% target) and groundwater shares (50% target). These performance measures were also met during the current period.

8.3.4 Current period

For surface water modelling, actual operating expenditure in the current period has been below that forecast at the time of the 2016 Determination by an amount of $2.1 million. However, DPIE has also received external funding of $2.6 million in the current period which was used for data collecting and modelling to support floodplain modelling and for the rebuilding of models to support Basin Plan activities. For groundwater modelling, actual expenditure exceeded that forecast at the time of the 2016 Determination by $571k across the current period. External funding of $371k was received in the current period for groundwater modelling.

The number of resources (FTE) that undertake modelling activities in the current period is detailed in Table 8-13.

Table 8-13 Modelling resource level in the current period

Category	2016/17	2017/18	2018/19	2019/20	2020/21
Surface water modeller	22.2	18.1	18.3	26.0	28.0
Groundwater modeller	5.2	4.0	4.0	4.5	5.0
Additional support staff	0.0	0.0	0.3	1.3	2.0

Source: DPIE

DPIE notes in its submission that modelling is an area where there is increasing demand from stakeholders for information and for improved modelling capability and accuracy and considers that as a consequence, that only the highest priority modelling activities are undertaken. We challenged DPIE to expand on its understanding of the cost and service trade-offs in this area and how it is managing them. DPIE set out that it has developed a draft modelling strategy (April 2020) and draft Sustainable Modelling Workplan (March 2019) to aid in documenting and managing this balance. The strategy identifies objectives for the modelling team and short term (to June 20201) and medium term (2021 to 2025) strategies to achieve these objectives. We have reviewed these two documents and consider them useful starting points for DPIE to manage service delivery for modelling. However, we note that the documents have the following areas for improvement, indicating that DPIE is at a relatively low level of maturity in this area:

- Both documents are at a draft stage and have not been endorsed for implementation
- The strategy does not quantify the objectives nor provide a link from the strategies into the actions in the workplan
- Neither the strategy nor workplan define expected levels of service or performance criteria. The workplan does include a section on program monitoring and evaluation.

The workplan does include resource estimates and a risk based prioritisation of work program which we discuss in the next section. However, we consider that these can be improved along with the strategy. Some businesses that perform the same function are taking an asset management approach to the models and the service they provide. This requires definition of service requirements based on stakeholder expectations and identification of decision criteria for trading off cost and these service requirements. The asset management

approach also takes a long term planning horizon across model build, maintenance, rebuild and importantly, operation. This approach also tests varying scenarios of cost and risk to inform decision making on the appropriate expenditure program over the planning horizon. We consider that DPIE will realise considerable benefits (reduced costs and/or improved service) through adoption of a similar approach the extends and formalises what it has commenced by way of the strategy and workplan.

DPIE was able to detail different measures and checks and balances such as calibration and peer review that help establish the service quality expected from its modelling. However, it is difficult to understand how these drive expenditure based on the information we have been provided.

8.3.5 Future period

The operating expenditure forecasts for the future period are based on 19.13 FTE for surface water modelling and 6.46 FTE for groundwater modelling. These forecasts are net of a substantial efficiency challenge applied by the business as summarised in Table 8-14. This shows an increase of one FTE for groundwater modelling compared with the current period and a decrease nine FTE for the current period. However, we understand that the current period figure includes resources that are externally funded.

Table 8-14 Requested resources and efficiency challenge for modelling activities for future period

	Surface water modelling	Groundwater modelling	Total
FTE requested	25.03	12.3	37.33
Efficiency challenge	-5.9	-5.85	-11.75
FTE included in pricing proposal	19.13	6.45	25.58
Efficiency challenge (% of requested)	-24%	-48%	-31%

The workplan includes a much higher estimate of the future resource requirements for the modelling activities. However, DPIE explained that the workplan includes effort for building new models where generally only the resources for model maintenance are included in the WAMC pricing proposal. The workplan includes a risk-based prioritisation of modelling work programs. DPIE confirmed to us that meeting statutory requirements are non-negotiable and the highest priority. The risk methodology compares the risk profile for a “base” resourcing level compared with a “proposed” level of resourcing and “proposed plus” level of resourcing. The intent of this scenario testing is to demonstrate the activities the modelling team will be able to focus on in coming years and those for which less effort will be invested.

While the workplan provides insight into DPIE’s prioritisation of effort for modelling, it has relied on other resource estimates to inform its pricing proposal. The resource estimate for surface water modelling is a top-down model at the program level. In comparison, the resource estimate for groundwater modelling is a detailed, bottom-up model across the forward program at a task level with a link to individual resources. This model is approaching what we consider to be good practice for resource estimating. We did not identify resource estimates for any other activities that approached the level of rigour undertaken for groundwater modelling. We note that despite this apparent rigour, the groundwater modelling activity has been subject to a 48% internal efficiency challenge compared to that derived from the model. While this may also reflect an internal concern with the link between the level of service required from modelling and costs (as we have set out), it also calls into question the comparative basis for the efficiency challenge across activities.

8.3.6 Conclusion

DPIE is proposing expenditure for surface water modelling that is 24% higher than actual expenditure in the current period and expenditure for groundwater modelling that is 16% higher than actual expenditure in the current period. The increases are despite all output measures and performance indicators being achieved in the current period and the end outcome that modelling contributes to: water management implementation and planning being largely business as usual between the current and future periods.

Rather than increased output, a key concern of DPIE for these activities is the increased demand for information from stakeholders and for more accurate information. While DPIE has commenced putting in place a framework that will allow it to make decisions that transparently trade off service and cost, this framework is relatively immature and has not been implemented.

Proposed expenditure for the future period for W04-01 surface water modelling is $252,000 per year higher than the average annual expenditure allowed for in the 2016 Determination and proposed expenditure for W04-02 Groundwater modelling is $261,000 per year (32%) higher than the average annual expenditure

allowed for in the 2016 Determination. In the absence of a clear need for increased output, we recommended in the draft report that expenditure be maintained at the same level as the 2016 Determination efficient forecast.

In response to the draft report, DPIE stated that the proposed adjustments were unsubstantiated and posed risks to evidence based decision making. In conducting this review, we sought information from DPIE to substantiate why its resource estimates for delivery of WAMC services at the level that it is obliged to provide. The information provided by DPIE for W04-01 Surface water modelling to substantiate its resource estimates are at a low level of maturity. We have not been provided with evidence to substantiate the step change in expenditure proposed. We agree that there is a paradox for W04-02 Groundwater modelling: this is an activity for which we observed some of the most mature resourcing planning but it is also the activity to which DPIE applied its internal efficiency challenge while passing over other activities for an efficiency challenge.

As detailed, DPIE has achieved outputs measures and performance targets in the current period for both modelling activities and the future period is largely business as usual. An opportunity for DPIE is to better document the level of service provided by its modelling and engage with stakeholders (particularly those who pay for this service) as to the appropriate balance between costs and the level of service provided. This will also enable it to better communicate outputs and performance in delivering these services. Based on the additional information provided by DPIE, we consider that the level of efficient expenditure for the future period for W04-02 Groundwater modelling should be in line with the expenditure in the current period as current period expenditure represents a more recent measure of actual expenditure requirements and in the current period outputs and performance has been achieved. This recommendation results in a reduction in average annual expenditure for this activity of $146,000 (which is $275,000 higher than recommended in our draft report): For surface water modelling current period expenditure is lower than that forecast at the time of the 2016 Determination due to external funding which has supported WAMC activities. Therefore we recommend that the efficient expenditure for surface water modelling be maintained in line with the 2016 Determination forecast rather than that in the current period.

While we consider that the modelling activities are an area where DPIE will achieve catch-up efficiencies in the future period, we recognise that DPIE has applied its own efficiency challenge and therefore have not applied a catch-up efficiency in our recommended expenditure.

8.4 W04-03 Water resource accounting

8.4.1 Background

The scope of this activity is the compilation, storage, management, reporting and publishing of surface and groundwater quantity and quality data and information to customers, stakeholders and the general public. This data is required to meet statutory reporting obligations under state and Commonwealth legislation, as well as inform water policy, planning and management. This activity is undertaken by DPIE.

Figure 8-7 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

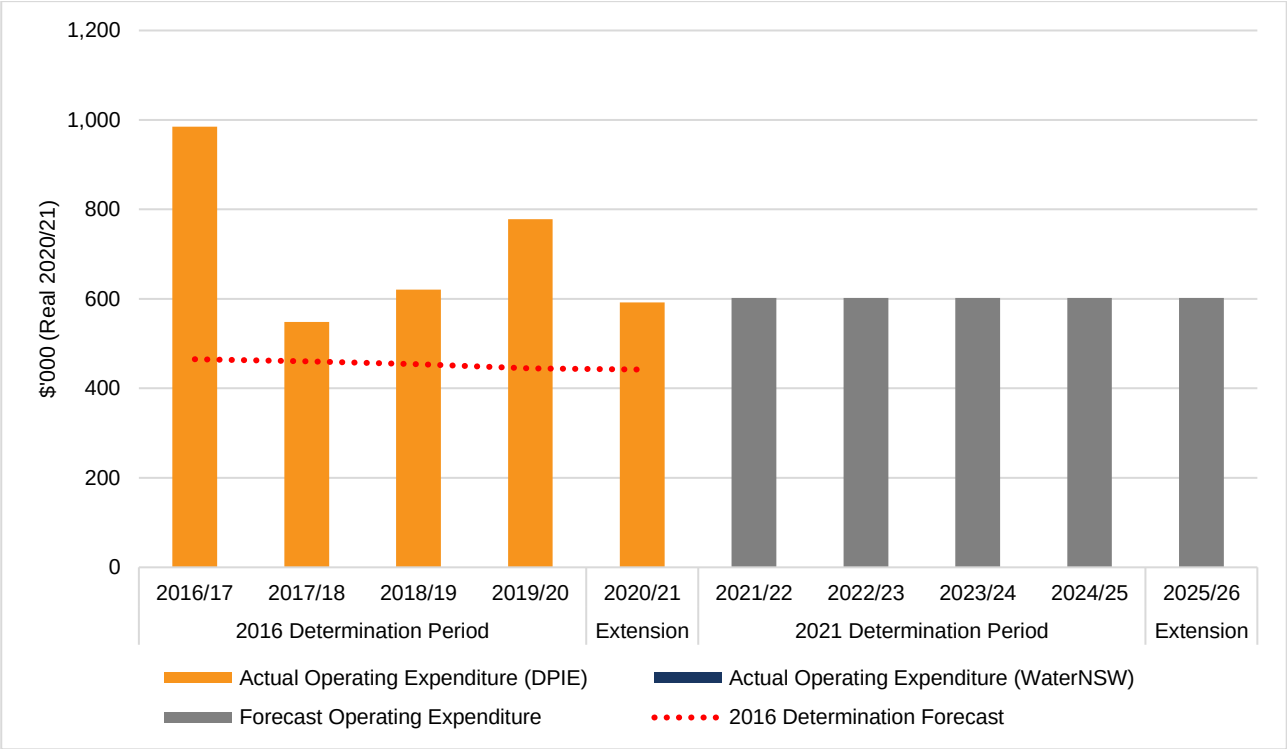

Figure 8-7 Current and future period expenditure for W04-03 Water resource accounting

Table 8-15 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-15 Current period expenditure for W04-03 Water resource accounting

	Expenditure ($',000) - (Real 2021 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
Budget (2016 Determination)	474	469	463	453	450	2,310	462
Actual	985	549	621	778	592	3,525	705
Variance	511	79	158	325	142	1,215	243

Table 8-16 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-16 Future period expenditure for W04-03 Water resource accounting

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	602	602	602	602	602	3,011	602

Actual expenditure in the current period has averaged $705,000 per year. This is $243,000 per year (53%) higher than allowed for in the 2016 Determination, which averaged $462,000 per year.

The proposed expenditure for the future period averages $602,000 per year. This is 140,000 per year (30%) higher than the average annual expenditure allowed for in the 2016 Determination, and $103,000 per year (15%) lower than the average annual expenditure incurred during the current period.

8.4.2 Driver for expenditure

Water resource accounting is a fundamental requirement for meeting obligations under the Water Management Act 2000 and Water Act 2007. Water accounting information is required for the review and evaluation of water sharing plans and for monitoring and reporting of water use, particularly in the Murray Darling Basin.

A key output is the General Purpose Water Accounting Reports which are produced under the Australian Water Accounting Standard 1. DPIE reports that these reports were initially developed with significant

stakeholder engagement. The requirements are well prescribed and have been matured through eleven years of reporting.

A change in requirements is that more complex reporting requirements have been required in recent years to meet Basin Plan compliance accounting requirements. DPIE reports that these increased reporting requirements have been captured in the last two years of actual expenditure in the current period and have been reflected in the future period forecasts.

8.4.3 Output measures and performance

The output measure for this activity is that water accounting reports and ad-hoc studies are prepared as required covering all valleys and sources. The output measures and performance indicators set at the time of the 2016 determination have been met in the current period

8.4.4 Current period

This activity consolidates water data from multiple sources to produce consistent, quality-assured and validated data. For this purpose, data is drawn from a combination of local, state and Commonwealth government agencies – including local governments, WaterNSW, bordering state governments, environmental water managers, the Murray-Darling Basin Authority and the Bureau of Meteorology – as well as private irrigation corporations.

The consolidated water resource accounting data is disseminated both internally and externally. External data is made publicly available through General Purpose Water Accounting Reports, developed under the Australian Water Accounting Standard 1, and various online dashboards. General Purpose Water Accounting Reports are used for water sources with adequate data coverage and are annually focussed, although a range of historical information and analysis is also included. For other water sources, online dashboards are used, displaying water usage, trading and allocation data, as well as data on environmental water.

This data is used to meet a number of state and Commonwealth reporting requirements, as well as support the development of various statutory and planning documents. Within New South Wales, this data is used to inform activities such as the review and development of water sharing plans, Natural Resources Commission audits, State of the Environment reporting and usage forecasting for IPART. At a Commonwealth reporting level, this data is used to meet reporting requirements such as those under the *Water Act 2007* and the Murray-Darling Basin Plan. A broad range of other project support and information requests are also met by the consolidated water resource accounting data.

8.4.5 Future period

The work program for the forward period is largely similar to the later years of the current period. DPIE will continue to produce outputs such as the General Purpose Water Accounting Reports, as well as continue to provide data to inform business support functions such as the review of IPART usage forecasts and the performance of system availability analyses for critical drought resource management. DPIE also intends to:

- Expand the coverage of the General Purpose Water Accounting Reports and transition these to a web-based platform, allowing data to be downloaded by users
- Migrate its Australian Water Accounting Standard 1 accounting process to a dedicated Water Resource Accounting System
- Continue the development of its customised, externally funded water resource accounting system.

However, as noted in Section 8.4.1, the average annual expenditure proposed for the future period is 17% lower than the average annual expenditure incurred during the current period. This may be due to the data automation techniques that are being, or will be, utilised for data ingestion and General Purpose Water Accounting Reports, as well as the efficiencies that are purported to be realised from its customised, externally funded water resource accounting system that is under development.

We requested DPIE to demonstrate the basis of its expenditure forecasts for the forward period which are based on an estimated 3 FTE per year. DPIE advised that being more cyclic in nature than other activities allowed forecasts to be made from historic costs with reasonable confidence. In the prior period staff resourcing costs averaged $698k per year for the activity (equating to around 4 FTE). DPIE then considered the scope for efficiencies in resourcing through leveraging new technology and systems. The DPIE estimate for this activity is comprised of 2.5 FTE for water accountants/data analysts and a new 0.5 FTE for technology support for the Water Resource Accounting system administration and support and for public

dashboard reporting. No labour costs include for software licensing. DPIE has demonstrated efficiency in its forecast expenditure against 2016 actual expenditure.

8.4.6 Conclusion

Across the 2016 determination period there has been a change in the level of reporting requirements and obligations imposed on DPIE for its water resource accounting activities.

In addition to increased environmental reporting, water trading reporting requirements, and sustainable diversion limit obligations, DPIE also became a service provider to NRAR over the 2016 determination period; providing data and insights to the new regulator and resulting in a large change in the level of activities that it has had to carry out for compliance purposes.

There has been demand for more timely information, with the nature of accounting meaning time is required to validate and approve reported information. In order to meet these increasing demands, DPIE has developed more self-service capabilities for improved customer and stakeholder experiences, using tableaux and dashboards to achieve this. The six dashboards that DPIE has developed, with the buildings of these funded by NSW Treasury, has reduced the time in delivery of the information to users. DPIE considers that this was the minimum viable product that it needed to develop to meet the demands for information but it has also been driven by changing customer expectations; with accuracy, as well as transparency, being asked for in order to the reported information to be scrutinised in detail.

The proposed expenditure for the future period averages $602,000 per year which is 14% higher than the average annual expenditure allowed for in the 2016 Determination and 22% lower than the average annual expenditure incurred during the current period. DPIE has demonstrated that the costs in the current period reflect increased requirements and expectations. It has also demonstrated that it has considered how it will achieve efficiencies in the future period and has incorporated these into its expenditure forecasts. DPIE is proposing a reduction of one FTE for the future period. In recognition of the efficiencies that DPIE has identified and the decreasing costs compared to actual costs in the current period, we propose that expenditure for this activity be subject to a relatively lower catch-up efficiency.

8.5 W05-01 Systems operation and water availability management

8.5.1 Background

The scope of this activity is the preparation and implementation of the systems and procedures required to deliver the provisions of water management plans. This activity also includes the provision of operational oversight to ensure compliance with the water management plans, the making of Available Water Determinations and the assessment of compliance with long-term extraction limits. This activity is undertaken by DPIE.

Figure 8-8 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

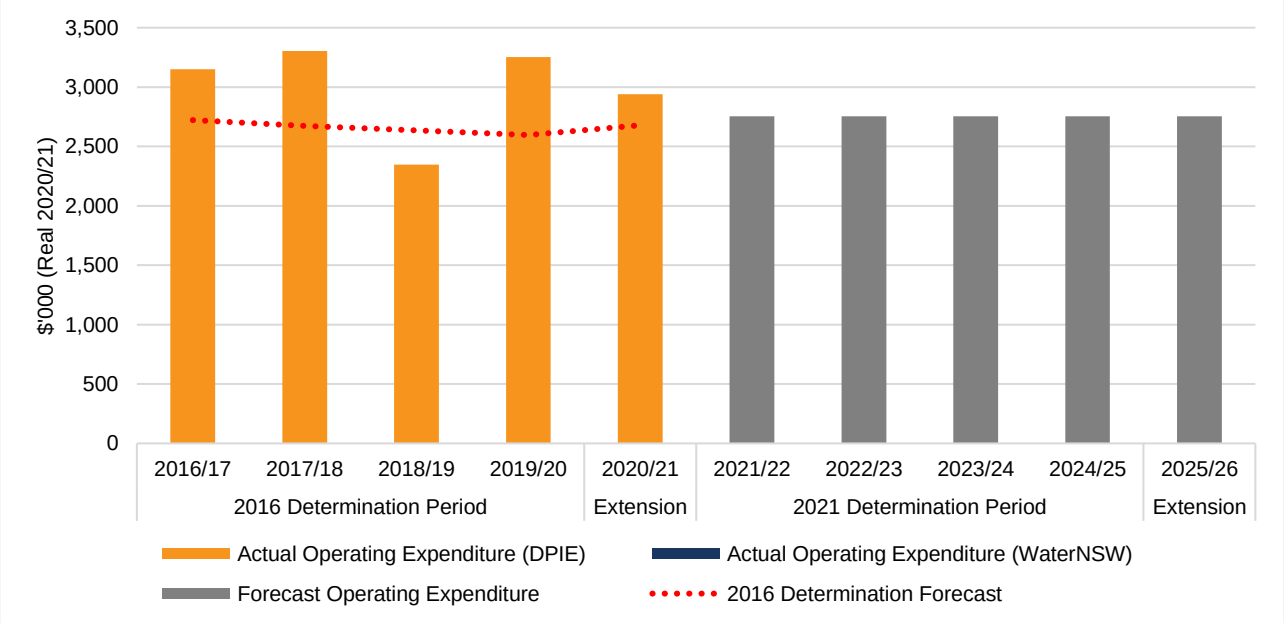

Figure 8-8 Current and future period expenditure for W05-01 Systems operation and water availability management

Table 8-17 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-17 Current period expenditure for W05-01 Systems operation and water availability management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	2,774	2,725	2,684	2,646	2,729	13,558	2,712
Actual	3,150	3,303	2,346	3,253	2,939	14,990	2,998
Variance	376	578	-338	607	210	1,433	287

Table 8-18 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-18 Future period expenditure for W05-01 Systems operation and water availability management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,755	2,755	2,755	2,755	2,755	13,776	2,755

Actual expenditure in the current period has averaged $2,998,000 per year. This is $287,000 per year (11%) higher than allowed for in the 2016 Determination, which averaged $2,712,000 per year.

The proposed expenditure for the future period averages $2,755,000 per year. This is $44,000 per year (2%) higher than the average annual expenditure allowed for in the 2016 Determination, and $243,000 per year (8%) lower than the average annual expenditure incurred during the current period.

8.5.2 Driver for expenditure

DPIE has legislative requirements for implementing and maintaining equitable water sharing operations under a number of government and Commonwealth acts, as follows:

- *Water Management Act 2000*
  - Chapter 2 Water management planning
    - Implementation planning
    - Amendment of plans
  - Chapter 3 Water management implementation
    - Available water determinations
    - Metering
    - Dealings (trade)
  - Access Licence Dealings Principles Order
    - Dealings (trade)
  - Water sharing plans, Limits to the availability of water, provide the statutory basis for water allocations, usually Part 7 (regulated river), or Part 9 (groundwater).
  - General resourcing required for input into operational policies and procedures.
- *Water Act 2007 (Commonwealth)*
  - Basin Plan 2012
  - Water trading rules
- *Snowy Hydro Corporatisation Act 1997*
  - Part 5
  - Management of the Snowy Water Licence

8.5.3 Output measures and performance

The output measures for DPIE's activities under W05-01 during the 2016 determination period have related to achieving timeframe targets for completing annual compliance reviews on WaterNSW's work approval conditions and issuing Available Water Determinations.

DPIE has met its targets for submitting the Annual Compliance Review in the first three years of the 2016 determination period, with the 2019-20 review underway at the time DPIE's pricing submission was prepared.

DPIE did not meet its timeliness targets for issuing Available Water Determinations in the first year of the 2016 determination period due to using a manual time-consuming process with a large number of water sources.

Improved processes to reduce data handling and the risk of errors, and automated upload to systems, were implemented for 2017-18 onwards. Although DPIE achieved its 100% targets for issuing Available Water Determinations for unregulated, regulated, and groundwater sources in 2017-18, it has not met the targets in the remaining years but it consistently delivered close to the targets.

The end result of DPIE's Available Water Determinations is an annual 1 July commitment. DPIE considers that if it can start the new water year with a general security allocation and no deficit to high priority commitments, its available water allocations have been successfully determined. If there is a shortfall starting the new year, water has been over-allocated but if there is additional water, its determinations have been overly conservative and more water could have been made available to users in the previous years. DPIE does not have a specific report or scorecard for the success of its Available Water Determinations but it is communicated fortnightly and monthly to water users and also tracked against the announcements. In exceptional circumstances temporary water restrictions may need to be put into the forecasts but water users are considered to be accepting of these, knowing that the conditions leading to any restrictions are beyond DPIE's control.

We consider that the output measures and performance indicators have been largely met in the current period.

8.5.4 Current period

The key activities DPIE undertakes under the W05-01 activity codes are monitoring water availability conditions and forecasts and making Available Water Determinations, and then using this information to credit bulk and private water users' accounts. In addition, it is responsible for implementing water management plans and ensuring users comply with those plans.

The audits of DPIE's water sharing plans by the Natural Resources Commission identified that the department needed to improve the implementation of its water management plans. This resulted in DPIE improving the processes for implementing the programs and reporting progress, to feed into the Natural Resources Commission's audits, as well as providing information to stakeholders about the work being carried out and how the department was tracking against each action required.

The work relating to water allocations undertaken by DPIE is vital as the assessments of the water resources allow customers to know how much water is available to them, with farmers using this information to make business decisions regarding crop planting. The activities associated with the Available Water Determinations form a focused, well-defined piece of work to assess available work on a per-catchment basis and identify obligations. If there is any additional available water, this is allocated to users based on the details set out in the water sharing plan to credit customers' accounts with additional water. The primary aim of the Available Water Determinations is to allow DPIE to allocate to water users with a low level of risk, which involves anticipating parameters such as catchment performance, future rainfall, and climate conditions. DPIE needs to take care not to over-allocate, which means a balanced approach that is conservative but also takes some risk to try to maximise the volume of water that users can take. DPIE is looking to allow more water to be provided under future provisions without taking on any additional risk; this will be achieved through improved data inputs for future inflow conditions, including water loss rates, stream flows, and anticipated rainfall.

As a result of the drought during the 2016 determination period, DPIE has been required to increase its work related to how the remaining water supplies have been managed. This has involved confirming the worsening conditions and identifying increased drought measures to prioritise water for critical needs, including making and implementing temporary water restriction orders. Increased levels of consultation across agencies on drought management and with water users and communities on both actions being undertaken and the need for water users to develop contingency arrangements have also been required as

part of the response to the drought conditions. This work has also included activities related to flood plain harvesting and the need to manage the water resources within the extraction limits.

8.5.5 Future period

Much of DPIE's activities under W05-01 going forward into the 2021 determination period can be regarded as business as usual. There will be a continuing need to monitor water availability conditions and forecasts and make Available Water Determinations.

In the 2021 regulatory period DPIE is planning to introduce greater sophistication into the analysis involved with its Available Water Determinations. This will allow it to better provide useful information to meet water users' information needs. There will be increased focus on reliability, rather than making any major improvements in accuracy, so that the data provided can be better relied upon by water users to make business decisions. The drive towards more reliable information into the 2021 determination period is aimed at allowing available water to migrate to higher-value users. By providing more insight and more reliable data, in particular the future forecasts, users will be able to better manage their own business risks and maximise the socio-economic benefits of the water that is available.

In addition, DPIE is proposing to complete development of, and commence, a water sharing plan implementation program under Section 51 of the *Water Management Act 2000*, to provide rigour, transparency and accountability across the implementation activities conducted by each of DPIE Water, WaterNSW and NRAR.

DPIE forecast that it will require 16.43 FTE for this activity in the future period. This was reduced by 2.6 FTE for inclusion in the pricing proposal through DPIE's internal efficiency challenge.

8.5.6 Conclusion

The key activities that DPIE records against the W05-01 activity code for water sharing plan implementation and Available Water Determinations are focused and well-defined. The expected work in the 2021 determination period is largely business as usual, with an aim to improve the sophistication of its analysis in order to make the allocations to water less conservative, and maximize the water made available to users.

With the exception of the first year in the 2016 determination period DPIE has consistently come close to meeting its output measures, although it only achieved them in one year, 2017-18.

DPIE exceeded the IPART allowance for the activities included under W05-01 in the first two years of the 2016 Determination but expenditure has been slightly below the allowance in the last two years. Some additional external funding was also made available in each year of the four year period to assist with increased work due to drought conditions.

DPIE's annual forecast across the 2021 determination period is similar to the 2016 IPART allowance and also similar to the actual spend in 2019-20 while also being a reduction to the annual average in the current period. This highlights that much of the work is ongoing business as usual activities with recognition of ongoing efficiencies.

As DPIE has applied its own efficiency challenge to the forecast expenditure requirements for this activity, we have not applied catch-up efficiency in arriving at our recommended level of expenditure for this activity.

8.6 W05-02 Blue-green algae management

8.6.1 Background

The scope of this activity is blue-green algae management which the provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans. This activity is undertaken by WaterNSW.

Figure 8-9 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. WaterNSW has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

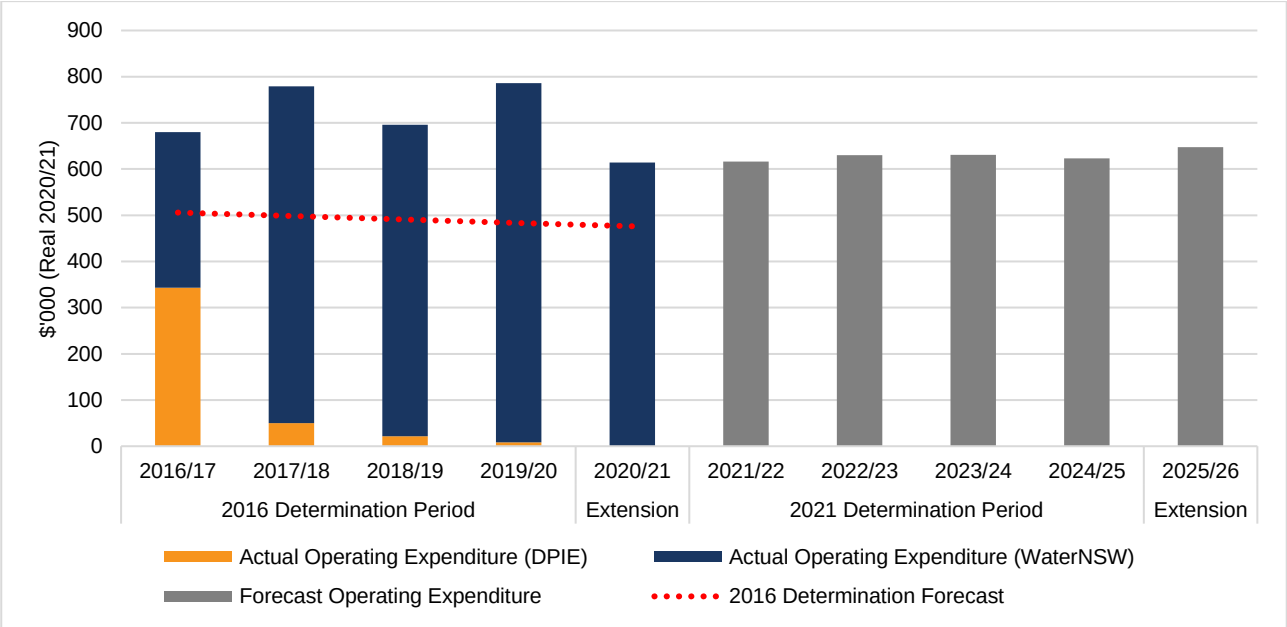

Figure 8-9 Current and future period expenditure for W05-02 Blue-green algae management

Table 8-19 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-19 Current period expenditure for W05-02 Blue-green algae management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	515	508	500	493	485	2,501	500
Actual	680	779	696	786	614	3,557	711
Variance	165	272	196	294	129	1,056	211

Table 8-20 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-20 Future period expenditure for W05-02 Blue-green algae management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	616	630	631	623	648	3,148	630

Actual expenditure in the current period has averaged $711,000 per year. This is $211,000 per year (42%) higher than allowed for in the 2016 Determination, which averaged $500,000 per year.

The proposed expenditure for the future period averages $630,000 per year. This is $129,000 per year (26%) higher than the average annual expenditure allowed for in the 2016 Determination, and $82,000 per year (11%) lower than the average annual expenditure incurred during the current period.

8.6.2 Driver for expenditure

This activity involves oversight of the algal risk management framework for fresh and marine waters, which has been developed to ensure that the risk from potentially toxic algal blooms is managed appropriately. The activities include:

- coordination of the Regional Algal Coordinating Committees (RACC)
- development and review of regional algal contingency plans
- issue of algal alerts as required, provision of regular updates to stakeholders, and maintenance of the algal website and information line

- provision of signage to water management authorities (including councils) and liaison with other agencies affected by an algal bloom
- identification and encouragement of scientific research to provide new information to enhance
- algal management. action and training, the issue of algal alerts and the development of algal risk management plans.

8.6.3 Output measures and performance

Outputs of blue-green algae management of this activity code is the implementation and update as required of algal risk management framework that would appropriately manage fresh and marine waters. It would also issue algal alerts as required with regulate updates to stakeholders, as well as maintenance of the algal website and information line. These output measure have been met in 2017-2018 and partially met in year after in 2018-2019.

Its performance indicators are the percentage of reports meeting in a weekly timeframe to regional algal coordinating committees and state algal coordinator of alert level based on algal data. This targeted performance of 100% was met in 2018/19, however was not met in the year before, 2017/18. Another performance indicator is the actions implemented in accordance with algal risk management plan and guidelines which its target of 100% was in achieved in period of 2017/18 and 2018/19.

We consider that the output measures and performance indicators have largely been met in the current period

8.6.4 Current period and future period

This activity was transferred from DPIE to WaterNSW at the beginning of the current period. However, DPIE has incurred costs in the current period of just over $400k; $343 of which was in 2016/17 and small amounts thereafter. Even adjusting for this potential duplication, total expenditure has exceeded that forecast at the time of the 2016 Determination. However, blue green algae management requirements can be variable depending on algae outbreak events.

8.6.5 Future period

WaterNSW has forecast costs for this activity alongside its forecasts for the W01 and W02 activity groups. Costs have then been allocated to this activity based on an assessment of the purpose of each monitoring site. Therefore, it is difficult to assess future costs trends at the activity level. The discussion in Section 8.2 regarding the development of cost estimates and the application of efficiencies applies to this activity.

8.7 W05-03 Environmental water management

8.7.1 Background

The scope of this activity is environmental water management. This activity is undertaken by DPIE.

Figure 8-10 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

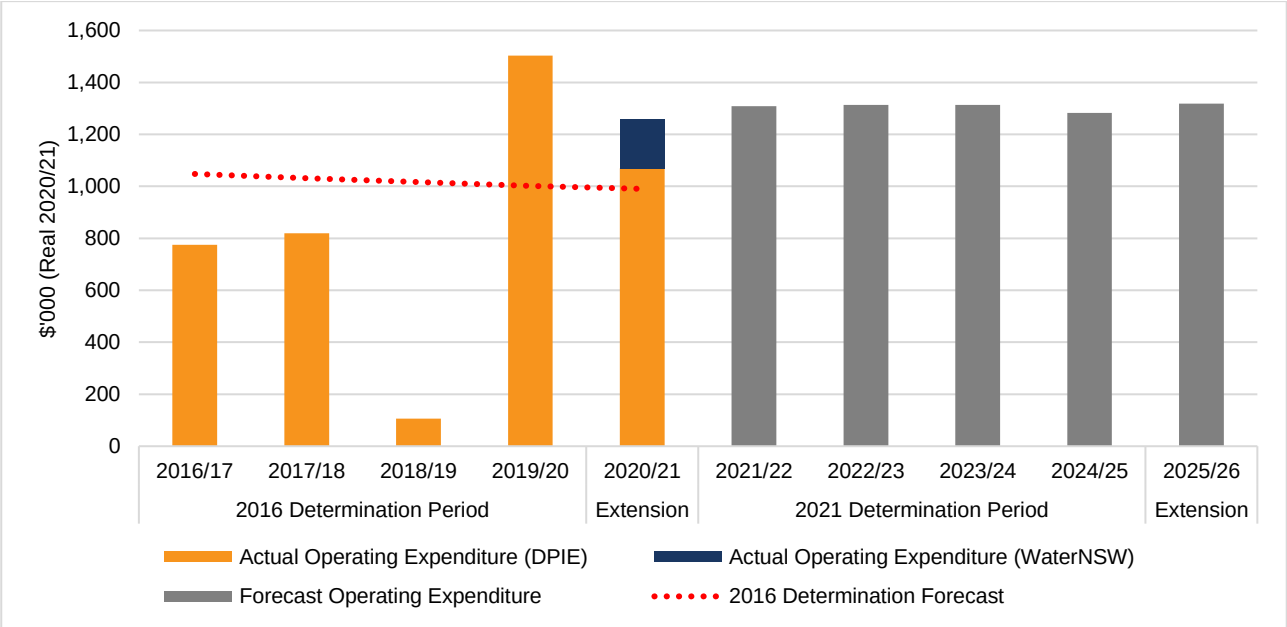

Figure 8-10 Current and future period expenditure for W05-03 Environmental water management

Table 8-21 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-21 Current period expenditure for W05-03 Environmental water management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	1,068	1,051	1,036	1,020	1,009	5,184	1,037
Actual	775	820	107	1,504	1,259	4,464	893
Variance	-293	-232	-929	484	250	-720	-144

Table 8-22 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-22 Future period expenditure for W05-03 Environmental water management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	1,309	1,314	1,314	1,283	1,319	6,538	1,308

Actual expenditure in the current period has averaged $893,000 per year. This is $144,000 per year (14%) lower than allowed for in the 2016 Determination, which averaged $1,037,000 per year.

The proposed expenditure for the future period averages $1,308,000 per year. This is $271,000 per year (26%) higher than the average annual expenditure allowed for in the 2016 Determination, and $415,000 per year (46%) higher than the average annual expenditure incurred during the current period.

8.7.2 Driver for expenditure

Environmental water requirements are set out in Section 8 of the *Water Management Act* and individual water sharing plans include environmental water management requirements. In the Murray Darling Basin, there are provisions in the *Water Act 2007* including for managing environmental water in the Snowy Scheme. DPIE is responsible for determining and managing the Snowy Hydro environmental flow releases. In the future period, Prerequisite Policy Measures will be introduced for the operation of environmental water planning in the Murray Darling Basin. Prerequisite Policy Measures are legislative and operational rule changes that improve the use and accounting of water for the environment in the southern-connected Murray–Darling Basin. For example, protecting return flows of water to the environment and 'piggybacking' of environmental deliveries on to unregulated events such as natural flooding.

8.7.3 Output measures and performance

Three requirements were included in the 2016 Determination under the output measure for this activity:

- Delivery of Snowy and Snowy Mountain River increased flows.
- Conditions on major dam work approvals to implement environmental watering plans and to mitigate cold water pollution impacts on receiving waters.
- Monitor and evaluate water resource plans to determine environmental outcomes.

These measures have been met in the current period. A performance indicator to achieve the daily environmental flow target for Snowy and Snowy Mountain flow targets on 98% of occasions was also set. This target was missed by a small margin – flows were delivered 96% of the time. DPIE details that a failed valve led to flow targets being missed for a small number of days. We consider that the output measures and performance indicators have largely been met in the current period noting the minor variation on delivery of daily flow target

8.7.4 Current period

Work in the current period has included:

- Contribution to development of annual watering plans
- Determining and managing the Snowy Hydro environmental flow releases. In 2018 some aspects of this work, being determining release patters for the flows, were transferred to DPIE Environment Energy and Science and hence these activities are now not included in DPIE's pricing proposal for WAMC monopoly services.
- Ongoing participation in forums and management committees.

Significant external funding of $4.6 million was received in 2018/19 and 2019/20 from the Commonwealth for the development of the Prerequisite Policy Measures framework. This framework came into effect on 1 July 2019. While this external funding was received, internal funded activity dropped substantially to 10 – 20% of that forecast at the time of the 2016 Determination. Expenditure in the first two years of the current period was also materially less than that included in the 2016 Determination. This trend of under-expenditure calls into question the veracity of the 2016 Determination as a reference point for required expenditure given that output measures and performance indicators were largely met.

8.7.5 Future period

In the future period, DPIE will continue to have responsibility for managing the aspects of the Snowy Hydro releases for which it is responsible as well as contributing to environmental water planning and ongoing participating in environmental water management forums.

DPIE considers that the ongoing implementation of Prerequisite Policy Measures and adaptive management under them is a new requirement for funding under WAMC prices. DPIE notes that implementing the Prerequisite Policy Measures meets its requirements under the Basin Plan as well as the requirements under the Management Act 2000 to effectively and efficiently deliver environmental water for beneficial outcomes.

DPIE also outlines that it will be required to progress environmental water planning in response to Government policy. In particular, to improve understanding of environmental water connectivity and management in the Northern Murray Darling Basin (accounting for flows arriving from Queensland).

DPIE has forecast that it requires 6.15 FTE for the future period to meet its requirements for this activity. Of these 6.15 FTE, 1.15 are forecast as being required to support DPIE Environment Energy and Science on collaborative management activities and the remaining 5 FTEs will be required for water plan implementation activities such as the implementation of Prerequisite Policy Measures (1.02 FTE), North Basin Connectivity (1.38 FTE) and management of the environmental water communication hub (1.08 FTE).

When we questioned DPIE water staff as to whether efficiencies would be gained in the future period it was noted that because requirements such as the implementation of Prerequisite Policy Measures was relatively new, improvements would be expected in coming years. It was also noted that there was a shift away from the demand of analytical work in the future period which was expected to realise relative efficiencies

8.7.6 Conclusion

The main features of the current period were under-expenditure compared with the 2016 Determination and significant external funding in 2018/19 and 2019/20 for the development of the Prerequisite Policy Measures framework.

For the future period, there are new requirements for implementation of the Prerequisite Policy Measures and investigations such as the Norther Basin Connectivity. While these are notable, it is not clear that they represent more than ongoing refinement of the overall approach to environmental water management. We note that DPIE has forecast future expenditure requirements based at a more detailed output level compared with other activities. However, there are no detailed work plans or programs which forecast activities and resourcing requirements. The forecasts appear to be more top-down based on expected workload per FTE.

Our assessment is that given that current period output and performance measures were achieved with less expenditure than forecast at the time of the 2016 Determination and because there is clear scope of efficiencies through the bedding down of new requirements, this activity is one where relatively higher efficiency gains may be made in the future period.

8.8 W05-04 Water plan performance assessment and evaluation

8.8.1 Background

The scope of this activity is the assessment, audit and evaluation of water management plans in achieving economic, social and environmental objectives. In undertaking this activity, the appropriateness, efficiency and effectiveness of the water management plans are considered. This activity is undertaken by DPIE.

Figure 8-11 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

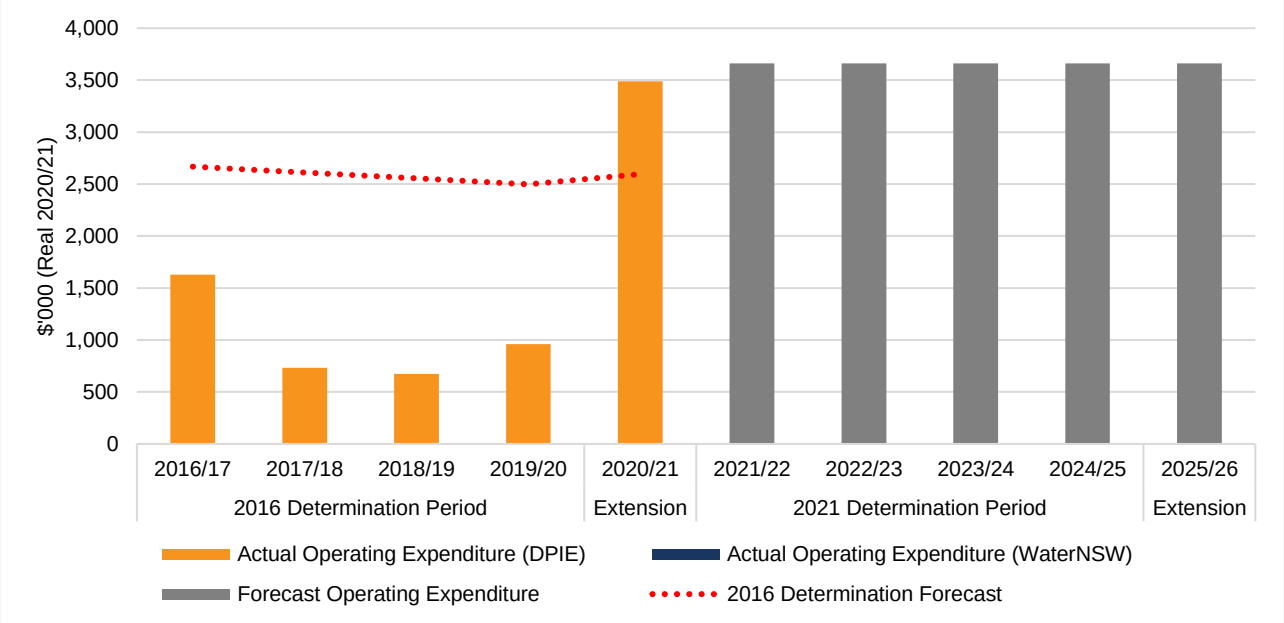

Figure 8-11 Current and future period expenditure for W05-04 Water plan performance assessment and evaluation

Table 8-23 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-23 Current period expenditure for W05-04 Water plan performance assessment and evaluation

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	2,719	2,662	2,604	2,546	2,646	13,176	2,635
Actual	1,630	733	675	960	3,490	7,488	1,498
Variance	-1,089	-1,929	-1,929	-1,585	844	-5,688	-1,138

Table 8-24 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-24 Future period expenditure for W05-04 Water plan performance assessment and evaluation

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	3,661	3,661	3,661	3,661	3,661	18,307	3,661

Actual expenditure in the current period has averaged $1,498,000 per year. This is $1,138,000 per year (43%) lower than allowed for in the 2016 Determination, which averaged $2,635,000 per year.

The proposed expenditure for the future period averages $3,661,000 per year. This is $1,026,000 per year (39%) higher than the average annual expenditure allowed for in the 2016 Determination, and $2,163,000 per year (144%) higher than the average annual expenditure incurred during the current period.

8.8.2 Driver for expenditure

Performance monitoring and assessment of Water Sharing Plans, Water Resource Plans and Regional Water Plans is required by legislation under the *Water Management Act 2000* and the *Water Act 2007 (Commonwealth)*, as follows:

- **Water Management Act 2000**
  - Section 43A(3) reviews to be undertaken by the Natural Resources Commission in considering whether a plan should be extended, based on its contribution to environmental, social and economic outcomes
  - Section 44 audits of water sharing plans (transferred to the Natural Resources Commission from 1 December 2018 under changes to the *Water Management Act 2000*, however DPIE continues to provide ongoing support in providing data and information to the Natural Resources Commission for these audits)
  - Division 3, Section 10 requirement for an evaluation every five years of the extent to which DPIE's activities have contributed to the Principles of the Act.
- **Water Act 2007 (Commonwealth)**
  - Schedule 12 of the Basin Plan sets monitoring, evaluation and reporting obligations for Basin States under the Basin Plan.

8.8.3 Output measures and performance

Commensurate to the underspend in the current period, DPIE has not achieved all of the output measures set at the 2016 Determination. Evaluation reports were delayed and fewer produced than had been targeted over the current period. However, all surface water plans that needed to be audited within the current period were audited, although some were completed after the five year interval period specified in the Water Management Act 2000.

For plan evaluations, 13 were completed against a target of 17. Performance indicators for surface water were not met for:

- Plans incorporated into ecological performance and assessment programs (%) – 73% achieved against 100% target
- Plans audited within statutory requirement (%) – 76% achieved against 100% target
- Plans evaluated that have come to term (%) – 0% achieved against 100% target.

8.8.4 Current period

DPIE outlined that due to an internal restructure and competing priorities with Basin Plan activities that it was not able to meet all output and performance requirements during the current period. Another factor has been the commencement of plan audits by the Natural Resources Commission in November 2018. The delineation and interface between the Natural Resources Commission and DPIE was initially found to be unclear although DPIE considers that this is now resolved.

In evaluating the inclusion of activities within the definition of WAMC monopoly services, we identified that the activities that the Natural Resources Commission undertakes, being:

- Section 43(a) reviews
- Section 44 audits

may be considered WAMC monopoly services. Both of these activities are required under the *Water Management Act 2000*. DPIE collects and analyses data to help inform the Natural Resources Commission reviews and activities. However, no costs are included in the pricing proposals for the costs of the Natural Resources Commission. The National Water Initiative Pricing Principles Appendix B include "Monitoring and evaluation of planning outcomes and progress against targets (including compliance)" as water planning and management activities. However, WAMC also undertakes monitoring and evaluation reviews and the Natural Resources Commission activities are currently funded outside of WAMC. Therefore, we don't propose that these costs are included in WAMC monopoly services.

8.8.5 Future period

DPIE is proposing a considerable increase in expenditure relative to its historical expenditures in the 2021 determination period. This increase has been forecast as DPIE considers that it needs to invest in a formalised socio-economic monitoring program, increase the number of evaluation reports produced, and complete risk assessments for the coastal water sharing plans.

DPIE is proposing to spend a total of $18.3 million in the 2021 determination period on water plan performance assessment and evaluation, an annual average of $3.7 million. This proposed annual average represents an increase of 281% from the $1.5 million DPIE spent on average annually during the 2016 determination period and is 39% higher than the amount IPART used when determining WAMC prices in 2016.

This increase in forecast workload in the 2021 determination period can be attributed, at least in part, to evaluation reports being delayed during the 2016 determination period due to staff resources being redeployed to deliver the externally funded Basin Plan activities. However, DPIE considers that because the Basin Plan work that was completed during the 2016 determination period allowed systems, structures, processes and agreements to be strategically implemented, efficiency and effectiveness gains will be realised in the 2021 determination period. Improved cost-effective monitoring, reporting and evaluation activities for future water sharing plan evaluation are the anticipated benefits coming from the Basin Plan work. In addition, a number of planned monitoring, evaluation and reporting projects were also not commenced or completed as planned during the 2016 determination period.

For the 2021 determination period, DPIE is proposing to complete six water sharing plan evaluations each year, with approximately 50% of the total 58 plans being evaluated in the next five years and working towards the legislative requirement that each plan is evaluated once every ten years. Additionally, DPIE will complete and publish risk assessments for inland and coastal water sharing plans as they come up for review. DPIE states that this work is the primary driver for the additional FTEs that have been added against this activity code in the 2021 period. DPIE stated that although the evaluation work program is 'ambitious', it is achievable. We note that the work program is in line with the legislative requirement to review plans on a ten-year cycle and that this is unchanged from the previous period. Therefore the requirement should be seen as business as usual. The proposed operating expenditure forecasts are predominantly to cover the labour costs although there is some forecasted spend on field work, meetings, equipment purchases and rentals.

In order to derive the expenditure forecast for the 2021 determination period, DPIE has built-up the costs based on the previous allowance and made assumptions as to what other FTE and costs are required to deliver the expected workload. Activity managers provided input on the forward work program and what happened over current period, as part of an iterative process to develop the forecast budget. The interrelationships between activities were also taken into consideration to arrive at the estimates. Essentially a bottom-up process was complemented by a top-down assessment for the business based on history and costs.

DPIE has provided a simple model that includes the FTEs and salaries for all DPIE activities. Activity code W05-03 is included in the simple model, but the model does not provided detailed breakdown of the expenditure allocations within the activity code for the current and future determination periods. DPIE has provided another high level beak down cost for the 2016 period which included a small set of activity themes within the activity code.

8.8.6 Conclusion

Actual expenditure in the current period has averaged $1.5 million per year which is 43% lower than allowed for in the 2016 Determination. The proposed expenditure for the future period averages $3.7 million per year

which is 39% higher than the average annual expenditure allowed for in the 2016 Determination, and 82% higher than the average annual expenditure incurred during the current period.

The driver for the underspend is that DPIE resources were deployed to Basin Plan work during the 2016 determination period, with external funding provided to assist in delivering this work. Although there are beneficial outcomes for stakeholders and water users from the delivering Basin Plan activities, it has meant that DPIE has not completed all of the services that it was expected to deliver. Evaluation reports were delayed and fewer produced than had been targeted over the current period. However, all surface water plans that needed to be audited within the current period were audited, although some were completed after the five year interval period specified in the Water Management Act 2000.

While we are concerned that the proposed expenditure for the forward period is to address underperformance in the current period, we accept that the WAMC businesses should be have the flexibility to reprioritise expenditure as the operating environment changes.

The activities proposed for the 2021 period while including some additional requirements for socio-economic analysis appear to be largely business as usual. These requirements are to undertake ten-yearly reviews of plans and this legislative requirement is unchanged between the current and future periods. Therefore, we recommend that expenditure for the future period be set at a level consistent with that included in the 2016 Determination. This represents a reduction in average annual expenditure of $1,026,000.

8.9 W06-01 Water plan development (coastal)

8.9.1 Background

DPIE's water plan development activities are required to deliver statutory water sharing plans and provide a statutory framework for sharing water access in NSW. The water sharing plans provide clarity and security for water users by specifying the sharing arrangements between the environment and water users, and also between the different types of water users. DPIE has developed water sharing plans to cover all surface water and groundwater sources in NSW. There are currently 58 water sharing plans across the state, of which 26 are on the coast. Activity Code W06-02 is for the development of water plans in inland areas.

The water sharing plans are independently reviewed by the Natural Resources Commission as part of its remit in establishing a sound evidence basis for the properly informed management of natural resources in NSW with regard to social, economic and environmental interests. Water sharing plans must be reviewed then either revised or extended after ten years, so all plans are reviewed during a ten-year period. Recommendations from the Natural Resources Commission, as well as community or government recommendations are considered in the next iterations of the water sharing plans.

Figure 8-12 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

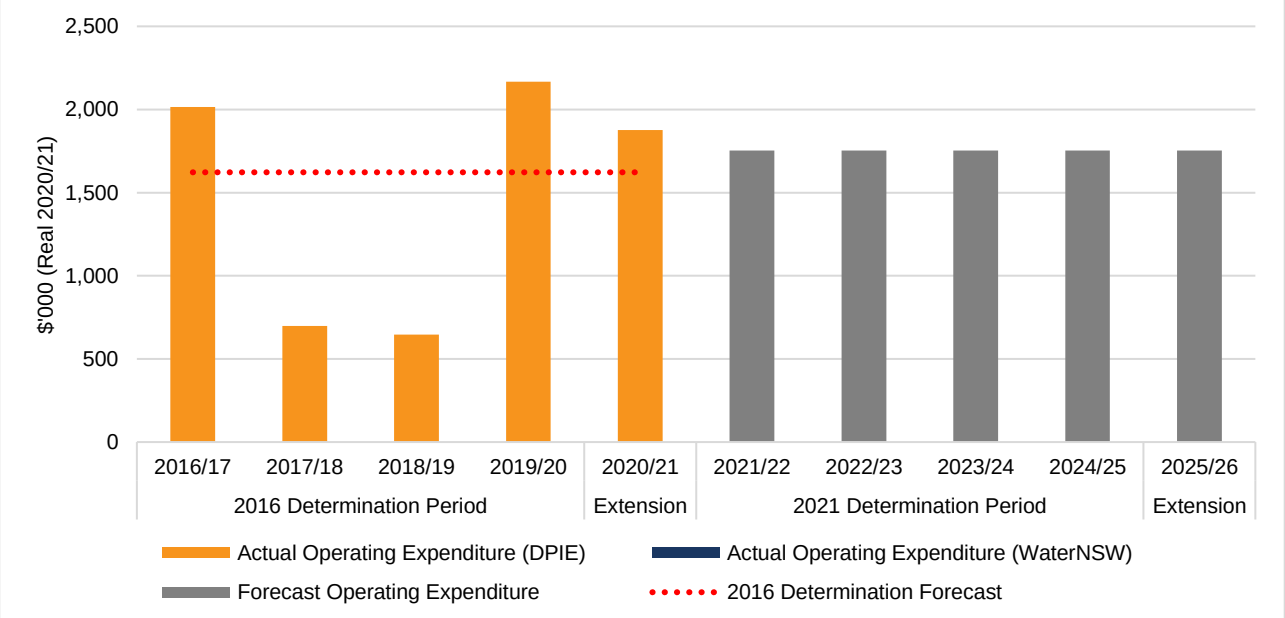

Figure 8-12 Current and future period expenditure for W06-01 Water plan development (coastal)

Table 8-25 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-25 Current period expenditure for W06-01 Water plan development (coastal)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	1,653	1,653	1,653	1,653	1,653	8,266	1,653
Actual	2,015	698	647	2,166	1,876	7,402	1,480
Variance	362	-956	-1,006	513	223	-863	-173

Table 8-26 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-26 Future period expenditure for W06-01 Water plan development (coastal)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	1,752	1,752	1,752	1,752	1,752	8,761	1,752

Actual expenditure in the current period has averaged $1,480,000 per year. This is $173,000 per year (10%) lower than allowed for in the 2016 Determination, which averaged $1,653,000 per year.

The proposed expenditure for the future period averages $1,752,000 per year. This is $99,000 per year (6%) higher than the average annual expenditure allowed for in the 2016 Determination, and $272,000 per year (18%) higher than the average annual expenditure incurred during the current period.

8.9.2 Driver for expenditure

The development of the water plans for coastal water sources is required to meet the following statutory obligations:

- ***Water Management Act 2000*:** water planning as required under Chapter 2, Part 3 Management Plans, Division 1, Division 2 Water sharing, Division 3 Water use and Part 4 Minister's plans for the making of management plans for water sharing.
- ***Intergovernmental Agreement on a National Water Initiative*:** as a signatory, NSW is required to prepare water plans consistent with the Initiative.

DPIE sets out in its pricing proposal that has engaged with its stakeholders and found that there is strong expectations for clear enforcement of the rules included the plans, enforcement based on accurate and transparent information and monitoring that the customers could trust. Although neither enforcement nor monitoring are a function of the W06-01 activity, the water plans for coastal sources need to include appropriately up-to-date, accurate and transparent information as well as rules that are detailed and robust enough to be enforced.

8.9.3 Output measures and performance

In its pricing proposal, DPIE notes that it has exceeded the output measure of five water sharing plans to be reviewed and replaced/extended during the period. By the end of 2019/20 DPIE had forecast two places as being replaced and four plans being extended a further four years to address issues identified. While this sums to more than the output measure, we note that extension is a lower bar to exceed, with three plans replaced, four plans extended and six plans under review. The performance indicator for cumulative percentage of forecast WSPs reviewed, replaced/extended or merged has not been met with 80% achieved against a target of 100%.

DPIE advises that it has prioritised completion of the inland water plans over the coastal plans in the current period.

We consider that the output measure can be improved in future so that more transparency is provided into the current status of each plan and compared to expected review timeframes. This may be achieved for example by defining more measuring points in the plan review and replacement/remake process and proving more information on the expected level of effort at each stage in the process.

8.9.4 Current period

The water plan development activities for coastal water sources undertaken by DPIE compromise the development, review, amendment and extension or replacement of water management plans, as well as the required consultation associated with developing these plans. As noted in Section 8.9.1, DPIE has developed water sharing plans to cover all surface water and groundwater sources in NSW, with 26 of the 58 plans across the state being for coastal water sources.

There is a formal review of each water sharing plan by the National Resources Commission which makes recommendations to the Minister. Depending on the National Resources Commission recommendations and the Minister's decision, the water sharing plan is either extended unchanged for another ten years, or remade with changes. If a water sharing plan is required to be remade, a range of options to change the rules and other provisions in the plan are considered and assessed in order to implement the National Resources Commission's recommendations and any other relevant matters that have been identified. This work generally includes input from technical experts, system modelling and consultation with interested parties. Draft plans are exhibited for feedback, with submissions considered in the development the final plan submitted to the Minister.

DPIE staff resources vary depending on the complexity of the water sharing plan. These complexities can include:

- Number of water sources
- Major infrastructure
- Level of demand placed on the water sources
- Risks and benefits to the health of the water sources
- Social and economic impacts on licence holders and the community
- The nature of the recommended changes.

Interim extensions for up to two years beyond a plan's expiry date can be granted by the Minister, under the provisions of the *Water Management Act 2000*. This is used for some plans for the purposes of managing the workload or to allow difficult issues to be adequately addressed.

In addition, water sharing plans are also audited mid-term by the National Resources Commission, which involves input from DPIE, and can be sometimes be amended at this time. These amendments involve similar processes to remaking the plan, although typically on a reduced scale

Consultation with stakeholders during the term of a water sharing plan is undertaken to identify their concerns, inform them of new information, changes in circumstances or policy that could affect the plan, and report on progress.

8.9.5 Future period

The review, amendment, extension or replacement cycle of DPIE's water sharing plans for its coastal water sources will continue through the 2021 determination period and reflect a 'business as usual' activity as required by the *Water Management Act 2000*. DPIE has a schedule of work that it needs to complete under the W06-01 activity code during the 2021 regulatory period

The program of works shows that the number of plans to be reviewed, replaced and implemented over the 2021 determination period is more than double the number required during the 2016 regulatory period. This workload includes a number of plans with mid-term amendments that were postponed in the 2016 determination period due to DPIE shifting focus to its inland water resource planning. The postponed plans will be evaluated and addressed either independently or as part of the plan remake process in the 2021 determination period.

The costs for completing the activities under W06-01 are predominantly for labour costs. However, as noted previously, the time and cost for each plan is dependent on the associated complexities and issues to be addressed, and this can vary between plans.

As DPIE has completed water sharing plans to cover the entire state, cost efficiencies and improvements are expected going forward into the 2021 determination period as the work required to initially develop a plan is much more than is required for the review and replacement phase of work that is now required.

The DPIE pricing proposal states that expenditure under the W06-01 activity code was considerably less than the IPART allowance. In the current period and attributed this to staff being redeployed to externally-funded high priority planning, mostly in the Basin. However, the updated AIR/SIR received in October 2020

provided updated outturn expenditure for 2019/20 that was $0.5 million higher than in the original AIR/SIR. As a result, outturn expenditure in the current period is a small amount (10%) lower than that included in the 2016 Determination. Although DPIE has met the majority of its 2016-20 output measures, the performance indicators are considered to not capture the full extent of the work carried out.

DPIE's has forecast its W06-01 expenditure across the 2021 determination period based on the number of plans and planned amendments to be addressed per year on average and additional improvements to the service delivery it has identified. DPIE states that the forecast also accounts for the efficiencies that are expected to be realised with work on more mature water sharing plans.

The forward schedule of expiring water sharing plans is not evenly spread from year to year during the 2021 determination period, meaning that the expenditure and delivery of outputs will vary from year-to-year across the four years. As a result, DPIE will work with the National Resources Commission to spread the review work more evenly over time by advancing some reviews and applying interim extensions to others.

The expenditure requirements for the future period for this activity are based on 9.5 FTE per year. We requested DPIE to share with us the basis of this estimate. This resource breakdown is shown in Table 8-27. The total forecast resource requirement of 38 FTE is for a four year period which equates to 9.5 FTE per year.

Table 8-27 DPIE resource estimate for coastal water plans for future period

Plan type	Length of time to replace	Count	Total years	Management/ support	Total resources
Easy	2	3	6	1.6	7.6
Moderate	2.5	2	5	1.3	6.3
Hard	3	4	12	3.2	15.2
Very Hard	3.5	2	7	1.9	8.9
		11	**30**	**8**	**38**

The resource estimate is fairly rudimentary and appears to have been generated for the purpose of addressing our question rather than being based on a forward work planning estimate.

8.9.6 Conclusion

DPIE has obligations under the *Water Management Act 2000* to develop, review and remake water sharing plans. As such, the activities involved with achieving the requirements represent business as usual for DPIE on an ongoing cyclic basis. The expenditure is predominantly for labour costs.

DPIE has a defined program of work for its W06-01 work activities which appears to include some catch-up of plan completion from the current period but is largely business as usual given the cyclic nature of planning. Proposed expenditure for the future period averages $1.7 million per year which is 6% higher than the average annual expenditure allowed for in the 2016 Determination, and 16% higher than the average annual expenditure incurred during the current period.

We consider that there is scope for material efficiencies to be achieved in this activity in the future period, as evidenced by the relative immaturity of the forward resource estimating. We would expect detailed, bottom-up estimates for each plan to be prepared for the forward period. This would allow efficiencies in resource utilisation and the resourcing mix to be identified. Efficiencies should also be able to be realised through continual improvement in business processes.

8.10 W06-02 Water plan development (inland)

8.10.1 Background

DPIE's water plan development activities for NSW's inland water sources are required to deliver statutory water sharing plans, as well as the amendment of additional planning instruments to comply with Commonwealth legislation.

The water sharing plans provide clarity and security for water users by specifying the sharing arrangements between the environment and water users, and also between the different types of water users. DPIE has

developed water sharing plans to cover all surface water and groundwater sources in NSW. There are currently 58 water sharing plans across the state, of which 32 are defined as inland (west of the divide).

The water sharing plans are independently reviewed by the Natural Resources Commission as part of its remit in establishing a sound evidence basis for the properly informed management of natural resources in NSW with regard to social, economic and environmental interests. Water sharing plans must be reviewed then either revised or extended after ten years, so all plans are reviewed during a ten-year period. Recommendations from the Natural Resources Commission, as well as community or government recommendations, are considered in the next iterations of the water sharing plans.

In addition to the water sharing plans, DPIE has also developed a total of 20 water resource plans under the W06-02 activity code during the 2016 determination period using Commonwealth funding. These plans were submitted to the Murray-Darling Basin Authority in April (elven water resource plans for groundwater) and June 2020 (nine water resource plans for surface water). The submission of these plans was substantially behind the scheduled agreed between New South Wales and the other parties to the Murray Darling Basin Plan in 2012.

Figure 8-13 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

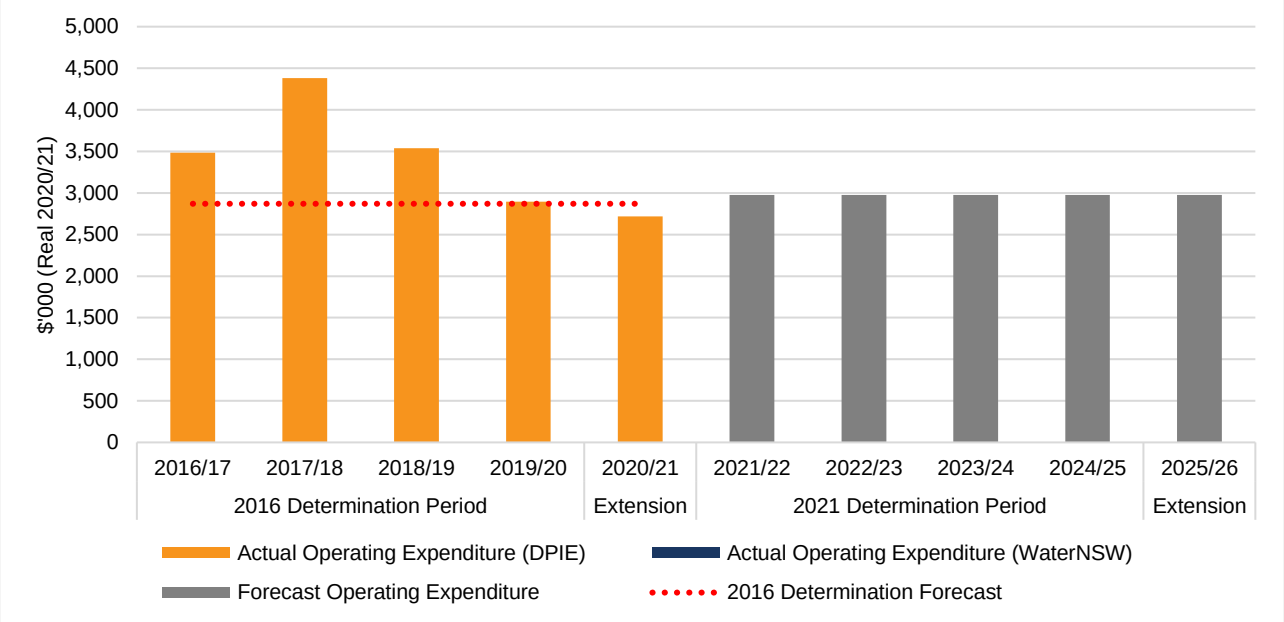

Figure 8-13 Current and future period expenditure for W06-02 Water plan development (inland)

Table 8-28 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year. There has been substantial external funding received for this activity in the current period of $27.9 million. his

Table 8-28 Current period expenditure for W06-02 Water plan development (inland)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	2,925	2,925	2,925	2,925	2,925	14,624	2,925
Actual	3,486	4,380	3,539	2,894	2,719	17,018	3,404
Variance	561	1,455	614	-31	-206	2,394	479

Table 8-29 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-29 Future period expenditure for W06-02 Water plan development (inland)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,976	2,976	2,976	2,976	2,976	14,881	2,976

Actual expenditure in the current period has averaged $3,404,000 per year. This is $479,000 per year (16%) higher than allowed for in the 2016 Determination, which averaged $2,925,000 per year.

The proposed expenditure for the future period averages $2,976,000 per year. This is $51,000 per year (2%) higher than the average annual expenditure allowed for in the 2016 Determination, but $427,000 per year (13%) lower than the average annual expenditure incurred during the current period.

8.10.2 Driver for expenditure

The development of the water plans for inland water sources is required to meet the following statutory obligations:

- ***Water Management Act 2000*:** water planning as required under Chapter 2, Part 3 Management Plans, Division 1, Division 2 Water sharing, Division 3 Water use and Part 4 Minister's plans for the making of management plans for water sharing.
- ***Water Act 2007* (Commonwealth):**
  - Part 2 – Management of Basin water resources
  - Murray Darling Basin Plan, Chapter 10 water resource plan requirements,
  - As a signatory to the Murray Darling Basin Plan, NSW has committed to preparing Water Resource Plans and Environmental Watering Plans by 2019-20.
- ***Intergovernmental Agreement on a National Water Initiative*:** as a signatory, NSW is required to prepare water plans consistent with the Initiative.

8.10.3 Output measures and performance

Outputs to replace and review Water Sharing Plans were met with 13 Water Sharing Plans replaced and 8 Water Sharing Plans reviewed and merged into an existing Water Sharing Plan against targets that 8 Water Sharing Plans would be reviewed and replaced/extended, a further 2 reviewed and 2 reviewed and merged into existing plans. DPIE has achieved 190% against a target of 100% for cumulative replacement/extension/ merge of Water Sharing Plans. This level of achievement is reflective of the additional resources provided for this activity in the current period supported by Commonwealth funding.

However, the target of 22 Water Resource Plans being complete was not met due to deferral of submission of these plans to the MDBA. While work was undertaken on these plans (Supported by the Commonwealth funding) DPIE states that the plans were not submitted due to the drought and to allow for more consultation on the draft Water Sharing Plans. The plans were submitted by June 2020.

8.10.4 Current period

The water plan development activities for inland water sources undertaken by DPIE compromise the development, review, amendment and extension or replacement of water management plans, as well as the required consultation associated with developing these plans. As noted in Section 8.10.1, DPIE has developed water sharing plans to cover all surface water and groundwater sources in NSW, with 32 of the 58 plans across the state being for inland water sources.

There is a formal review of each water sharing plan by the National Resources Commission, which makes recommendations to the Minister. Depending on the National Resources Commission recommendations and the Minister's decision, the water sharing plan is either extended unchanged for another ten years, or remade with changes. If a water sharing plan is required to be remade, a range of options to change the rules and other provisions in the plan are considered and assessed in order to implement the National Resources Commission's recommendations and any other relevant matters that have been identified. This work generally includes input from technical experts, system modelling and consultation with interested parties. Draft plans are exhibited for feedback, with submissions considered in the development the final plan submitted to the Minister.

DPIE staff resources vary depending on the complexity of the water sharing plan. These complexities can include:

- Number of water sources
- Diversity of water users and industry and the level of demand placed on the water sources
- Infrastructure in place
- Future programs and projects
- Number and type of legislative frameworks and policies applicable to the plan area
- Environmental assets
- Risks and benefits to the health of the water sources
- Social and economic impacts on water users and the community
- Nature of the recommended changes.

Interim extensions for up to two years beyond a plan's expiry date can be granted by the Minister, under the provisions of the *Water Management Act 2000*. This is used for some plans for the purposes of managing the workload or to allow difficult issues to be adequately addressed.

In addition, water sharing plans are also audited mid-term by the National Resources Commission, which involves input from DPIE, and can be sometimes be amended at this time. These amendments involve similar processes to remaking the plan, although typically on a reduced scale

Consultation with stakeholders during the term of a water sharing plan is undertaken to identify their concerns, inform them of new information, changes in circumstances or policy that could affect the plan, and report on progress.

8.10.5 Future period

The review, amendment, extension or replacement cycle of DPIE's water sharing plans for its inland water sources will continue through the 2021 determination period and reflect a 'business as usual' activity as required by the *Water Management Act 2000*. DPIE has a schedule of work that it needs to complete under the W06-02 activity code during the 2021 regulatory period.

In addition to the water sharing plan activities, additional work may be created if the Murray-Darling Basin Authority determines that the 20 water resource plans developed during the 2016 determination period do not meet the criteria established under the Basin Plan. Although this would result in further changes to the water resource plans, it may also involve amendments to the 31 water sharing plans that form the basis of the water resource plans. The Basin Plan review and amendment in 2025-26 are also considered likely to result in changes to the water resource plans during the 2021 determination period. However, we consider that these form part of the business as usual ongoing improvement of these plans. We also note that these water resource plans were obliged to be in place in the current period and this initial period of refining the plans should have been completed by now if New South Wales had met its obligations.

The costs for completing the activities under W06-02 are predominantly for labour costs. However, as noted previously, the time and cost for each plan is dependent on the associated complexities and issues to be addressed, and this can vary between plans.

As DPIE has completed water sharing plans to cover the entire state, cost efficiencies and improvements are expected in the 2021 determination period as the work required to initially develop a plan is much more than is required for the review and replacement phase of work that is now required.

DPIE has forecast its W06-02 expenditure across the 2021 determination period based on the number of plans and planned amendments to be addressed per year on average, and additional improvements to the service delivery it has identified. DPIE states that the forecast also accounts for the efficiencies that are expected to be realised with work on more mature water sharing plans.

The forward schedule of expiring water sharing plans is not evenly spread from year to year during the 2021 determination period, meaning that the expenditure and delivery of outputs will vary from year-to-year across the four years. As a result, DPIE will work with the National Resources Commission to spread the review work more evenly over time by advancing some reviews and applying interim extensions to others.

The expenditure requirements for the future period for this activity are based on 16 FTE per year. We requested DPIE to share with us the basis of this estimate. This resource breakdown is shown in Table 8-30. The total forecast resource requirement of 64.7 FTE is for a four year period which equates to 16.15 FTE per year, just above the 16 FTE included in the forecast.

Table 8-30 DPIE resource estimate for inland water plans for future period

Plan type	Length of time to replace	Count	Total years	Management/ support	Total resources
Easy	2	3	6	3.8	9.8
Moderate	2.5	6	15	9.6	24.6
Hard	3	5	15	9.6	24.6
Very Hard	3.5	1	3.5	2.2	5.7
		15	**39.5**	**25.2**	**64.7**

The resource estimate is fairly rudimentary and appears to have been generated for the purpose of addressing our question rather than being based on a forward work planning estimate.

8.10.6 Conclusion

DPIE has obligations under the *Water Management Act 2000* to develop, review, and remake water sharing plans. As such, the activities involved with achieving the requirements represent business as usual for DPIE on an ongoing cyclic basis. The expenditure is predominantly for labour costs.

DPIE has a defined program of work for its W06-02 work activities and has exceeded its target outputs for the 2016 determination period for water sharing plans. This was due to the need to review more water sharing plans than originally forecast to meet the Basin Plan requirements. The number of water sharing plans to be reviewed and remade during the 2021 determination period is similar in quantum to the number completed during the 2016 determination period, although DPIE exceeded its target for these plans for the four years. In addition, it achieved its target for completing the water resource plans that it was required to develop and submit in the period although this was achieved late. DPIE received a total of $27.9 million of Commonwealth funding over the 2016 determination period for developing the water resource plans but DPIE will need to use its allowance to fund the ongoing review and amendment of these plans going forwards.

Proposed expenditure for the future period averages $3.0 million per year which is 2% higher than the average annual expenditure allowed for in the 2016 Determination but 13% lower than the average annual expenditure incurred during the current period (net of Commonwealth funding). We consider that there is scope for material efficiencies to be achieved in this activity in the future period, as evidenced by the relative immaturity of the forward resource estimating. We would expect detailed, bottom-up estimates for each plan to be prepared for the forward period. This would allow efficiencies in resource utilisation and the resourcing mix to be identified. Efficiencies should also be able to be realised through continual improvement in business processes.

8.11 W06-03 Floodplain management plan development

8.11.1 Background

The scope of this activity is the development, review and amendment and extension or replacement of Floodplain Management Plans in collaboration with OEH. This activity is undertaken by DPIE.

Figure 8-14 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

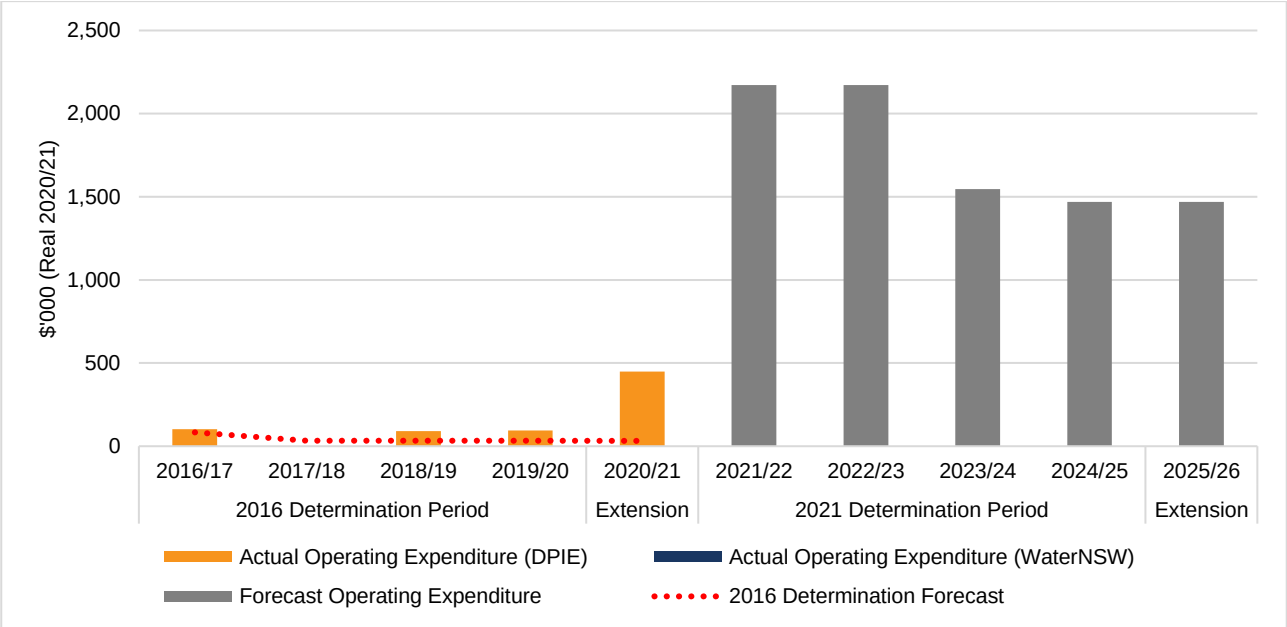

Figure 8-14 Current and future period expenditure for W06-03 Floodplain management plan development

Table 8-31 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-31 Current period expenditure for W06-03 Floodplain management plan development

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	85	34	34	33	33	218	44
Actual	102	0	90	94	450	735	147
Variance	17	-34	56	61	417	517	103

Table 8-32 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-32 Future period expenditure for W06-03 Floodplain management plan development

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,172	2,172	1,547	1,469	1,469	8,829	1,766

Actual expenditure in the current period has averaged $147,000 per year. This is $103,000 per year (237%) higher than allowed for in the 2016 Determination, which averaged $44,000 per year.

The proposed expenditure for the future period averages $1,766,000 per year. This is $1,722,000 per year (40x) higher than the average annual expenditure allowed for in the 2016 Determination, and $1,619,000 per year (11x) higher than the average annual expenditure incurred during the current period.

8.11.2 Driver for expenditure

The development and the remake of FMP is required to meet statutory obligations under:

Water Management Act 2000:

> Chapter 2, Part 3 Management Plans, Division 1, Division 5 Floodplain Management, Division 7 Environmental Protection and Part 4 Minister's plans for the making of management plans.

Water Act 2007 (Commonwealth):

> Part 2 –Management of Basin water resources.

- Murray Darling Basin Plan, Chapter 10 water resource plan requirements.
- As a signatory to the Murray Darling Basin Plan, NSW has committed to preparing Water Resource Plans and Environmental Watering Plans by 2019-20.

Floodplain management plans underpin implementation of the Floodplain Harvesting Policy which brings floodplain harvesting into a licensing framework. Implementation has proceeded in the current period with substantial revisions in 2018. Floodplain licences and approvals are expected to be in place for all five northern basin valleys by July 2021.

8.11.3 Output measures and performance

Outputs of this activity are in the form of the Floodplain management plan (FMP) development and the remake of each FPH as it expires. The target indicator for 2018/19 period is to have five FMPs completed or remade; these are in the areas of Gwydir, Border Rivers, Macquarie, Barwon-Darling, and Namoi. By the end of 2019/20, DPIE has forecast five FMPs to have officially commenced and a sixth for Macquarie to be largely complete but to not have officially commenced.

8.11.4 Current period

Within the current period six floodplain valleys are being developed for six rural flood pains as a part of the transition of water management from the provisions of the Water Management Act 1912 to the provisions of the Water Management Act 2000. The FMPs provides the framework for coordinating the development of flood works on the whole-of-valley basis. These six FMPs are being developed under the current Water Management Act 2000 are for five valleys, Gwydir, Border Rivers, Macquarie, Barwon-Darling, and Namoi; which replaces the 12 existing Water Act 1912 FMPs.

In DPIE's 'Detailed paper E – Expenditure by activity consolidated' it has shown that a majority amount of the operating expenditure was funded externally which is not reflected in the figure above with its yearly averaged expenditure higher than the average proposed expenditure in the future period.

8.11.5 Future period

DPIE has noted the continued ongoing development of new and existing FMPs into 2021 regulatory period. While the focus in the current period has been the Northern Basin, the future period will develop plans for the Southern Basin. The Water Management Act 2000 mandates reviews and audits for the FMPs to be kept to date with changes in knowledge, risks and circumstances, and continually improved to reflect experience in implementation.

DPIE sets out that service delivery will be improved in the 2021 regulatory period by:

- development of further Water Management Act 2000 compliant FMPs to replace the existing ten FMPs under the Water Act 1912and
- a higher level of mid-term reporting for the existing FMPs under the Water Management Act 2000 and more frequent ongoing communication and consultation with stakeholders.

We queried DPIE over the makeup of resourcing in the current period compared with the future period given the cessation of Commonwealth funding. DPIE advised that around 13 FTE have been funded by the Commonwealth and DPIE made a 10% contribution of funding to secure the external funding. The future period is estimated to require a team of seven FTE to complete the work comprising a team leader, modeller, two planners and two project officers as well as support resources. DPIE advised that rather than being determined through a detailed analysis, the resource estimate for the future period was undertaken based on the experience in the current period coupled with internal discussion and review ('sanity check').

The forecast costs for the future period also include material non-labour expenses which are higher in the first two years ($992k) before declining leading to average annual expenditure of $660k per year. DPIE advised that these costs are for technical development in the early stages of planning and include:

- preparation of a scoping study and associated data acquisition (e.g. LiDAR to produce digital elevation models, gauged flood flow data and flood aerial photography and satellite imagery),
- a flood behaviour investigation (hydrological and hydrodynamic modelling to delineate a floodway network, asset mapping and proposed rule development).

The costs proposed for the future period in these areas are based on those incurred in the current period.

8.11.6 Conclusion

In the current period, DPIE has received substantial external funding to develop FMPs in the Northern Basin. Internally funded expenditure averaged $735k per year. In the future period, the focus will be on the Southern Basin. While a lesser resource base is forecast as being required to delivered the ongoing workload (reduction from 13 FTE to seven FTE), DPIE does not expect to receive any external funding meaning that a step change in internal funding (rising to $1.7 million per year) is forecast as being required.

We consider that DPIE has justified the need for the work under this activity in the future period. However, we note that the resource estimate for the future period, while based on recent experience, is also relatively immature. We would expect detailed, bottom-up estimates for each plan to be prepared for the forward period. This would allow efficiencies in resource utilisation and the resourcing mix to be identified. Also, the estimates for the costs for non-labour costs in the future period do not appear to incorporate efficiencies. Accordingly, we consider that DPIE can achieve relatively higher levels of catch-up efficiency from this activity in the future period.

8.12 W06-04 Drainage management plan development

8.12.1 Background

The scope of this activity is drainage management plan development. This activity is undertaken by DPIE.

Figure 8-15 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its pricing proposal.

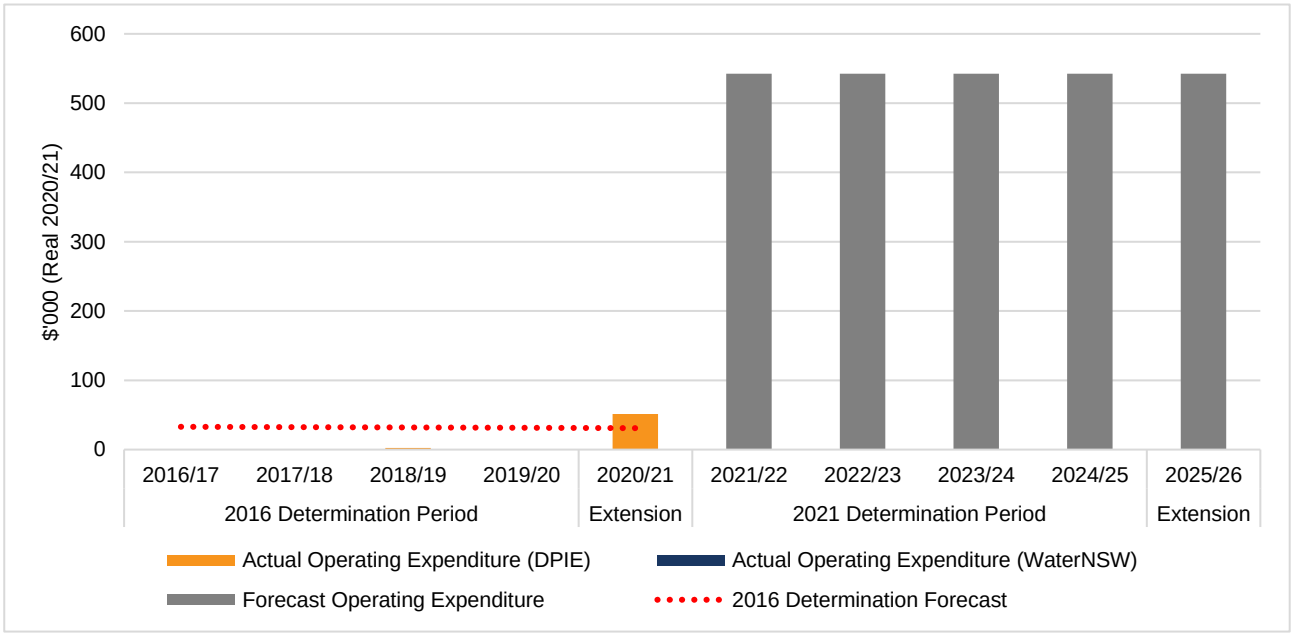

Figure 8-15 Current and future period expenditure for W06-04 Drainage management plan development

Table 8-33 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year. Only minimal expenditure was included in the 2016 Determination for this activity. An additional $225k of external funding has been received for this activity in the current period.

Table 8-33 Current period expenditure for W06-04 Drainage management plan development

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	34	33	33	32	32	163	33
Actual	0	0	2	0	52	54	11
Variance	-34	-33	-30	-32	20	-109	-22

Table 8-34 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-34 Future period expenditure for W06-04 Drainage management plan development

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	543	543	543	543	543	2,713	543

Actual expenditure in the current period has averaged $11,000 per year. This is $22,000 per year (67%) lower than allowed for in the 2016 Determination, which averaged $33,000 per year.

The proposed expenditure for the future period averages $543,000 per year. This is $510,000 per year (16x) higher than the average annual expenditure allowed for in the 2016 Determination, and $532,000 per year (49x) higher than the average annual expenditure incurred during the current period. The step up in proposed expenditure reflects the potential for introduction of a drainage management planning framework which has been under development in the current period.

8.12.2 Driver for expenditure

The Water Management Act 2000 includes provisions for the creation of a drainage management framework.

8.12.3 Output measures and performance

At the time of the 2016 Determination an output measure of the number Drainage Management Plans prepared was defined but the expected output was set at zero reflecting that no activity to formalise plans was anticipated in the current period.

8.12.4 Current period

As noted, while *the Water Management Act 2000* has provisions for drainage management, these are not yet in force. In the current period, the Department has been undertaking work to identify policy options for implementing drainage management and to achieve the following objectives:

- reduce complexity, time and costs associated with the approval requirements for agricultural drainage structures and activities on coastal floodplains
- improve the environmental outcomes from these activities, particularly water quality.

Of relevant was the release in 2018 of the Marine Estate Management Strategy. This Strategy has a 10-year horizon and defines threats to the marine estate and management initiatives for addressing these threats. Through the stakeholder engagement undertaken to development this strategy it was identified that estuarine water quality and works approvals were key concerns.

DPIE is leading coordinated work across government to come up with an appropriate framework for improving drainage management. External funding for these policy development activities is in place until 30 June 2021. The Department anticipates that a decision will be made on the preferred option for the drainage management framework before the commencement of the future period. Options include moving to a state-wide (coastal catchments) drainage management planning approach or modifying existing instruments so that they adequately account for drainage management objectives.

In the current period DPIE has undertaking a pilot of developing a drainage management plan which has provided insight into the potential scope and requirements of a plan as well as the resource requirements.

8.12.5 Future period

Although the nature of the preferred drainage management policy and implementation framework is unknown, DPIE has made its best effort to estimate the potential resourcing requirements. Its forecasts for the future period are based on assumed requirement of 3.18 FTE per year. A minor allowance for non-labour operating expenditure has also been made at an average of $4k per year. These have been based on the pilot work that has been completed.

DPIE advised us that its pricing proposal assumes likely costs for implementation of drainage management plans which it considers to be at the upper bound of potential costs for the policy options being considered. DPIE has also undertaken an initial risk assessment to prioritise coastal catchments that may be subject to planning and has identified seven priority catchments of which Richmond is the highest priority. DPI

Fisheries are also undertaking work to identify high priority environmental areas within the marine environment to assist with prioritisation.

8.12.6 Conclusion

DPIE has undertaken work in the current period to progress the definition of a drainage management framework. This work has been mostly externally funded. There is no clear policy position for the nature of drainage management planning in the future period. A number of options are being considered some of which have lower cost than that included in the pricing proposal which has been based on the development of drainage management plans in priority coastal catchments.

Given the uncertainty as to what efficient costs may be and if there will even be work undertaken in this area in the future period, we recommended in our draft report that no costs for this activity be considered efficient WAMC costs. In response to the draft report, DPIE accepted this recommendation given the uncertainty over the future framework in this area,

8.13 W06-05 Regional planning and management strategies

8.13.1 Background

DPIE's overall Water Strategy Program is a planning framework that will be used to set the strategic direction for water resource management and the water sector in NSW. The framework includes a new State Water Strategy which will be underpinned by 12 regional water strategies, the metropolitan Greater Sydney Water Strategy, and the Lower Hunter Water Security Plan. The W06-05 activity code is used to cover the development, evaluation, and review of these regional water strategies, metropolitan water plans, and other planning instruments, including associated stakeholder engagement, that deliver the strategies.

The strategies provide a platform for water agencies to work together and enable WAMC to enable to clearly articulate the work being carried out across the range of plans, regulatory reforms, projects, and other initiatives across to its customers and stakeholders. They will also provide the strategic framework for managing future droughts, and a monitoring and evaluation framework to track the performance of water service providers and the government in delivering these strategies.

Figure 8-16 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

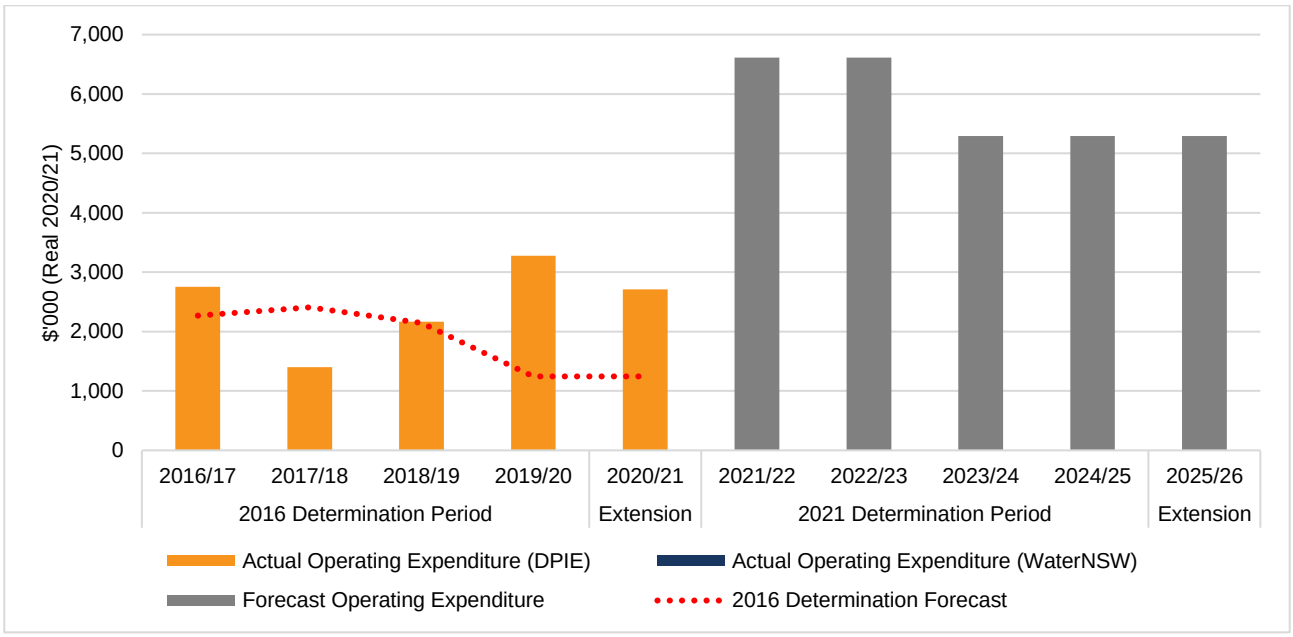

Figure 8-16 Current and future period expenditure for W06-05 Regional planning and management strategies

Table 8-35 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Substantial external funding was also received during the current period - $1.6 million in 2018/19 and $4.1 million in 2019/20.

Table 8-35 Current period expenditure for W06-05 Regional planning and management strategies

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	2,313	2,454	2,187	1,269	1,269	9,491	1,898
Actual	2,755	1,400	2,168	3,276	2,709	12,309	2,462
Variance	442	-1,053	-19	2,008	1,440	2,818	564

Table 8-36 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-36 Future period expenditure for W06-05 Regional planning and management strategies

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	6,614	6,614	5,292	5,292	5,292	29,103	5,821

Actual expenditure in the current period has averaged $2,462,000 per year. This is $564,000 per year (30%) higher than allowed for in the 2016 Determination, which averaged $1,898,000 per year.

The proposed expenditure for the future period averages $5,821,000 per year. This is $3,922,000 per year (207%) higher than the average annual expenditure allowed for in the 2016 Determination, and $3,359,000 per year (136%) higher than the average annual expenditure incurred during the current period.

8.13.2 Driver for expenditure

Although the strategies in the Water Strategy Program are not statutory plans, they contribute to water management outcomes aligned with the objects of the *Water Management Act 2000* and will provide guidance to how the New South Wales water sector meet their obligations under this and other water management legislation.

The strategies also contribute to key priorities and commitments by the NSW Government and The Premier. DPIE also considers that the Independent Commission Against Corruption, the NSW Productivity Commission, and the NSW Auditor General, have all indicated that they require DPIE to have in place a strategic planning framework for water resource management in NSW.

Expenditure on metropolitan water planning is recovered from Greater Sydney customers through a specific charge levied on WaterNSW's Greater Sydney business.

8.13.3 Output measures and performance

DPIE did not meet its target to complete six new regional water strategies during the 2016 determination period. It is forecasting that that four will be completed by June 2021, nine by December 2021, and all 12 will be in place in 2022.

DPIE based the initial costings and timeframes for delivery of the regional water strategies program over the 2016 determination period on the Greater Hunter regional water strategy, which was not yet complete at the time the forecasts were developed. In addition a review of the approach being taken to develop the strategies, which was undertaken with support from external consultancies, identified that the scope of the strategies needed to increase; this subsequently increased the cost of delivering each strategy document.

The additional research, analysis, assessment and engagement that was identified as being required delayed the completion of the strategies that DPIE had anticipated would be completed during the 2016 determination period.

In addition, a number of the regional strategies have been affected by Murray-Darling Basin impacts. Significant and specific additional engagement and analysis has been required to complete the affected regional strategies.

8.13.4 Current period

During the 2016 determination period, DPIE has undertaken regional planning and management strategy work for the regions and metropolitan areas.

The key output to be completed in the current period has been the State Water Strategy, due to be finalised in 2020 and made available for consultation in 2021. This will provide the overall state water planning framework for a 20 year horizon that reflects the objectives of the *Water Management Act 2000* and will include overarching policies, targets, and strategic outcomes.

The State Water Strategy will be underpinned by the 12 regional water strategies, the Greater Sydney Water Strategy, and the Lower Hunter Water Plan that DPIE has also commenced during the current determination period. These strategies, which DPIE is developing in partnership with the relevant water service providers across the state, will provide context and direction for water management over the next 20 years and will identify priorities for potential investment in infrastructure, and non-infrastructure solutions, to address changing water needs and climate variability.

The Greater Sydney Water Strategy replaced the previous Metropolitan Water Plan in 2017 and looks to ensure water security, economic growth, community wellbeing, and to guide water allocation and major infrastructure investment decisions for Greater Sydney.

A review of the 2014 Lower Hunter Water Plan is currently underway by DPIE, Hunter Water Corporation and DPIE Water and other regional stakeholders. The release of the renamed Lower Hunter Water Security Plan is planned for 2021. The plan will include a portfolio of supply and demand measures which will ensure there is enough water to supply homes, business, and industry in the region for the future and during drought.

During the 2016 determination period, DPIE's expenditure for developing the regional water strategies has been funded through a combination of revenue from user charges and external funding. The external funding provision was driven by the recommendations in the State Infrastructure Strategy to prioritise regional water strategies and their adoption as an election commitment by the NSW Government.

In September 2020 the Auditor General released report[36] that examined aspects of the regional and metropolitan water planning undertaken through this activity. A key finding of this report was that DPIE had only commenced a program to integrate local, regional and state water planning in 2018–19:

> *The department has not implemented a state-wide and regionally integrated approach to managing town water security risks and infrastructure priorities. As such, the department has been supporting planning for and funding LWUs' town water infrastructure without a long-term strategy. The New South Wales' Water Management Act 2000 (WM Act) made provision for a state-wide, strategic water plan almost 20 years ago. In 2018–19, the department commenced a program to develop 12 regional water strategies by 2021. The department had started a strategy for the Greater Hunter region in 2014, which is now complete but not yet implemented. The department has also outlined 'regional town water strategies' as a new approach for guiding LWUs to do cross-LWU boundary planning and has committed to co-fund these. In 2020 the department started work on a state water strategy.*

The report goes on to highlight how this lack of an integrated and state-wide approach to planning had impeded the identification of risks and funding priorities.

8.13.5 Future period

DPIE expects that State Water Strategy to be completed in late 2020 for consultation in early 2021.

DPIE expects to have all the final 12 regional strategies and implementation plans in place during the 2021 determination period. DPIE is seeking funding in the period to finalise the remaining strategy documents and provide the ongoing coordination, implementation, and stakeholder engagement for each regional water strategy.

The stakeholder involvement to implement each of the strategies will include engagement with government and sector stakeholders to ensure that their own strategies, plans, and investment decisions are informed by the opportunities, risks, and constraints identified by the water strategies. This engagement is considered key to ensuring that the outcomes included in the strategies and benefits identified are realised.

The strategies will be subject to ongoing review and update via a program of monitoring and evaluation, including whether the intended outcomes have been achieved in order to demonstrate effectiveness, accountability, and transparency to government, stakeholders and the community. A three to four year review period has been assumed to ensure that each strategy continues to be relevant and includes up-to-

[36] NSW Auditor General, *Support for regional town water infrastructure,* September 2020.

date information and considerations. DPIE expects the rolling program of strategy reviews and updates to come into effect towards the end of the 2021 determination period.

The funding DPIE is seeking for the 2021 determination period for work on the regional strategies is for completing the remaining eight regional water strategies that are currently under development and for developing the associated regional water strategy Action Plans to implement each strategy. The program for plan completion is heavily forward loaded with DPIE intending to complete all plans by January 2022 and then move into plan maintenance and renewal. Despite this forward loading of its program DPIE proposal a significant step change in expenditure that is sustained throughout the forward period. This appears at odds with the reduced level of work that is anticipated in the plan maintenance and renewal phase.

During the 2021 period, DPIE will implement actions included in the Lower Hunter Water Plan. However, as this work is charged directly to Hunter Water, and funded by their customers, there is no net cost to the water management services funded through WAMC prices. Therefore, no expenditure on the Lower Hunter Water Plan is included in DPIE's pricing submission.

In relation to the Greater Sydney Water Strategy, DPIE will develop implementation and monitoring and evaluation plans in the 2021 determination period. Staff time costs are the major component of the expenditure for this activity, with additional staff and consultancies identified as being required to complete the work. This work is programmed to be completed in the first two years of the 2021 determination period.

Resource of 28.55 FTE are forecast as being required for the future period in addition to an average of $934k per year of non-labour operating expenditure. Of the total, 5.1 FTE are for metropolitan planning and the balance for regional planning. For the metropolitan water planning component of the expenditure, the non-labour operating expenditure is for consultancies. We requested a project plan for the metropolitan water planning component to demonstrate a link between the overall objectives and project workstream activity. The plan provided did not show a clear link between the workstream and effort forecast.

8.13.6 Conclusion

Although there is no statutory requirement to develop the water management plans that DPIE produces under this activity code, they contribute to water management outcomes aligned with the objectives of the *Water Management Act 2000* and also meet recommendations and requirements placed on the department from other agencies and stakeholders, including helping to meet key commitments made by the NSW Government and the Premier.

DPIE consider that as a result of the drought during the current determination period, more integrated planning is needed to be in place to best manage the state's water. However, as the plans that were in place have not been aligned, they have been considered to have not put the state as a whole in the best position to address infrastructure delivery. Although this is a small part of the overall approach to water management, it has highlighted the need to align infrastructure for water management with policy and operations to provide greater clarity for the socioeconomic requirements for water users. This view is supported by the September 2020 Auditor-General report.

DPIE did not meet its outputs across the 2016 determination period and this has been attributed to initially developing inaccurate costings and timeframes based on limited information from the first regional plan developed for the Lower Hunter region, as well as also subsequently identifying that the scope of the work needed to increase in order to achieve the required outcomes. In addition, a number of the regional strategies have been affected by Murray-Darling Basin impacts and have required significant additional work to be completed.

DPIE's proposed expenditure for the future period averages $5.9 million per year which is $3.9 million per year (207%) higher than the average annual expenditure allowed for in the 2016 Determination, and $3.4 million per year (136%) higher than the average annual expenditure incurred during the current period.

The proposed increase in expenditure is required to finalise and implement the metropolitan and regional strategies and to then start the process of ongoing monitoring, review and update of the plans on a rolling cyclic basis. A three to four year cycle for each plan before it is reviewed is expected. There is a clear need for this activity and strong stakeholder support. The Auditor-General report also raises concerns over the lack of state-wide regional planning.

However, given that the findings of the Auditor General report are relevant to this activity and are very recent and stakeholder concerns over the need for increased engagement and better integration with local water utility planning, we recommend that expenditure for this activity be reprofiled so that planning work is slowed in the first two years of the future period while stakeholder engagement is prioritised and the findings from the Auditor General's report can be adequately accounted for and incorporated into future planning. This is not to diminish the importance of the planning but to allow sufficient time so that a better overall outcome is

reached. The reprofiling will also allow the Department a more considered ramp up in resourcing this activity which, all else being equal, should lead to better outcomes. As noted, the profile proposed by DPIE is a step change in resourcing that is then sustained and does not reflect the expected reduction in effort required as the plans enter into the maintenance and renewal stage.

DPIE pushed back strongly on this recommendation in its response to the draft report noting:

> *We reject Cardno's recommended adjustment for activity W06-05 on the grounds it is beyond its scope of work. Further, the recommended adjustment requires extensive knowledge of the context and the inter-relationship between engagement and rural water planning. Cardno does not provide qualifying information to suggest that they possess the required level of knowledge to substantiate the recommended adjustment of 25% per year for the first two years or how it would it would be beneficial to plan development.*
>
> *In making its recommendation it appears that Cardno does not understand the complex and iterative nature of regional water strategy development and stakeholder consultation. We contest that stakeholder engagement cannot proceed ahead of, and separate from, planning and to do so would represent inefficient expenditure. We cannot progress stakeholder engagement in any phase of the strategies*

We made our recommendation based on observed stakeholder concern regarding the extent of engagement. These are the stakeholders that the Department is collaborating with to produce the plans. This concern is also reflected in the findings of the Auditor General's report and the Auditor General has made other findings relevant to this activity area that we would expect DPIE to fully consider. These findings are the basis of our recommendation. We acknowledge that the draft report was not clear that our recommendation is only seeking to rebalance effort so that more planning is undertaken later in the period once engagement can be more fully completed and the findings of the Auditor General be more fully considered. This final report has been updated to make this more clear.

In preparing this final report we sought to better understand the approach to stakeholder engagement and the basis for the resource estimate for the overall planning activities. DPIE provided the stakeholder engagement plan for the North Coast Regional Water Strategy which has considerable detail on the extent and timing of proposed engagement. However, the document is also not approved and its currency is not clear. Notwithstanding this, it appears to be a sound basis for planning and executing engagement.

In response to our request for more information on the approach taken to estimating resource requirements, DPIE provided qualitative information along with discussion as to why it considered its required resourcing is higher than that included in its pricing submission. Good practice resource planning should be able to demonstrate[37]:

- how resourcing supports Departmental or work area objectives
- estimate resource requirements
- consideration of options and approaches to address capability gaps
- monitoring and evaluation.

The information provided by DPIE in response to our initial information requests and in response to the draft reports does not demonstrate clearly the basis of the proposed resourcing (expenditure) profile to support the desired objectives. We consider this is a further reason for the expenditure to be reprofiled so that DPIE can confirm that its planned resourcing approach is appropriate. We also recommend that this expenditure is subject to a relatively higher level of catch-up efficiency to reflect the relative immaturity of resource planning and to reflect that material efficiencies should be gained through the development of a large number of plans in a rolling, integrated and well-coordinated program where continual improvement is given importance. As Metropolitan Water Planning costs are recovered through a specific charge levied on WaterNSW, we have provided in Table 8-37 the efficient costs for this component of the overall activity and the derivation of these efficient costs.

The information provided by DPIE has not provided new information to address our concern that expenditure for this activity would achieve a better outcome if it was reprofiled so that less planning occurred while stakeholder engagement was prioritised and overall, detailed resource planning improved. Therefore, we

[37] See for example the New South Wales *Strategic Workforce Planning Framework for the NSW Government Sector,* Public Service Commission, 2019

maintain our recommendation that expenditure for this activity be reprofiled by reducing expenditure in the first two years of the period by 25%.

Table 8-37 Calculation of recommended efficient expenditure for Metropolitan Water Planning

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Proposed operating expenditure	1,322	1,322	0	0	0	2,644
Adjustments	0	0	0	0	0	0
Proposed expenditure net of adjustments	1,322	1,322	0	0	0	2,644
Catch-up efficiency (%)	-1.4%	-2.8%	-4.1%	-5.5%	-6.8%	
Catch-up efficiency ($)	-19	-37	0	0	0	-55
Proposed expenditure net of adjustments and catch-up efficiency	1,303	1,285	0	0	0	2,589
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	-3.5%	0
Continuing efficiency ($)	-9	-18	0	0	0	-27
Recommended efficient expenditure	**1,294**	**1,267**	**0**	**0**	**0**	**2,562**

8.14 W06-06 Development of water planning and regulatory framework

8.14.1 Background

The scope of this activity is development of water planning and regulatory framework. This activity is undertaken by DPIE.

Figure 8-17 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. All expenditure for this activity is operating expenditure in its 2020 pricing proposal.

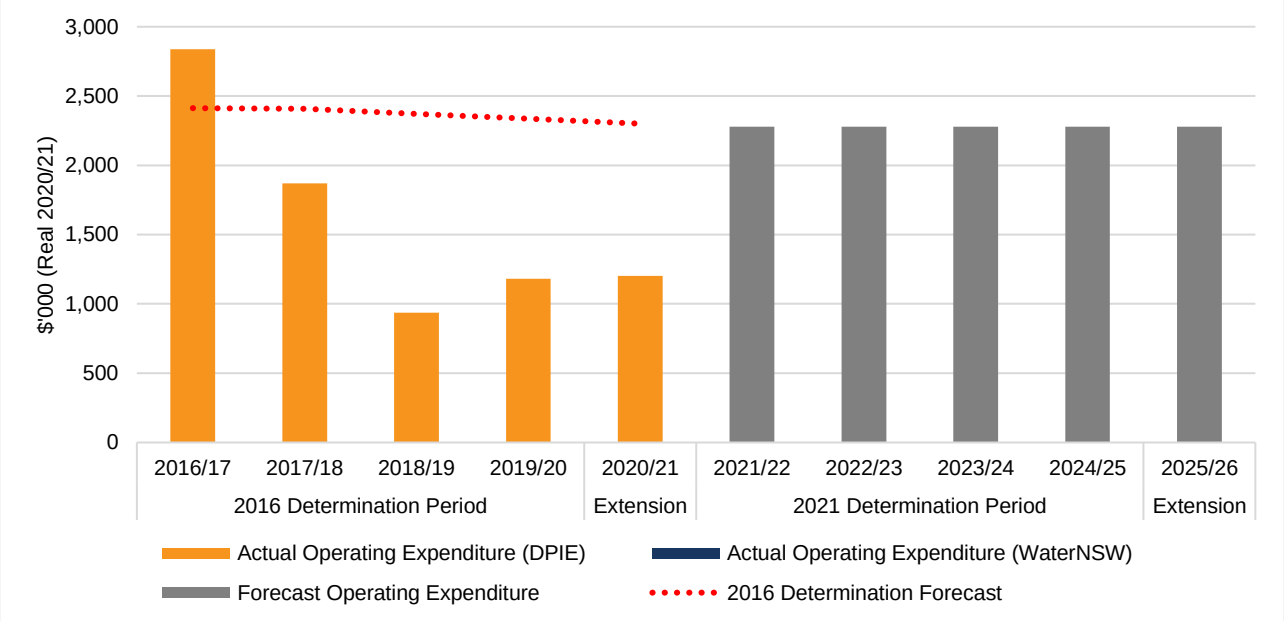

Figure 8-17 Current and future period expenditure for W06-06 Development of water planning and regulatory framework

Table 8-38 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year. Significant external funding for this activity has been received in the current period of just under $10 million.

Table 8-38 Current period expenditure for W06-06 Development of water planning and regulatory framework

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	2,458	2,453	2,416	2,380	2,344	12,051	2,410
Actual	2,839	1,869	937	1,182	1,202	8,029	1,606
Variance	380	-584	-1,479	-1,198	-1,142	-4,023	-805

Table 8-39 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-39 Future period expenditure for W06-06 Development of water planning and regulatory framework

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,278	2,278	2,278	2,278	2,278	11,392	2,278

Actual expenditure in the current period has averaged $1,606,000 per year. This is $805,000 per year (33%) less than included in the 2016 Determination, which averaged $2,410,000 per year.

The proposed expenditure for the future period averages $2,278,000 per year. This is marginally higher than that included in the 2016 Determination.

8.14.2 Driver for expenditure

This activity is for the ongoing development of the whole water management regulatory framework across all relevant legislation and supporting instruments. The primary pieces of legislation are the *Water Management Act 2000* and the *Water Act 2007*. The scope of work includes for planned policy development and for responding to needs to improve the regulatory framework as these are identified.

8.14.3 Output measures and performance

The output measure defined for this activity at the 2016 Determination was the number of regulatory instruments and policies developed or amended according to an annual forecast. The performance target was for 100% of the forecast annual work plan to be delivered. The output measure has been reported as not being met as the Department has not made annual forecasts of its work plan under this activity.

We consider that this output measure is not a good indicator of the level of effort or performance delivered for this activity. The measure being set based on the Department's own forecast is problematic as the Department's own forecast may not reflect the actual need for development of the regulatory framework. There is also potential if those being measured are responsible for setting the target for the target to be set at a level that could be easily achieved. We note this has not occurred in the current period as the Department has not been making forecasts. Finally, we also consider that the performance target to deliver 100% of the forecast is undesirable as the Department should be able to be responsive and flexible to changing needs, not locked in to achieving a forecast that may no longer reflect the best understanding of needs.

8.14.4 Current period

DPIE set out that the work that it undertakes for this activity derive from a number of needs particularly the State framework under the Water Management Act 2000 and intergovernmental agreements for water management, particularly in the Murray Darling Basin under the *Water Act 2007*. There is also a need to assist developing and formalising government policy for water management. The staff that undertake this activity also undertake policy work that falls outside of the scope of WAMC monopoly services.

DPIE advised that a lot of effort under this activity is in response to stakeholder feedback and representations, such as them seeking more information on the impact of water management on their decision making or seeking amendments to the regulatory framework. An example of this in the current period has been a desire from stakeholders to increase transparency around water sharing plans. The Matthews Report and the creation of NRAR has also impacted this activity in the current period as it has provided more attention on the effectiveness of the regulatory framework and areas that required improvement. There have been other investigations in recent years that have identified ways in which water management can be made more efficiency and effective.

We challenged DPIE as to how it could reliably forecast and manage its workload when it was required to respond to stakeholder concerns and to respond changes in government policy. DPIE responded that there was a backbone of workload defined by statutory obligations and the known timing of implementation or reviews. However, it also identified that these known reviews also led to unanticipated reactive work as issues with the regulatory framework were identified.

DPIE advised that it has a list of known regulatory improvements that it has prioritised and uses as a basis for directing its efforts. It also uses this planning to identify synergies in activities. DPIE advised that it has previously been challenged as to how to prioritise its workload, and the risk-based approach implemented in the last year has led to improvements. We requested and received this prioritisation model. The model uses a multi-criteria scoring approach to assign a risk score to identified needs based on potential impacts across a number of consequence categories. DPIE advised that the methods used to develop the register, such as the definitions of consequence, are a work-in-progress and will change as the model is used more and as more is learned about how it can be useful in setting the work program. DPIE also advised that the results provide a guide only, and the work program is based on discussion and guidance from the DPIE Executive with this model an input to these discussions.

In the current period (early 2020), DPIE has commenced use of a “Water Policy and Legislations Suggestions Form” which was enabled to better capture needs in a consistent manner and with information that assists in the prioritisation of effort.

8.14.5 Future period

Our understanding is that for DPIE, while continuing to need to respond to Government priorities and stakeholder needs, the anticipated activity reflects a largely business as usual operating environment. DPIE has sought to build up capacity in this area after losing experienced staff in the current period.

DPIE will continue to implement its improved work processes to identify and prioritisation needs in this area. However, the forward expenditure efforts are based on a top-down estimate of resource requirements based on experience rather than a bottom-up estimate in line with the prioritised needs list. Expenditure for the future period has been forecast based on an estimated requirement of 12.13 FTE to deliver the anticipated workload. Non-labour operating expenditure is forecast at an average of $197k per year.

8.14.6 Conclusion

In the current period, expenditure has been below that included in the 2016 Determination, but for the future period the forecast requirement is almost identical to that included in the 2016 Determination. There is no clear rationale for DPIE to adopt the 2016 Determination level of expenditure for the forward period considering that the lower level of expenditure incurred in the current period has been sufficient meet output and performance targets. The estimated expenditure requirement has not been arrived at from a detailed estimate, although we realise that a bottom-up, estimate may not be possible for this activity.

Significant work has been undertaken to improve the justification for work undertaken under this activity including better control over needs identification, prioritisation of effort, and resource planning for delivery of work. However, the evidence in the current period is that a proportion of work is reactive in nature and output levels are lower than anticipated.

While there will always be a need for flexibility and agility in policy response, a more proactive and planned response to policy and regulation development should achieve objectives more efficiently. This is not to say that a proactive approach is not currently undertaken but that the balance should be shifted so that less reactive work is undertaken. This level of expenditure will also provide an incentive for DPIE to undertake more proactive planning and execute work in accordance with its planning. We recommend that the scope of this activity for the future period be reduced to account for less reactive work being undertaken and to reset to reflect the Department’s current observed level of prioritised effort. We recommend a reduction in proposed activity levels to reflect the level of effort in the current period (a reduction of $3.4 million).

8.15 W06-07 Cross border and national commitments

8.15.1 Background

The scope of this activity comprises development of national and cross border water arrangements, including funding arrangements and operational programs to meet national and interstate commitments. This activity is undertaken by DPIE.

Figure 8-18 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its 2020 pricing proposal.

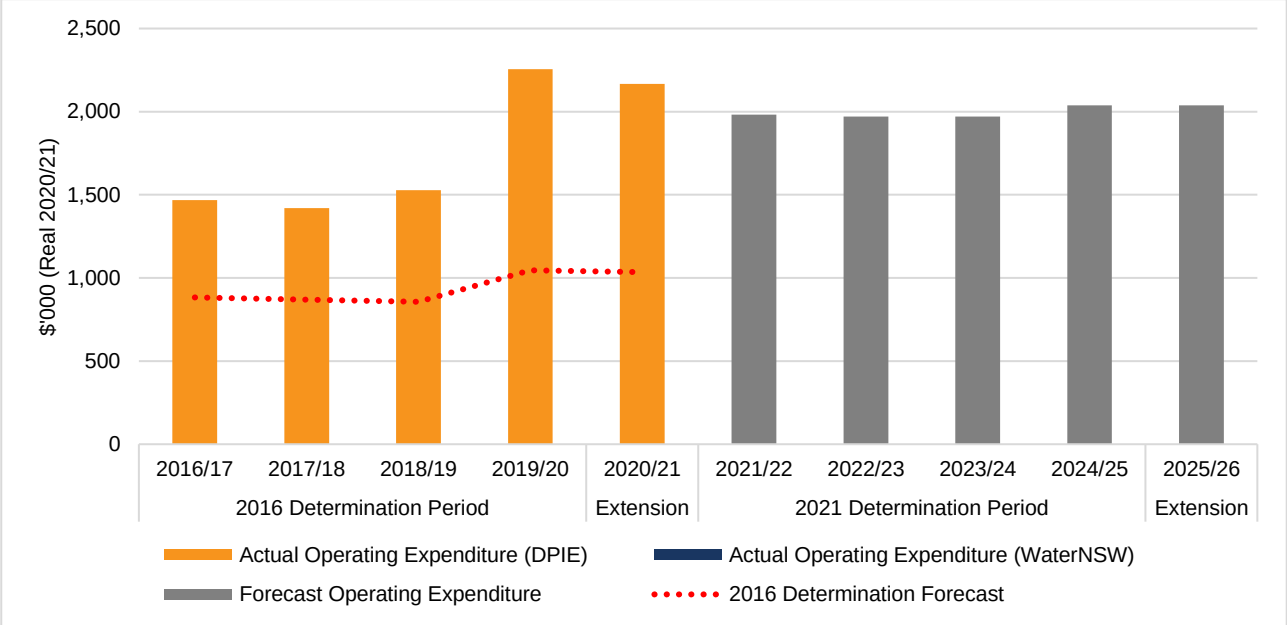

Figure 8-18 Current and future period expenditure for W06-07 Cross border and national commitments

Table 8-40 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-40 Current period expenditure for W06-07 Cross border and national commitments

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	900	886	873	1,066	1,055	4,779	956
Actual	1,468	1,421	1,528	2,255	2,167	8,839	1,768
Variance	568	535	655	1,189	1,112	4,059	812

Table 8-41 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-41 Future period expenditure for W06-07 Cross border and national commitments

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	1,981	1,971	1,971	2,037	2,037	9,998	2,000

Actual expenditure in the current period has averaged $1,768,000 per year. This is $812,000 per year (85%) higher than allowed for in the 2016 Determination, which averaged $956,000 per year. However, DPIE indicated that it considers that the 2019/20 figure includes some incorrectly allocated costs.

The proposed expenditure for the future period averages $2,000,000 per year. This is $1,044,000 per year (109%) higher than the average annual expenditure allowed for in the 2016 Determination, and $232,000 per year (13%) higher than the average annual expenditure incurred during the current period.

8.15.2 Driver for expenditure

The driver for this activity is the need to represent New South Wales' interest in the review and implementation of a range of agreements. DPIE's pricing proposal states that "We must also be a powerful advocate for NSW licence holders and negotiate for outcomes sought by NSW to ensure that these agreements and legal instruments will deliver balanced and fair outcomes and obligations".

Cross border obligations occur in a range of instruments including:

- Water Act 2007
- Murray Darling Basin Plan 2012
- Murray-Darling Basin Intergovernmental Agreement 3 July 2008
- Murray Darling Basin Reform Memorandum of Understanding 26 March 2008
- Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin of 5 June 2013
- NSW Queensland Border Rivers Act 1947
- NSW Queensland Intergovernmental Agreement 2008
- Intergovernmental Agreement for the Paroo River between New South Wales and Queensland 2003
- Intergovernmental Agreement on a National Water Initiative
- Great Artesian Basin Sustainability Initiative.

The agreements relating to the Murray Darling Basin are notable as this Basin covers approximately 75% of the area of the State while also covering significant portions of Victoria, South Australia, the Australian Capital Territory and Queensland. The importance of the Basin and the need to work with the other jurisdictions to jointly achieve desired objectives means that it is a particular driver for expenditure in this area.

There are two different types of costs included within this activity: work to participate in "intergovernmental activities" which is mainly through a broad range of committees and work on the Basin Salinity Management Strategy 2030 (BSM2030).

In reviewing this activity, we found that a portion of the work undertaken for "intergovernmental activities" (as distinct from Basin Salinity Management) appears to be more in line with "policy development" rather than the other water planning and management categories defined in Appendix B of the National Water Initiative Pricing Principles[38]. Expenditure for "policy development" is not within the scope of WAMC monopoly services. Principle 2 of the NWI pricing principles sets out the exclusion of policy development activities from water planning and management charges and note (i) defines the scope of these activities. This section of the pricing principles is reproduced following:

> *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. *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.*

[38] NRMMC, 2010, *National Water Initiative pricing principles*.

The work plan provided to us by DPIE for intergovernmental activities includes descriptions of work planned to be undertaken in this area such as the following (among others) which we consider appear more aligned with "policy development" than implementation of policy:

- AI 4.2 SDLAM National Partnership Agreement: "Policy development of proposed negotiating positions and options…Negotiate and agree terms of SDLAM NPA…Consult impacted NSW agencies and delivery partners…Liaise with NSW central agencies to enable agreement and signature of NPA…"
- Progressing water market reform: "Lead development of proposed NSW position on interim report and options…Present NSW positions and contribute to any joint government response and implementation of options…"
- Update of the National Water Initiative: "Assist the Productivity Commission as required in their inquiry into national water reform…Continue NSW contribution to NWI reform".

A challenge in assessing whether the work under this activity falls within the definition of WAMC monopoly services is that lack of information that DPIE has been able to provide that demonstrates the objectives of the work being undertaken, the nature of the work being policy or operational and the basis of the resource estimates made. In preparing this final report we requested DPIE to provide more detailed information in this area for a sample of initiatives included in its overall work plan but we were only provided with the same relatively coarse information that DPIE provided for the draft report.

We recommend that DPIE undertakes an assessment of the intergovernmental activities component of this activity code and tests them against the National Water Initiative Pricing Principles Appendix B and shares this information with IPART. For the purposes of this final report, we have made our own assessment of the amount of effort undertaken for intergovernmental activities which appears to be policy development and therefore should not be included within the scope of the WAMC monopoly services. Our assessment has been based on the work plan provided by DPIE and by simply assuming an equal weight of effort for all of the positions identified. We have then made our own assessment of the extent to which each activity is consistent with "policy development" and then determined the proportion of total effort that is in this category. Through this assessment, we identified that around one-quarter of all effort appears to be "policy development" and therefore should not be considered a WAMC monopoly service. We therefore recommend that the scope of this activity be reduced by one-quarter when determining the level of expenditure that users should support. Note that this adjustment is made before the application of user shares as the NWI pricing principles set out that the scope of expenditure aligned with the principles should first be determined then user shares applied to efficient costs.

8.15.3 Output measures and performance

The output measure for this activity is "Full participation in interstate processes to manage water" with a performance indicator of "Compliance with key interstate agreements". The target for the performance indicator is 100%.

The output measure is subjective in that "full participation" cannot be unambiguously defined. DPIE detailed that a number of its interstate processes are subject to independent review and audit to test compliance but these are the exception rather than the rule.

DPIE has reported that it has met the output measure and performance indicator in the current period. However, as we note below, New South Wales has been in breach of its obligations relating to the BSM2030.

8.15.4 Current period

Expenditure in the current period has been almost double that forecast at the 2016 Determination, and a further 13% increase in expenditure compared with actual in the current period is proposed for the future period.

DPIE states that costs for this activity were higher than expected due to "significantly more complex and protracted negotiations around basin plan settings than anticipated, particularly the Northern Basin Review, the Sustainable Diversion Limit (SDL) adjustment mechanism, disallowance of a key basin plan amendment and proposed disallowance of a second amendment, development of stronger socioeconomic neutrality criteria for water efficiency measures, and the basin compliance compact".

The State is required to participate in over 35 groups and committees to discuss and implement the intergovernmental agreements. We queried whether DPIE kept records of the time spent for each committee and were informed that it did not.

8.15.5 Future period

The expenditure forecast for the future period is based on an assumed 6.8 FTE for intergovernmental activities and 3.6 FTE for the Basin Salinity Management Strategy.

Work on the Basin Salinity Management Strategy is required to meet the State's obligations under Schedule B of the Murray Darling Basin Agreement. New South Wales is currently in breach of its obligations to support BSM2030 as expanded on in the below audit report extract[39]:

> *The Audit raised the issue two years ago; that NSW did not have sufficient resources to adequately manage its responsibilities under BSM2030. While a plan has been established as a way forward, and some new resources made available to progress some register reviews and improve the management of the SIS, there is still much to do. The rapid expansion of irrigation in the NSW component of Sunraysia without a salinity policy framework and with many register reviews outstanding is a concern for both those investing in the permanent plantings and for the health of the rivers in the basin. Already 5,800 ha has been developed with approximately a 6 EC debit that is not on the registers. There is a potential for another 3,500 ha to be developed with a potential for another 3.7 EC debit. While the Auditors appreciate that NSW has had many water resource plans to submit to the MDBA and demands for resources to manage drought, we understand that it may take two more years before a further increase in funding is available to commence work on the salinity impact assessments. NSW is already in breach of the Schedule B and any further delay will put both the investors and the health of the River Murray at risk. It is essential that NSW immediately provide the resources to meet its obligations under the Murray-Darling Basin Agreement and the Water Act (2007).*

There is clearly a need for expenditure to be committed for the State to meet its BSM2030 obligations. DPIE has increased resourcing in this area with an additional 1.5 FTE commencing recently. The total of 3.6 FTE for salinity management activities is supported by an external consultant's report in the scope of activities required. DPIE notes that it has to catch-up effort to meet its obligations for the 2025 review of BSM2020.

For the intergovernmental activities, a workplan has been developed to estimate the number and level of staff required to perform required activities in the future period. The work plan only identifies the number of each staff position required for activities. The level of input (time) expected for each position and the duration over which the effort will be provided is not identified. DPIE informed us that in addition to this bottom-up forecast, it had undertaken a top-down estimate based on its experience in recent years and understanding that the intergovernmental activities have become increasingly complex in recent years. As noted, in preparing this final report we requested DPIE to provide more detailed information regarding the planning for the work it undertakes for this activity. DPIE provided to us the same information it had provided for the draft report. This information demonstrates a relatively low level of maturity in DPIE's approach to resource planning for this activity.

A recent review[40] of the effectiveness and efficiency of joint governance arrangement for the Murray Darling Basin concluded that:

> *While it is generally accepted that the management of the Basin is complex and with that complexity comes higher governance costs than might otherwise be the case, the current transactional costs are excessive.*
>
> *The existing governance arrangements are unwieldy, there are too many committees adversely affecting coordination and stream lined decision-making.*

This conclusion highlights that while the current joint working arrangements are those that have been put in place by the jurisdictions, they do not reflect an efficient approach to delivering these services.

8.15.6 Conclusion

We consider that the costs for BSM2030 are clearly justified and the resource estimates have been based on a third party assessment which has been subject to internal review.

We consider that around one-quarter of the effort for intergovernmental activities falls outside the scope of a WAMC monopoly services. We therefore recommend that proposed expenditure for the intergovernmental component of this activity be reduced by this proportion. In light of the recommendations of the Claydon

[39] Report of the IAG-Salinity 2017-19, Independent Audit Group for Salinity, 2019.
[40] Review of the Murray-Darling Basin Joint Governance Arrangements – Final Report, Greg Claydon, 18 March 2019.

review, we consider that an adjustment to scope for this activity of 5% is warranted to reflect the opportunity for increased efficiency that can and should be realised through improved governance arrangements and less involvement of the Basin States in committee work.

In developing our recommendations for efficient expenditure, we have not applied a catch-up efficiency allowance in recognition of DPIE's own efficiency challenge

8.16 W07-01 Water management works

8.16.1 Background

The scope of this activity is to undertake water management works to reduce the impacts arising from water use or remediate water courses. This involves works in two main areas- to reduce salinity effects and to restore riverbank stability. Erosion effects are addressed by restoring river frontage through structural erosion controls, such as log and rock revetment, fencing to exclude stock and protect revegetation, and assistance with off-stream stock watering and planting of local native species. Salinity effects on surface water are mitigated by the operation of salt interception schemes. This activity is undertaken by DPIE.

Figure 8-19 shows the expenditure for this activity in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown. DPIE has classified all expenditure for this activity as operating expenditure in its pricing proposal.

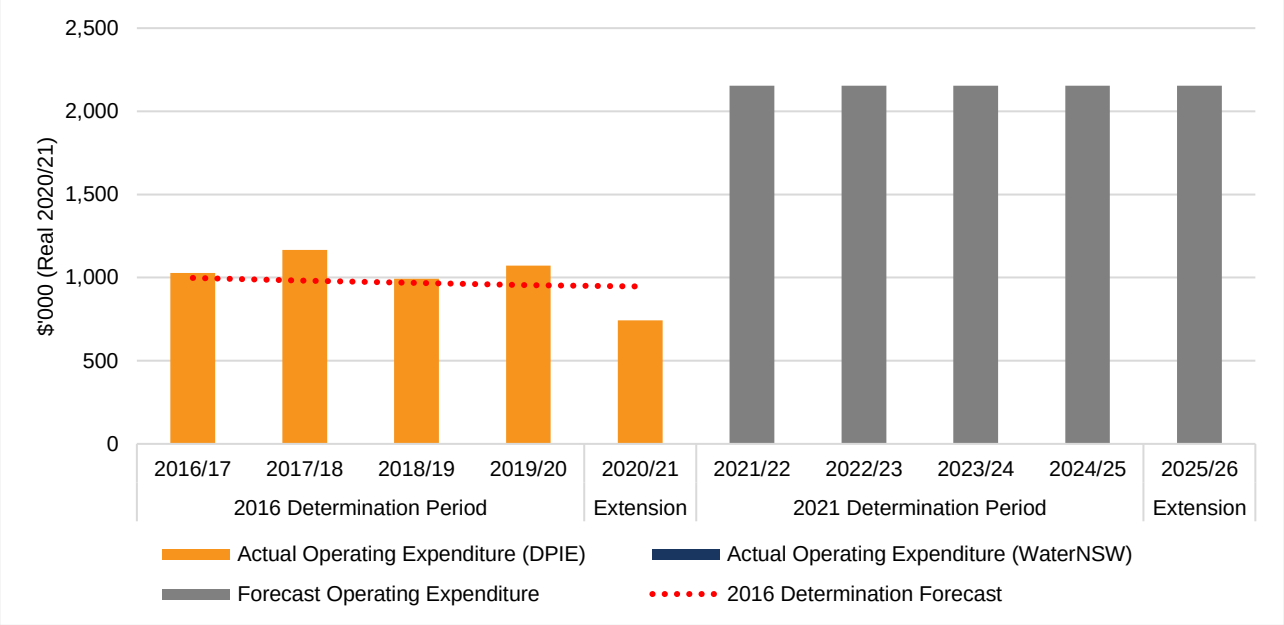

Figure 8-19 Current and future period expenditure for W07-01 Water management works

Table 8-42 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-42 Current period expenditure for W07-01 Water management works

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	1,017	1,001	986	972	965	4,941	988
Actual	1,028	1,165	992	1,073	742	5,000	1,000
Variance	11	164	6	101	-223	60	12

Table 8-43 presents the future period expenditure for this activity, including the average annual expenditure across all years. This table includes the figures from the updated AIR/SIR received in October 2020 which corrected for double counting of expenditure against this activity code. The impact has been to reduce proposed expenditure by around $720,000 in each year of the forward period.

Table 8-43 Future period expenditure for W07-01 Water management works

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	2,153	2,153	2,153	2,153	2,153	10,766	2,153

Actual expenditure in the current period has averaged $1,000,000 per year. This is $12,000 per year (1%) higher than allowed for in the 2016 Determination, which averaged $988,000 per year.

The proposed expenditure for the future period averages $2,153,000 per year. This is $1,165,000 per year (118%) higher than the average annual expenditure allowed for in the 2016 Determination, and $1,153,000 per year (115%) higher than the average annual expenditure incurred during the current period.

8.16.2 Driver for expenditure

DPIE negotiates river works service level agreements with relevant impactors and stakeholders. DPIE has a five year Service Level Agreement with the Soil Conversation Services for its river works. The agreement has a three year rolling works plan based on a prioritised program of works that is reviewed and updated annually.

DPIE's activities related to the operation and maintenance of salt interceptions schemes are undertaken in compliance with salinity management requirements and legislative obligations:

- *Water Act 2007 (Commonwealth)*
  - Salinity management requirement in Chapters 5, 9 and 11 of Murray Basin Plan
  - Performance of works arrangements that enable NSW to comply with its formal salinity credit obligations in Schedule B to Murray Darling Basin Agreement in Schedule 1 under Part 1A of Water Act
  - Joint Venture asset management obligations listed within the Joint Venture Work Plan – Schedule 1 Murray-Darling Basin Agreement
- *Water Management Act 2000*
  - Release of water from Blowering Dam for the use by downstream water users, and the provision of environmental flows as defined in the Act and in accordance with the Murrumbidgee Water Sharing Plan. Legislative responsibility to assess the impact of the erosion control works on the stability of the river channel through this Act.

DPIE includes in its pricing proposal expenditure for Salt Interception Schemes at Buronga (partial share) and Billabong. Costs for the operation and maintenance of other Salt Interception Schemes are borne by New South Wales users and government. DPIE's has advised that it proposes that the costs for these other Salt Interception Schemes should be recovered through WaterNSW's rural valleys customers in line with how the MDBA allocates costs between River Murray and non-River Murray activities. DPIE confirmed that its pricing proposal only includes for Salt Interception Scheme costs a Buronga and Billabong.

8.16.3 Output measures and performance

For the 2016 determination period, DPIE has had two output measures for W07-01, one each for river works and Salt Interception Schemes. These are:

- High priority areas of erosion identified and remediated- Target: 90%
- Maintain salinity (Electrical conductivity EC) credits for NSW

There has also been a performance indicator for the river works program to maintain the channel output capacity at 9,200ML/day. This was required to provide a stable main channel capable of carrying sufficient capacity to suit the needs of both irrigation demand and power generation.

Based on the river works completed between 2016-17 and 2018-19, the channel output capacity at Tumut was maintained at 9,200 ML/day.

New South Wales maintained a credit balance (>38EC credits) on the Salinity Register during the period 2016-17 to 2018-19.

However, DPIE has not meet its output measure to identify and remediate 90% of high priority areas of erosion in the first three years of the determination. It achieved 66% in 2016/17 and 80% in 2017/18 and 2018/19.

DPIE has noted that the target initially proposed was considered an end-of-program target (not a yearly target) and does not take into account natural climatic events such as flooding that essentially 'reset the clock'; i.e. following an extreme event, the program is focused on repair and maintenance rather than completing new works.

For the 2021 determination period, DPIE is proposing the same output measures and performance indicator as were adopted of the 2016 determination period, plus the addition of a performance indicator that the Salt Interception Schemes are to be operated and maintained in accordance with the Buronga Operations and Maintenance Manual.

8.16.4 Current period

Murray-Darling Basin salinity issues are a significant challenge that requires ongoing and proactive management to ensure that salinity levels in the Basin rivers and catchments do not exceed agreed levels. As a signatory to the Murray-Darling Basin Agreement, New South Wales has agreed to on-going management of salinity, including the operation and management of Salt Interception Schemes. These schemes are used to divert saline groundwater and drainage water away from the river system.

The operation and maintenance of Salt Interception Schemes are delivered by DPIE Water in conjunction with WaterNSW and SA Water. DPIE has worked collaboratively with the other partner agencies to achieve in-river salinity targets and ensuring that any land or water management actions that cause an increase in salinity are offset by actions that provide a decrease in salinity. This activity contributes to NSW agreed obligations to the management and operation of the Buronga SIS (delivered through the Murray-Darling Basin Authority led, Joint Venture program) and the state-owned Billabong SIS.

All of the Salt Interception Schemes generally operated in a full-time capacity between 2016/17 and 2018/19, with a total of 154,000 tonnes of salt diverted from the Murray and Darling River systems through NSW Joint Venture Salt Interception Scheme operations. Approximately 53,000 tonnes of the total is removed annually by the Buronga scheme, with the operating costs for the scheme shared between the NSW Government and the Murray Darling Basin Joint Venture Program. WAMC water management charges account for the recovery of 71% of the costs, with the remaining 29% coming from the Murray-Darling Basin Authority.

The Salt Interception Schemes generally operate on a 24 hour basis, and power consumption forms a large component of total expenditure. Operational and maintenance activities include:

- Replacement of bores
- Maintenance of head works and pipeline repairs
- Disposal basin maintenance
- Meter repairs/replacement
- Acid dosing of bores, replacement of electrical components
- Weed management.

In addition, funds are also used to monitor groundwater impacts of the schemes. DPIE has achieved some efficiencies during the 2016 determination period as a result of savings from changing the power service provider and moving to a whole-of-government negotiated supply contract.

The river works component completed under DPIE's W07-01 activity code has focused on mitigating the impact of water releases from dams and includes the maintenance of bank stability and channel capacity within the Tumut River reach.

New South Wales has existing contractual arrangements with Soil Conservation Service to deliver various river works as per the Tumut River Management Plan and via a cost sharing agreement between New South Wales and Snowy-Hydro Ltd. Annual inspections have been used to identify work sites. The inspections have been completed by boat and also through on-ground inspections if appropriate or required. Work sites have been prioritised, with work requirements determined and landholder liaison and agreement undertaken. DPIE develops its work program based on completing the highest priority river works but also looks to optimise the program of works by working on lower priority work on the same property or in the vicinity at the same time in order to maximise efficiency. This approach enhances productivity by minimising relocation costs of plant and personnel.

Works that have been delivered under this program during the 2016 determination period have included:

- Revegetation and weed management activities
- Rock revetment

- Weed control
- Stock control fencing
- Installation of off-stream watering points.

Environmental monitoring, covering 75km of riverbank, has also been undertaken annually.

8.16.5 Future period

Expenditure forecasts for the future period include for ongoing Tumut River works and works for the two Salt Interception Schemes. The breakdown of expenditure between these activities is shown in Table 8-44 including a breakdown between labour costs and other operating expenditure. The other element of the program is expenditure for Gayini Nimmie-Caira which is around $130k per year.

Table 8-44 Breakdown of proposed expenditure between Tumut River Works and SIS

Program	Resourcing Type	Proposed costs ('000s)			
		2021/22	2022/23	2023/24	2024/25
Tumut River Works	FTE	625	625	625	625
	OPEX	878	856	889	889
	Total	1503	1481	1514	1514
SIS	FTE	163	163	163	163
	OPEX	250	256	263	263
	Total	413	419	426	426
Total		1916	1900	1940	1940

Source: DPIE

As a result of recently increasing its in-house resourcing for the Salt Interception Scheme program, DPIE has increased its capacity to complete annual planned maintenance and operations as well as any outstanding or additional operational or maintenance issues that are a legacy of past program resourcing issues.

Additional funding has been identified as being required for the Buronga Salt Interception Scheme to meet requirements as set out in the Murray-Darling Basin Authority Joint Venture Annual Workplan 2019-20 to 2022-23. The scope for the works for this additional funding is being driven by outdated infrastructure and legacy issues related to the capacity of the asset. As the project is included in the Murray-Darling Basin Authority Joint Venture works program, its inclusion is based on negotiations between all of the basin states.

Currently, a review is being undertaken related to the Billabong Salt Interception Schemes operational performance. DPIE is seeking additional funds to implement and deliver the report recommendations to further improve and maintain scheme performance in the 2021 period.

DPIE is looking to identify future efficiencies for the Salt Interception Schemes through a Joint Venture funded Responsive Management trial that is currently underway to assess the impact of reduced Salt Interception Schemes operations on river/riparian health. This initiative is designed to optimise the operation of schemes to achieve budget savings whilst also managing any adverse impacts in terms of salinity, ecology, social and economic outcomes. Although outcomes from this responsive management trial will inform future Salt Interception Schemes operations, the study is not due to be completed until 2025/26, meaning no efficiencies are expected during the 2021 determination period. As the outcomes are based on parameters that include groundwater monitoring and salination impacts on vegetation, changes can take a number of years, hence the long-term nature of the study. DPIE has also identified that additional funding is required to implement the Tumut River Works program set out in the Tumut River Works Plan. The river works proposed in the 2021 period under the Tumut River Management Plan are the only river works planned for the period and are based on the management plan.

Some of the activities outlined in the Tumut River Works Plan have not been carried out in preceding years, and this may lead to negative outcomes, including reduced channel capacity, bank instability, damage to Aboriginal cultural heritage, decrease in instream habitat, and a decrease in wetland community functionality. The river works program has primarily focused on erosion management but by fully implementing the management plan, DPIE considers that benefits across a multitude of areas resulting in a range of improved cultural, ecological, social and economic outcomes will be realised. DPIE intends the use the additional

funding it is proposing to enable further work to be undertaken with respect to Aboriginal Cultural Heritage Management, native vegetation management, and wetlands management.

Although the basis for the river works included in DPIE's submission is the Tumut River Works Plan, the program of works for the 2021 period has been based on what DPIE has considered reasonable and what could be delivered. DPIE considered that full implementation was not realistic due to resource constraints. DPIE has developed its program in accordance with the 'Soil Conservation Services Priorities for Management of The Tumut Rivers' methodology, which establishes the priorities for the different environmental and administrative control management strategies. The build-up works included in the program and the reasoning for inclusion is set out in Table 8-45. We note that this expenditure is lower than that included in previous years of the Tumut River Works Plan mainly due to decreased expenditure on erosion control. So while the current period may see a relative increase in expenditure on erosion control, it is much less than the $1.2 million per year ($2011) included in the original plan.

Table 8-45 Breakdown of expenditure included in the Tumut River Works program

	Proposed opex costs ('000s)				
Activity	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**Comments**
Program review	100				As per the Tumut River Works Plan a review of the program is overdue, with outcomes integrated into future annual work plans. Included in the review will be an evaluation of data (bank condition trends, asset condition, progress towards objectives); cost review (assess resource requirements); and, qualitative assessment of program governance, monitoring, reporting and on-ground delivery of works Estimate of costings based on similar River Works program reviews
Woody Weed Management	150	150	150	150	Based off previous years costings as per annual reports
Native Vegetation Management	200	200	200	200	Based off previous years costings as per annual reports
Erosion Control Management	400	400	400	400	Based off previous years costings as per annual reports - increased expenditure in this area moving forward to further address priority areas
Aboriginal Cultural Heritage Management		36	36	36	As per the Tumut River Works Plan - Traditional Owner engagement and consultation
Instream Habitat Management		42	42	42	Outcomes from the review will inform instream habitat priorities and future works. Costs remain as per Tumut River Works Plan
Wetland Management			33	33	Considered a lower priority - emphasis placed on instream aspects and bank condition/stabilisation works. High priority activities to address this aspect will be undertaken and further considered as part of next funding round
Manage Drawdown					Program review outcomes may further inform how this can be undertaken by river operators (note: DPIE-Water do not have this function)
Stock Access to Water	3	3	3	3	As per the Tumut River Works Plan

Activity	Proposed opex costs ('000s)				Comments
	2021/22	2022/23	2023/24	2024/25	
Monitoring	25	25	25	25	Bank condition assessments and asset condition. Program review outcomes will inform this activity; however, estimate based off other similar River Works Programs
Total	**878**	**856**	**889**	**889**	

Source: DPIE

DPIE is looking to achieve efficiencies in its river works program during the 2021 determination period through the development of a 'fit for purpose' database to improve program reporting, asset management and monitoring. This database is intended to enable further transparency of the works undertaken and assist in the communication of outcomes to external stakeholders, including the general public and local communities.

Previously there have been gaps in capturing the full breadth of works but DPIE considers that it has developed a good database for the Hume to Yarrawonga reach that it is looking to bring across to the Tumut river program. This will allow clear and transparent information around the prioritisation of the works and the works themselves to be provided, making the program defensible to scrutiny and also identifying and realising efficiencies in the works program. In addition, the service level agreement with the Soil Conservation Service to deliver various river works as per the Tumut River Management Plan that has been established means less time and resource expenditure is required for the governance of the program.

8.16.6 Gayini Nimmie-Caira project

DPIE has been involved in the Gayini Nimmie-Caira project during the 2016 determination period, where 85,000 hectares of flood plain between Maude and Balranald in South Western NSW has been remediated to deliver flood water and environmental waters through the landscape. This project is a SDLAM project as has been discussed in Section 4.2.4.1. Although the $21 million of initial investments in the project were covered by Commonwealth funding, DPIE will have ongoing operation and maintenance costs that it will need to fund going forward to manage the assets to deliver this water. This approach, where the Commonwealth funds capital expenditure and the States ongoing operation and maintenance is consistent with other SDLAM projects. The assets for the project that WAMC has ownership over were not known at the time of the 2016 determination and were only known when they were transferred in 2017. There is no expected capital expenditure required for Gayini Nimmie-Caira in the foreseeable future unless there is a major event. The banks have been assigned a 50 year asset life and the telemetry assets are owned by the Nari Nari Tribal Council, with WAMC contributing to the costs for servicing.

DPIE has completed options analysis over a number of years for Sustainable Diversion Limit Adjustment Mechanism (SDLAM) projects to determine the most appropriate interventions. The options analysis has focused on how to best protect the environmental assets, including financial and economic assessments. The location for the Gayini Nimmie-Caira project was a targeted selection because there were no other possible alternative sites. DPIE provided a business case that supports the inclusion of the site as a SDLAM This business case is thorough and includes considerable analysis of direct and indirect benefits. SDLAM projects are also subject to assessment through the MDBA's assessment framework for the projects that are notified for inclusion by the Basin Officials Committee. The schedule of SDLAM projects was open for public consultation and has been endorsed in legislation.

DPIE is proposing that the costs associated with managing the Gayini Nimmie-Caira infrastructure are recovered from WAMC water management charges for the licence holders in the Murrumbidgee Valley in order to apply the impactor-pays principle and reflect that environmental releases are required within the valley to mitigate against water used by other licence holders. In addition, DPIE considered that the Murrumbidgee Valley users receive considerable benefits, through the potential for increased water allocations, due to more efficient use of environmental water. We agree that this is appropriate.

DPIE is proposing that the Gayini Nimmie-Caira costs are included in activity code W07-01, therefore 80% of the costs are allocated to users (according to the principle of impactor-pays) and 20% to the government to reflect the wider benefits to the community generated by the project.

DPIE considers that the Gayini Nimmie-Caira project meets the definition of a WAMC monopoly service based on its obligations to make water available under the objectives of the Water Management Act 2000 and the Murray–Darling Basin Agreement requirements included in the Water Act 2007 (Commonwealth). The Gayini Nimmie-Caira project has allowed more water in the system as a result of efficiency measures and saving water in the system and then being able to make this available to water users. The 19 farms that previously took water are now served by a stock and domestic supply to allow for agricultural activities, with the irrigation channels no longer used for these purposes. However, this results in ongoing operating and maintenance costs to be able to make the water available.

We agree with this assessment that the Nimmie-Caira project meets the definition of WAMC monopoly services as detailed in Section 4.2.4.1.

Based on discussions with the land manager and the telemetry contract provider, DPIE has developed estimates for the ongoing operating and maintenance costs associated with Gayini Nimmie-Caira. The estimated operating costs take into account telemetry, vehicles, and labour costs to maintain the embankments, and monitoring flood water flows and events. The basis for these costs are fixed annual costs for activities that will be needed the same time each year plus a variable cost component for when the land floods. DPIE has assumed that there will be two watering events each year in its estimate. We queried which party bore the risk of there being more (or less) events in a year. DPIE responded that the costs included represent base costs only as two watering events would also be required in two years to manage the dry refuge. DPIE will bear the costs for any additional watering events in wet years.

The telemetry costs have been provided by the contract provider, and DPIE has split the direct costs 75%:25% as a stock and domestic pipeline is also part of the telemetry in the contract. The 75% portion has been allocated to the Gayini Nimmie-Caira project. The maintenance costs include a provision for ongoing vegetation removal that will need to be completed irrespective of whether the infrastructure is used or not. Operating and maintenance costs have been estimated based on the activities included in the Operating and Maintenance Manual provided by Nari Nari Tribal Council who manage the land. The breakdown of assumed costs developed by DPIE for operating during events includes labour, vehicle and material costs. We have reviewed the costs and consider them reasonable for the scope of works noting that the costs have been developed at a relatively high level. The breakdown of the Gayini Nimmie-Caira operating and maintenance costs are provided in the following table. We consider that these costs are appropriate and should be consider efficient expenditure for the W07-01 Water management works activity.

Table 8-46 Estimated Gayini Nimmie-Caira operating and maintenance costs include in W07-01 Water Management Works

Item	Yearly fee to WAMC
Telemetry	$61,634.90
O&M on WAMC Assets	$35,000.00
Operating costs during events - assume two events per year	$30,000.00
Total costs to be recovered	$126,634.90

Based on the user share split under W07-01, the 80% of the total allocated to users (according to the principle of impactor-pays) is $101,000 each year. The remaining 20% allocated to the government to reflect the wider benefits to the community generated by the project is $25,000.

8.16.7 Conclusion

DPIE's river works program and Salt Interception Schemes are ongoing activities. The costs associated with DPIE's water management work activities under W07-01 relate to specific water management projects. The cost is allocated on the value of works in each of the pricing water sources, creating the need for this work to be undertaken.

The river works program is driven by an overall management plan, focused on addressing the impacts of erosion through annual inspections and prioritised works. DPIE has been achieving approximately 80% of the annual program of works that it has identified due to resource and capacity issues. Although the program of works going forward has changed, there are still considered to be budget restraints, leading to increases in the proposed expenditure in the 2021 period.

There has been an increase in Salt Interception Scheme activities over the 2016 determination period. It was identified that the infrastructure was beginning to degrade as asset renewals and maintenance were insufficient but with expanded resources, more planned maintenance is now being carried out. For the future period, it has been identified that a maintenance program needs to be implemented to clear the backlog of maintenance activities in order to reduce the risk of major failure of the infrastructure.

DPIE proposed annual average expenditure for its W07-01 activities in its pricing submission were 172% higher than it has incurred across the 2016 determination period. However, since its pricing submission, DPIE has revised the forecast expenditure for W07-01 over the 2021 determination period to remove some double counting. The revised forecasts represent expenditure 115% higher than it has incurred in the 2016 determination period. We conclude that this additional expenditure is justified as it is required to deliver increased outputs.

Nominal estimates for the ongoing operation and management costs for WAMC's Gayini Nimmie-Caira assets were included in DPIE's pricing submission proposal and have since been firmed up. As a result, DPIE has allowed a total of $126,635 in each year for the ongoing operating and maintenance costs associated with the Nimmie-Caira project. DPIE has also proposed that these costs are included under the W07-01 activity code. We consider that this activity does meet the definition of a WAMC monopoly service.

8.17 W08-01, W08-02, W10-03 Account management and Billing

8.17.1 Background

As set out in Section 4.2, WaterNSW has included historical and forecast operating expenditure in its pricing proposal against its own activities rather than the activity codes used for the 2016 Determination. The WaterNSW activity of "account management and billing services" incorporates the three activity codes of W08-01, W08-02 and W10-03 as set out in Table 8-47. Because of this grouping by WaterNSW, we discuss these three activity codes together in this section. Within these three activity codes, DPIE and NRAR also undertake some of the activities under activity code W08-02 and around 46% of all operating expenditure forecast for the future period is for these agencies.

Table 8-47 Summary of account management and billing activities

Activity code	Activity	Description	Who undertakes
W08-01	Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.	WNSW. However, no expenditure proposed for the future period separately allocated to W08-01
W08-02	Consents management and licence conversion	The transcribing of water sharing provisions into licence conditions and the conversion of licences to the *Water Management Act*.	Both WaterNSW (54%) and DPIE/NRAR (46%)
W10-03	Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.	WaterNSW only

All three activity codes have a user share of 100%. Therefore, grouping the activities should not alone undermine the link between expenditure and the user share of pricing. However, WaterNSW notes in its pricing proposal that there is not direct alignment between its activities and the activity codes and therefore analysis at the activity code level should be interpreted with care.

Figure 8-20 shows the expenditure for tall three activities in the current and future periods. For the current period, both the 2016 Determination and actual expenditure are shown.

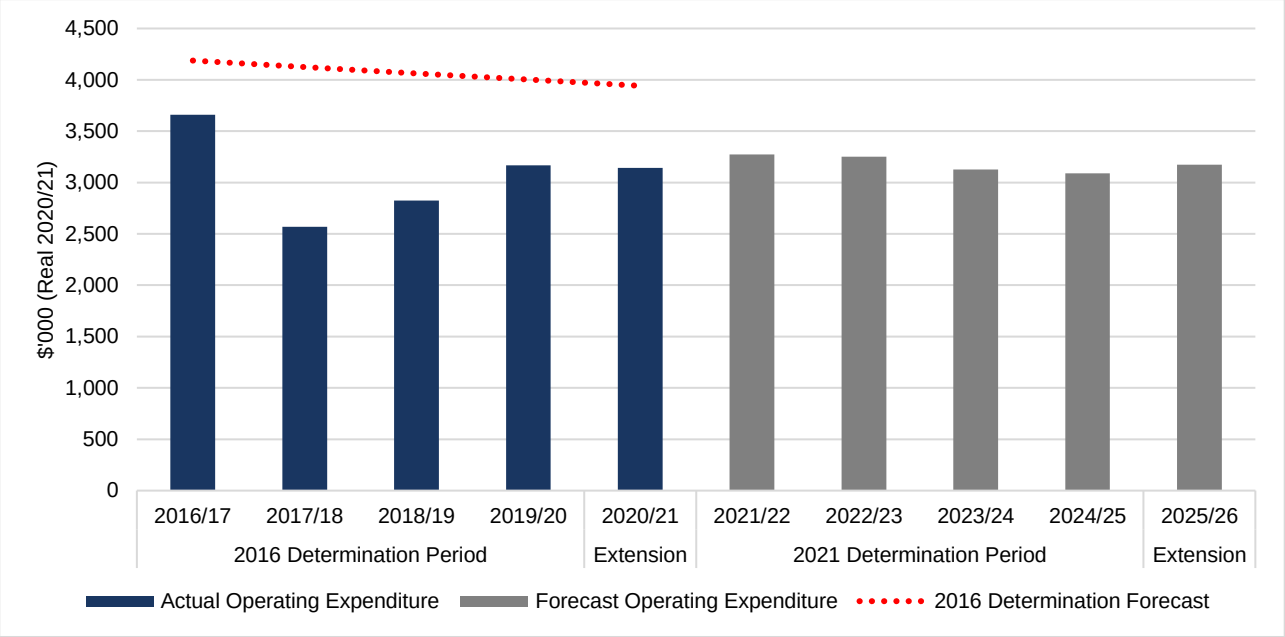

Figure 8-20 Current and future period expenditure for W08-01, W08-02 and W10-03 (Account management and billing)

Table 8-48 presents the current period expenditure for these three activities, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-48 Current period expenditure for W08-01, W08-02 and W10-03 (Account management and billing)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	4,267	4,203	4,140	4,078	4,017	20,704	4,141
Actual	3,664	2,570	2,825	3,168	3,143	15,370	3,074
Variance	-603	-1,633	-1,315	-909	-873	-5,334	-1,067

Table 8-49 presents the future period expenditure for all three activities, including the average annual expenditure across all years.

Table 8-49 Future period expenditure for W08-01, W08-02 and W10-03 (Account management and billing)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	3,273	3,251	3,128	3,089	3,175	15,915	3,183

Actual expenditure in the current period across the three activities in aggregate has averaged $3,075,000 per year. This is $1,067,000 per year (26%) lower than allowed for in the 2016 Determination, which averaged $4,,141,000 per year.

The proposed expenditure for the future period averages $3,183,000 per year. This is $958,000 per year (23%) lower than the average annual expenditure allowed for in the 2016 Determination, and $109,000 per year (4%) lower than the average annual expenditure incurred during the current period.

To the extent that it is appropriate to treat the activities together and that the comparison to the 2016 Determination is valid, the combined agencies have demonstrated efficiencies in delivering these services in the current period. The forecasts for the future period are a real 4% increase on the current period average. However, the future period expenditure is in line with average expenditure in the last two years of the current period where we could expect, all else being equal, the actual expenditure to be a more reliable benchmark for the future.

As W08-02 for consents management and licence conversion is undertaken by all agencies, it is useful to examine actual and forecast expenditure for this activity alone. This analysis is shown in Figure 8-21. The 2016 Determination forecast expenditure is also shown.

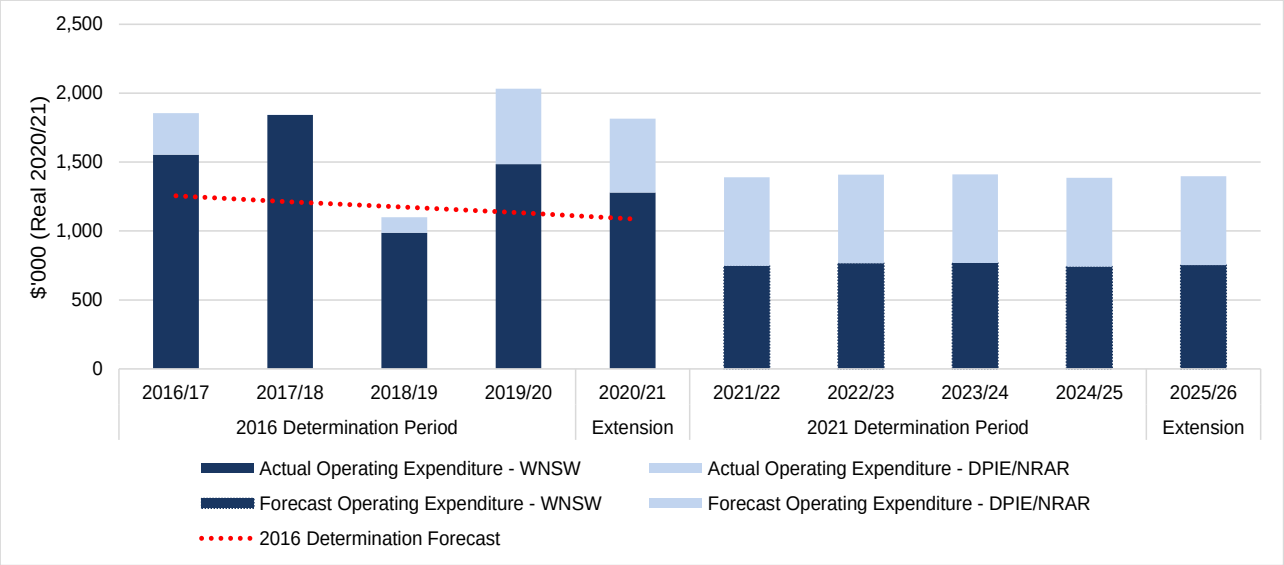

Figure 8-21 Current and future period expenditure for W08-02 Consents management and license conversion (All agencies)

Table 8-50 presents the current period expenditure for W08-02 Consents management and licence conversion, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year. Expenditure is for all agencies.

Table 8-50 Current period expenditure for W08-02 Consents management and license conversion (All agencies)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	**1,279**	**1,260**	**1,241**	**1,222**	**1,204**	**6,205**	**1,241**
Actual	**1,855**	**1,841**	**987**	**1,485**	**1,279**	**7,448**	**1,490**
Variance	**576**	**581**	**-254**	**263**	**75**	**1,242**	**248**

Table 8-51 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-51 Future period expenditure for W08-02 Consents management and license conversion (All agencies)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	1,390	1,409	1,411	1,385	1,397	**6,993**	**1,399**

Actual expenditure in the current period has averaged $1,490,000 per year. This is $248,000 per year (20%) higher than allowed for in the 2016 Determination, which averaged $1,241,000 per year.

The proposed expenditure for the future period averages $1,399,000 per year. This is $157,000 per year (13%) higher than the average annual expenditure allowed for in the 2016 Determination, and $91,000 per year (6%) lower than the average annual expenditure incurred during the current period.

It is difficult to make an assessment regarding the relative efficiency of W08-02 Consents management and licence conversion. The 2016 Determination envisaged one agency delivering this activity. All three agencies now play a role. The forecast of increased expenditure compared to the 2016 Determination (an additional $157,000 per year or 13% higher) may be the result of inefficiencies from duplicated effort or diseconomies of scale. However, it may also be in part due to costs not being accurately allocated to activity codes by WaterNSW.

8.17.2 Driver for expenditure

The need for W08-01 Regulation systems management is to keep accurate records in an information system to enable operation of the water management framework.

W08-02 for Consents management and licence conversion is required so that customer licences reflect up-to-date provisions included in water sharing plans. Therefore, this is an ongoing activity that is related to the

review and approval of water sharing plans. In the current period there has also been activity to convert licences issued under the *Water Act 1912* to new licences issued under the *Water Management Act 2000*. While most licences have been converted, there remains some work to be done in the future period for some of the out of the ordinary licences.

W10-01 for Billing management is required so that all businesses collect revenue for delivering the WAMC monopoly services as reflected in charges. WaterNSW performance this activity on behalf of all agencies.

8.17.3 Output measures and performance

All output measures and performance indicators have been met in the current period across all three activity codes.

8.17.4 Current period

WaterNSW took on responsibility for W08-01 Regulation system management parts of W08-02 Consents management and licence conversion and W08-03 Billing management at the time of transfer of responsibilities.

W08-02 Consents management and licence conversion includes the following tasks:

- When water sharing plans are reviewed, defining and transcribing mandatory new conditions into existing licences
- Converting licences under the *Water Act 1912* to new licences under the *Water Management Act 2000*
- Maintaining the Water Licensing System and uploading converted and amended licences into the system
- Customer service such as responding to enquiries and updating customer records.

The separation of tasks for W08-02 Consents management and licence conversion between WaterNSW and DPIE (then DPI Water) is described in the Deed of Transfer and most responsibilities transferred to WaterNSW. However, there have been further changes to roles and responsibilities in the current period with NRAR taking on some responsibilities for licence conversion and developing mandatory conditions before many tasks transferred back to DPIE in September 2019. DPIE is also responsible for various administrative steps required to apply conditions to licences and approvals in the Water Licensing Systems, and convenes an interagency working group that resolves conditioning issues and proposes condition improvements. WaterNSW is responsible for hosting and administering the Water Licensing System. It also develops and applies discretionary licence conditions. We challenged the agencies as to whether there was a clear distinction in the roles and responsibilities between the agencies. The agencies responded that they considered that roles and responsibilities were clear.

8.17.5 Future period

For the future period, DPIE has forecast its expenditure requirements for W08-02 Consents management and licence conversion based on an estimated requirement of 3.65 FTE. The estimate is based on its experience in delivering these activities since September 2019.

WaterNSW has built up its forecast based on project-level accounts. There are project accounts for the different sources across valleys and across regulated and unregulated sources. WaterNSW also allocates 70% of total costs to account management and billing from an “all valleys” cost centre. The relatively high level of allocations raises concerns over the total level of costs.

Over the forward period, WaterNSW is forecasting costs to reduce in total by $161,000 across all years, with the largest reductions occurring in the later years of the future period. The overall reduction is driven by a reduction in the allocated costs component as there is no change in the direct cost component over the period as shown in Figure 8-22.

Figure 8-22 Year on year change in WaterNSW estimates for account management and billing

8.17.6 Conclusion

In aggregate across all three activities, expenditure in the current period is lower than that forecast in the 2016 Determination by a material amount (26%). Expenditure for the future period is forecast to be line with the last two years of the current period which maintains expenditure at levels lower than the 2016 Determination by 23%. While at this aggregate level efficiency is evident, the picture for activity W08-02 Consents management and licence conversion alone is not as convincing as expenditure is proposed to increase by $157,000 per year (13%) more than allowed for in the 2016 Determination, which averaged $1,241,000 per year.

In the draft report, we recommend that efficient expenditure for activity W08-02 Consents management and licence conversion for the future period match the 2016 Determination level because there appeared little justification for increased costs particularly given that the work for converting licences under the *Water Act 1912* had substantially declined. In response to the draft report, both WaterNSW and DPIE responded that the 2016 Determination forecast expenditure does not reflect the increased scope of activities required for W08-02 Consent management. The following were cited as examples of the increased level of activity undertaken:

- Increased frequency and volume of notifications citing the first bulk notification in 2016/17
- $60,000 per year for use of the Licence Record System paid to a private operator for services previously provided free of charge to the Department
- Responding to customer our external party led changes to consents including Ministerial amendments, suspensions, requisitions, reissuing licences due to amendments, and the processing of surrendered and cancelled water licences.

In addition, DPIE provided records of expenditure for the first quarter of the current financial year which show actual expenditure broadly in line with that proposed in its pricing proposal.

Based on the additional information provided by WaterNSW and DPIE, we do not propose and adjustments to expenditure for this final report. However, we propose that the higher level of catch-up efficiency be applied reflecting that the changing requirements of the activity represent greater opportunity for efficiencies to be realised.

8.18 W08-03 Compliance management

8.18.1 Background

The scope of this activity is on-ground and remote monitoring activities (such as investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions. This activity was transferred from DPI Water to WaterNSW on 1 July 2016 as part of the “water transformation

project". The activity was transferred to NRAR on 30 April 2018 although WaterNSW proposes a small amount of ongoing expenditure in the 2021 period. This is for the provision of legal services to NRAR.

Figure 8-23 shows the expenditure for this activity in the current and future periods. For the current period and forward period all expenditure is operating expenditure.

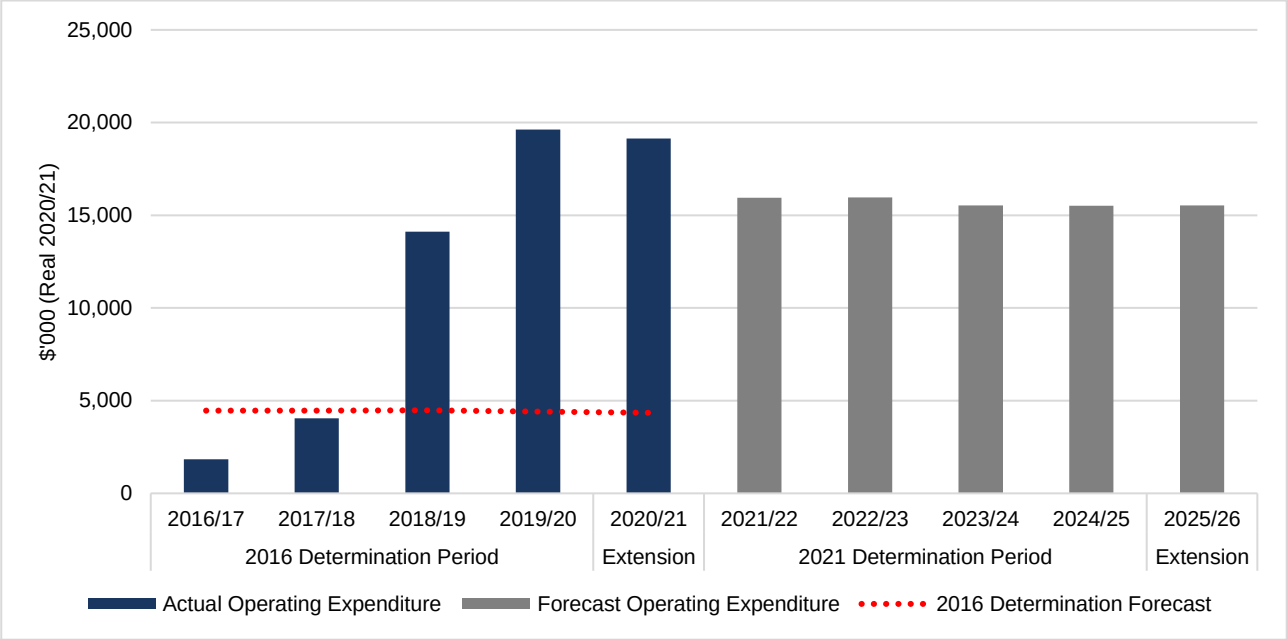

Figure 8-23 Current and future period expenditure for W08-03 Compliance management

Table 8-52 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-52 Current period expenditure for W08-03 Compliance management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**	**Average**
2016 Determination	4,542	4,554	4,565	4,496	4,429	22,586	4,517
Actual	1,843	4,050	14,116	19,619	19,146	58,775	11,755
Variance	-2,699	-504	9,552	15,123	14,718	36,189	7,238

Table 8-53 presents the future period expenditure for this activity, including the average annual expenditure across all years. DPIE made a correction in the AIR/SIR received in October 2020 to remove one FTE that it has double counted in its cost build-up.

Table 8-53 Future period expenditure for W08-03 Compliance management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	**2022/23**	**2023/24**	**2024/25**	**2025/26**	**Total**	**Average**
Proposed	15,953	15,957	15,523	15,520	15,526	**78,479**	**15,696**

Actual expenditure in the current period has averaged $11.8 million per year. This is $7.2 million per year (160%) higher than allowed for in the 2016 Determination, which averaged $4.5 million per year.

The proposed expenditure for the future period averages $15.7 million per year. This is $11.2 million per year (247%) higher than the average annual expenditure allowed for in the 2016 Determination, and $3.9 million per year (34%) higher than the average annual expenditure incurred during the current period. It is clear that there has been a step change in resourcing of compliance management in the current period with an ongoing level of expenditure much higher than anticipated at the 2016 Determination, but showing a decrease from expenditure in the last two years of the current period as NRAR has been established.

8.18.2 Driver for expenditure

Compliance management activities seek to ensure compliance with relevant legislation for water management. Without compliance activities water is more likely to be illegally taken thereby undermining the objectives of water management. At the time of the 2016 Determination these activities were undertaken by DPI Water but soon transferred to WaterNSW. As set out in Section 3, NRAR was established in early 2018 to take on these compliance functions from WaterNSW in response to community and stakeholder concern over the inadequacy of the existing approach to compliance management.

At the time of the 2016 Determination, DPI Water set out that it adopted a risk-based approach to compliance management which included the following complementary strategies[41]:

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

While the strategies articulated are both proactive (seek to avoid non-compliance) and reactive (respond to non-compliance), there was no articulation of an overall strategy at the time of the 2016 Determination to arrive at the 'right' level of compliance management.

The events leading to the creation of NRAR has created a much clearer driver for this expenditure, not least the establishing legislation, the *Natural Resources Access Regulator Act 2017*. This Act sets the following objectives:

- to ensure effective, efficient, transparent and accountable compliance and enforcement measures for the natural resources management legislation, and
- to maintain public confidence in the enforcement of the natural resources management legislation.

8.18.3 Output measures and performance

The 2016 Determination defined an output measure for this activity of the number of breach reports received and forecast a level of 600 reports received each year. As shown in Table 8-54, the number of reports received was below this forecast in the first two years of the current period but exceeded this figure in 2018/19. The DPIE/NRAR pricing proposal states that it considers the number of breach reports received should be considered as an input into the compliance process rather than an output. We agree with this assessment but only in part because proactive compliance approaches may lead to increased reporting of breaches. This is possibly supported by the jump in breach reports received in 2018/19 after the establishment of NRAR. This highlights the need for the outputs and performance of compliance management to be measured holistically.

Table 8-54 Performance against W08-03 output measure in current period

		2016/17	2017/18	2018/19	2019/20	2020/21
Number of breach reports received	Forecast	600	600	600	600	600
	Actual	396	351	845	1,463	in progress

Table 8-55 shows performance against the performance measures set for W08-03 at the 2016 Determination. This shows that the first two measures have not been met in any year. These measures are proactive. The second two measures are reactive and were met by WaterNSW in 2016/17 but not met in 2017/18 (when WaterNSW was responsible for most of the year) and then were met in 2018/19 when NRAR had responsibility.

Table 8-55 Performance against W08-03 performance measures in current period

		2016/17	2017/18	2018/19	2019/20
Percentage of non-basic landholder rights approvals audited each year	Target	2%	2%	2%	2%
	Actual	0%	0%	0%	Cannot be determined

[41] Synergies Economic Consulting 2016, DPI Water Expenditure Review, Final Report prepared for IPART, page 92

		2016/17	2017/18	2018/19	2019/20
					with confidence
Percentage of properties audited that are in compliance with licence and approval conditions (excluding those audited as part of investigating an alleged breach)	Target	90%	90%	90%	90%
	Actual	0%	0%	0%	Cannot be determined with confidence
Percentage of breach reports risk assessed within 14 days of receipt	Target	90%	90%	90%	90%
	Actual	90%	74%	92%	89%
Percentage of all cases finalised within 6 months	Target	70%	70%	70%	70%
	Actual	72%	50%	76%	67%

The DPIE pricing proposal includes the following notes regarding performance during the current period:

- *2016/17 - During the reporting period, the priority was ensuring that customer service levels were maintained during a period of significant agency reform and ensuring higher priority licensing activities were the focus.*
- *2017/18 - Whilst there was no formal program of extensive compliance-specific approval audit during the period, experienced WaterNSW field officers conducted in excess of 9,000 physical on-site water-meter reads at various locations across the state. The primary purpose of these visits was to record water usage (via reading the meter), however, these field officers have a good general knowledge of applicable conditions and lodge an Alleged Breach Notification if they conclude the circumstances observed may not be in compliance with the approval conditions. 51 Alleged Breach Notices were lodged by these field officers as a result of their activities.*

Without taking away the impact of the regulatory reform, we note that the licencing and meter reading activities referred to are separately funded activities with their own performance expectations.

A challenge with measuring outputs and performance in the current period is that they were developed before the creation of NRAR. NRAR has increased resources and undertakes a more risk based approach to compliance. This means that, for example, a measure of the number of properties audited that are in compliance with approval conditions is less meaningful as NRAR intends to target properties at higher risk of non-compliance. So lower performance against this measure may be desirable, at least in the short to medium term. NRAR has proposed measures it considers are more meaningful for the future period.

8.18.4 Current period

The most significant feature of the current period was the establishment of NRAR in response to strong community expectations arising initially from an investigative report into alleged corruption, misconduct and maladministration in water management and compliance. Events subsequent to this investigative report included the Matthews Report (the interim version of which was released in September 2017 and the final version of which was released in November 2017) and the establishment of NRAR in late 2017 and early 2018.

The focus of the final Matthews Report was to provide assessment of, and advice on, progress in the implementation of the reform activities proposed and undertaken following the Interim Report. This final report is generally positive regarding the direction of reform (noting the relatively short timeframe between the interim and final reports) but also identifies risks to successfully addressing the issues with compliance management that had been identified. Resourcing and staff recruitment were identified as a risk and it was recommended that budgets be clarified quickly. The large increase in expenditure observed first in 2018/19 (when expenditure increased from $4.05 million the year before to $14.12 million) and then in the following year, when expenditure increased to $19.15 million, is an understandable consequence of the need to meet community and stakeholder expectations for an effective compliance function to be in place while also responding to the specific requirements of the reform.

An Establishment Plan was put in place to guide formation of NRAR. Progress in forming NRAR was reported on in the NRAR Progress Report 2018/19 which was prepared by the NRAR Board. This report states:

This Progress Report is an overview of our activities during the first year as an independent regulator for the state of NSW. This report will complete our Establishment Plan obligations and outline NRAR's plans to build and embed capability over the coming years.

The Progress Report 2018/19 also sets out the activities that the agency planned to focus on in the following 12 months as it planned to build further capability. Based on the NRAR Progress Report and the evidence that the Establishment Plan has been completed we conclude that the observed historical expenditure since 2018/19 in the current period is justified.

However, in the first year of the current period (before the establishment of NRAR), expenditure was well below that forecast in the 2016 Determination and the two proactive performance measures were not met. WaterNSW cites that it reprioritised its efforts to meeting "customer service levels" as well as licensing activities. In the next year expenditure more than doubled and approached the level forecast at the 2016 Determination, but performance worsened with no performance measures being met. In explaining its performance, WaterNSW sets out that it proactively raised 51 breach notes arising from meter reading activities. We do not understand this connection as meter reading activities are separately funded and an effective meter reading function would be expected to proactively identify potential breaches as part of business as usual.

8.18.5 Future period

After the step change of expenditure in the current period, proposed expenditure for the future period is proposed to remain relatively flat. However, this trend masked by income that NRAR considers it is likely (although not confirmed) to receive. This adjustment includes just over $1 million per year of anticipated Commonwealth funding and an adjustment of $1.9 million per year from controlled activity approvals. While these approvals are outside of the scope of WAMC monopoly services, NRAR uses the same resources to deliver these approvals hence an offsetting adjustment is made to ensure water users are not expected to fund this work through water user charges. Total expenditure and expenditure net of adjustments for the future period are shown in Figure 8-24. It is the expenditure net of adjustments that has been included in the pricing proposal for inclusion in the costs for WAMC monopoly services. NRAR will bear the risk if the assumed income is not received in the future period.

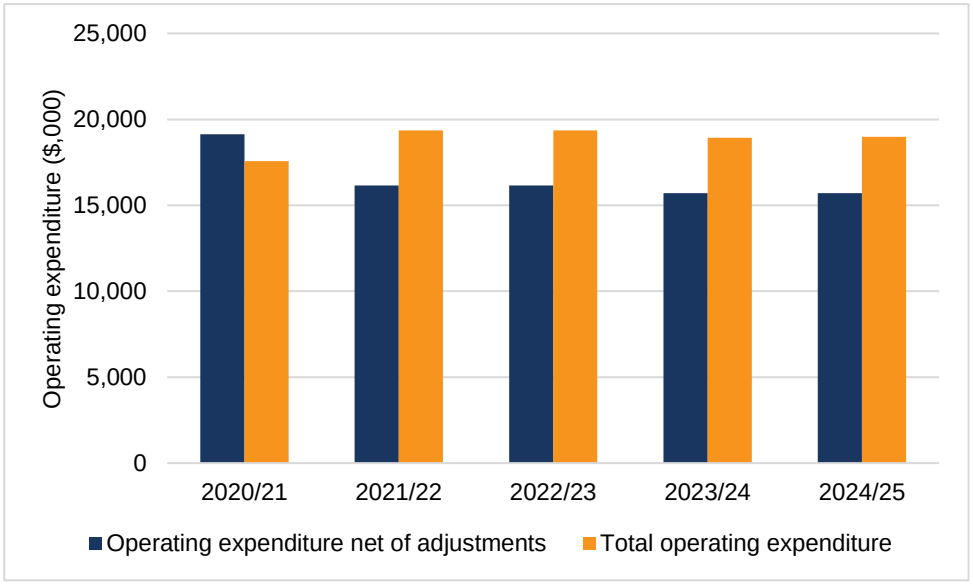

Figure 8-24 Total costs and costs net of adjustments for future period for NRAR

The increase in total costs for the future period is driven by both a step up in staff costs and other operational expenditure as shown in Figure 8-25. The increase in staff costs from 2020/21 to 2021/22 is 11% ($1.6 million) and for other operational expenditure the increase is 7% ($232,000). We queried NRAR to explain this step change and were advised that this was due to a reallocation of staff from W10-01 customer management to this activity, and that there was no net impact across the activities. Expenditure is then flat to 2022/23, before both categories are forecast to decline by 2% in 2023/24. Other operational expenditure is consistently around 19% of total operational expenditure for NRAR activities.

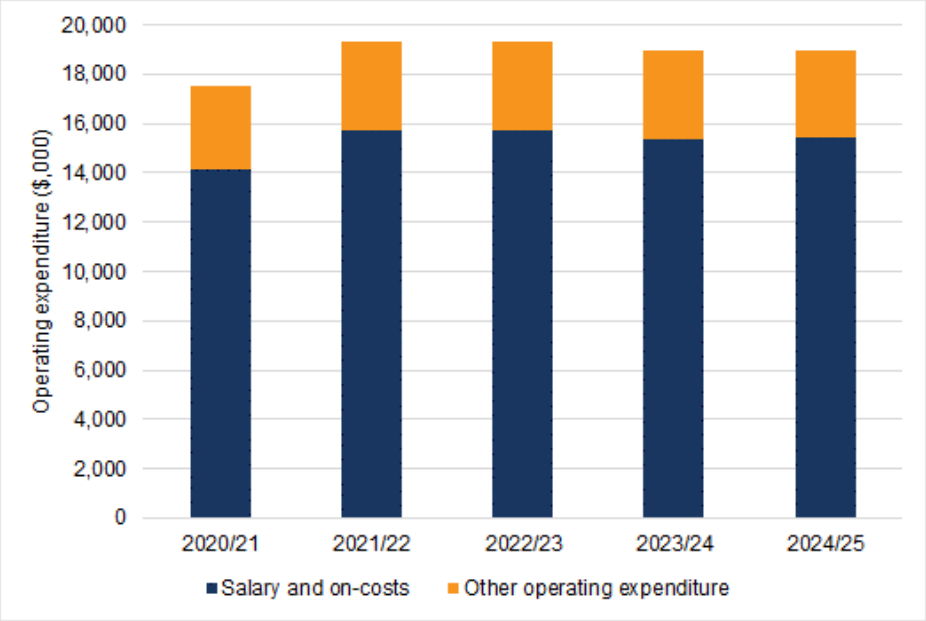

Figure 8-25 NRAR alary costs and on-costs and other opex forecast for future period

NRAR advised that its forward forecasts were determined based on the 2019/20 budget and actual expenditure, with adjustments made to reflect expected needs in the future period. NRAR has proposed an additional two FTEs for compliance officers, taking the total number of compliance offices from 62 to 64. NRAR also proposed one additional FTE for data analytics and reporting. The breakdown of NRAR resources for the future period is shown in Table 8-56. This has been adjusted to reduce FTEs for call centre, triage, and CIRAM management down by one as advised by NRAR.

Table 8-56 NRAR resource breakdown for future period

Compliance task	FTEs
Call centre, triage and CIRAM management	3.5
On-ground – investigation, enforcement, monitoring and audit	64
Data analytics and intelligence	11
Training and procedures (allocated to compliance management)	9
Communications education and reporting	5
Total	**92.5**

The main driver for expenditure in the future period is the number of on-the-ground compliance officers. As set out in Section 5.6, NRAR has substantially higher levels of on-the-ground enforcement than in other jurisdictions. However, the other jurisdictions have not had the same driver for increased activity to address substantial shortcomings as identified by the Matthews Report. We challenged NRAR to justify its levels of resourcing. NRAR acknowledges that there is uncertainty in what an efficient level of resourcing is given that it is still maturing its approach and understanding of the level of compliance and the risk of non-compliance. NRAR responded that it has based its resourcing requirements on what it has learned in the last three years of operations, and its desire to reduce reactive work. This can be partially seen in the historical and forecast level of Alleged Breach Notices that NRAR has been required to respond to, and is forecast to need to respond to, as set out in Table 8-57.

Table 8-57 Historical and forecast Alleged Breach Notices

	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25
Number of Alleged Breach Notices	494	845	1,562	1,562	1,825	1,966	1,809	1,926	1,931

The reality is that the relationships between compliance activities, actual compliance, and risk to overall water management objectives is not well known at this time. Even the relationship between cause and effect is uncertain. For example, it cannot be said with certainty whether an increase in Alleged Breach Notices indicates reduced compliance, or an increase in awareness and understanding reflective of increased compliance more broadly across the industry. There is inherent uncertainty in forecasting the future expenditure requirements for this activity without more information on actions and their effectiveness, and this information will take years to collect. As a means of comparison, the National Heavy Vehicle Laws which were introduced in 2014 are currently subject to a five-year review. The discussions regarding them pertaining to compliance and enforcement effectiveness and costs are very similar to those considered here for NRAR, but a key difference is the five years (and often more) of information that has been gathered. Notwithstanding the availability of some information, a recommendation from the review is that more information is still required to better understand these relationships.

The resourcing forecasts for the current period reflect the initial Establishment Plan, which has been subject to review and endorsement. While the costs are a large step change above historic costs, there is a clear justification and there has been considered effort in establishing business processes and resource levels as evidence by the Establishment Plan, annual review reports, and other planning documents provided to us such as the Functional Business Plans. We also found that NRAR was able to articulate a clear strategy to move from being mostly reactive in compliance and enforcement to being more proactive if the reactive workload decreases. Proactive work would focus on areas such as education and awareness, which are currently below levels deemed to be desirable.

NRAR also notes that its resource forecasts reflect expected efficiency gains arising from increased maturity, which is reflected in the ratio of resources to forecast Alleged Breach Notices. NRAR is forecasting an increase in Alleged Breach Notices of around 20% to be managed by a consistent resource base.

Table 8-58 provides a breakdown of other operating expenditure items for the 2019/20 year, which was the basis of the forward forecast. Travel is the largest single item reflecting the on the ground presence of compliance officers. The costs equate to around $326 per week for each compliance officer, which appears reasonable noting that there is a separate expenditure item for vehicles and also that the travel costs will be for additional staff other than compliance officers.

Table 8-58 Other expenditure for W08-03

	2019/20 budget ($)	Proportion of total
Travel	960,000	20%
Projects	888,000	18%
Legal	720,000	15%
Other expenses	650,000	14%
CIRAM	361,000	8%
Education programs	260,000	5%
Vehicles:	223,000	5%
Planned Capability Development	200,000	4%
NRAR Board	171,000	4%
Data Analytics software licensing	125,000	3%
Non-specific Training	125,000	3%
Computers	120,000	2%
Total	**4,803,000**	

We found NRAR's plans for the future period to be well considered and supported by considerable planning. The proposed expenditure is reflective of the Establishment Plan and NRAR's maturing understanding of the activities it needs to undertake to achieve its compliance objectives. Therefore, we consider that all of NRAR's proposed expenditure for the future period, net of catch-up and continuing efficiency adjustments, should be fully funded by users and Government. However, we question whether all the costs represent efficient costs that are justified to be passed on to users. The efficiency test requires that expenditure represents the best and most cost effective way of delivering monopoly services to customers. While we do

not doubt that NRAR's proposed approach is justified by its current operating environment, it appears that the level of expenditure is at least, in part, due to a history of ineffective compliance management in the State and by the Government's tardiness in undertaking metering reform.

The ineffective compliance management and compliance culture and the weak approach to metering is detailed in the Matthews Reports. An independent review panel report[42] into compliance in the Murray Darling Basin remarked with respect to New South Wales:

> *Although the task is difficult, tackling it has been a low priority in the 20 water agencies that have been responsible for compliance in the past 20 years. The absence of a culture of compliance, organisational instability and limited resourcing have meant that compliance has relied heavily on custom and practice, resulting in a lack of effectiveness, consistency and transparency.*

Regarding metering reform, New South Wales first signed an intergovernmental agreement on measurement, monitoring and reporting in 2004 as part of the National Water Initiative. In December 2009, the State signed an intergovernmental Framework for Compliance and Enforcement as well as committing to the National Framework for Non-Urban Metering. Despite these commitments, a State-wide metering policy is only now being implemented.

It is instructive to compare New South Wales to Victoria where metering reform has progressed ahead of that seen in New South Wales. Victoria has been selected as the comparator primarily because of data availability, the extent of metering in place and the similar area of area watered for agriculture which is a key driver for water use. In response to the draft report, NRAR questioned the validity of using Victoria for comparison to New South Wales, in particular noting that the geographic expanse of New South Wales is much larger than Victoria (3.5 times) and therefore NRAR's compliance effort is required to be employed over a much greater area necessitating greater resources.

We agree that the wider expanse of New South Wales compared with Victoria is a driver for relatively greater expenditure, all else being equal. However, under a mature, risk based compliance approach, this will not be a direct relationship as the compliance effort should be focused in areas of greatest water use, greatest economic value added and areas of greatest assessed risk of non-compliance. To illustrate the skewed distribution of water use in New South Wales, the Murrumbidgee and Murray/Lower Darling catchments comprise and 17% of the land area of New South Wales but hold around 75% of the volume of entitlements for regulated sources. Without making any inference about the level of compliance in these catchments, it is clear that there is greater potential impact for compliance activities in these catchments compared with less intensively watered catchments.

Table 8-59 presents information on water use for agriculture in the two states and the extent of metering. This data is then used to determine benchmarks on the level of compliance resourcing within the two jurisdictions.

Table 8-59 Comparison of metering and compliance approach and benchmarks – New South Wales and Victoria

	New South Wales	Victoria	Ratio (NSW/Vic)	Source
Measures of land use and water use				
Land area (km^2)	801,137	227,038	3.53	Geosciences Australia
Number of licences	37,038	26,344	1.41	MDBA Water Compliance Review Victorian Water Register
Volume of entitlements (GL)	13,302	6,680	1.99	ABS 4610.0.55.003 Water access entitlements, allocations and trading
Volume of water applied 2018/19 (GL)	2,688	1,722	1.56	ABS 4618DO001 Water use on Australian Farms
Area watered for agriculture (Ha)	627,314	513,706	1.22	ABS 4618DO001 Water use on Australian Farms

[42] The Murray Darling Basin Water Compliance Review; Containing report by the Murray Darling Basin Authority and Independent Review Panel, November 2017. ISBN: 978-1-925599-55-

	New South Wales	Victoria	Ratio (NSW/Vic)	Source
No. compliance officers	64	12	5.33	MDBA Water Compliance Review DPIE pricing proposal
Extent of metering				
No. meters	12,855	32,515	2.53	MDBA Water Compliance Review
Meters per licence	0.35	1.23	3.56	Calculated
Meters per GL of entitlement	0.97	4.87	5.04	Calculated
Proportion of usage metered Surface water Groundwater	54% 83%	83% 91%	1.5 1.1	MDBA Water Compliance Review
Benchmarks				
Compliance officers per 1,000 licences	1.7	0.5	0.26	Calculated
Compliance officers per 1,000 GL of entitlement	4.8	1.8	0.37	Calculated
Compliance officer per 1,000 GL of water applied 2018/19	23.8	7.0	0.29	Calculated
Compliance officer per 10,000 Ha land watered	1.02	0.23	0.23	Calculated

This analysis demonstrates that metering is far more progressed in Victoria than New South Wales with the former having 3.5 times the number of meters per licence than New South Wales and five times the number of meters per gigalitre of entitlement. This translates into higher volumes of usage being measured in Victoria compared with New South Wales.

We note that there are no clear measures of the effectiveness of compliance in Victoria. In using Victoria as a benchmark we are not making inferences regarding the effectiveness or otherwise of the compliance function in the state. We have relied in particular on the 2017 Murray Darling Basin Water Compliance Review and its qualitative descriptions of the relative compliance cultures in the two states.

In response to the draft report, NRAR contended that number of works approval should be considered as a measure of compliance effort. NRAR reports that New South Wales has around 127,000 works approvals and Victoria 8,181 equivalent works approvals. We have not verified NRAR's reported figures and also note that there are differences in what requires a works approval in each state. However, we consider that these figures are more a measure of the more relatively skewed distribution of the magnitude of water take per user (or works) in New South Wales compared with Victoria than the compliance effort required. The entitlement per works approval in New South Wales implied by these figures is 100 ML and 820 ML in Victoria. We consider that effective compliance management should seek to maximise the volume of entitlement and take that is free from non-compliant behaviour, not maximise the number of works approvals free from non-compliant behaviour as benefit is derived from the use of the volume of water taken. While important to the overall compliance culture, many of the smallest works approvals will not have a material bearing on the overall volume of water take or entitlements that are subject to non-compliant behaviour. This is reflected in the State metering strategy where it is noted that coverage of 56% of works approvals with metering will result in around 95% of water take being measured. The level of resourcing of on the ground compliance officers in New South Wales (as proposed by NRAR for the future period) is significantly higher than that observed in Victoria for all the benchmarks shown. At the low end, New South Wales proposes nearly three times as many compliance officers per 1,000 gigalitres of entitlement than there is in Victoria and at the upper end, New South Wales proposes 4.4 times more compliance officers per 10,000 hectares of land watered.

In response to the draft report, NRAR questioned whether the reported number of compliance staff reported for Victoria in the MDBA review report was reflective of the actual level of resourcing. NRAR's makes two arguments in this regard, the first being that the MDBA review report cites other compliance activities and costs not included in the total being " *field staff, meter reading and maintenance staff, education, telemetry*

costs and the costs of maintaining the Victorian Water Register". We note that meter reading, meter maintenance, telemetry costs and maintaining water register costs are also not included in NRAR's proposed costs so this is unlikely to lead to an ineffective comparison. Regarding education, this may not be within the total reported for Victoria but we note that DPIE and WaterNSW also undertake education activities in addition to those proposed and undertaken by NRAR.

The second argument made by NRAR is that 12 is very likely an understatement of the actual number of compliance staff in Victoria given that there are 19 water corporations. NRAR cites examples for three water corporations. We note that most of the water corporations in Victoria are responsible for urban water only and 19 is not the correct comparator. Regarding the examples cited, NRAR has cited activities outside of compliance such as customer management and support services. We have also sought to identify better information on the level of compliance resourcing in Victorian water corporations but could not find any more reliable or recent information than the 2017 MDBA review. As we are not aware of any better information being available to inform benchmarking, we have relied on this report for our own assessment. We note that NRAR is working proactively with MDBA and Basin States to compile more up to date and comprehensive benchmarking for compliance activities.

While we acknowledge that benchmarking has inherent limitations and that measuring compliance is difficult, this preceding analysis strongly suggests that an alternative to the high levels of resourcing proposed by NRAR would have been a convincing commitment to compliance over time and a more mature metering policy. On this basis, we suggest that the efficient costs for compliance activities in New South Wales should moderate in the medium term once the historical shortcomings in culture and compliance expectations in the State have been addressed. We consider that the level of effort required to maintain efficient compliance management in this steady state should be in line with the resourcing levels currently employed in Victoria. In response to the draft report, NRAR detailed that its:

> *"…fundamental concern with Cardno's assessment of Compliance Management costs is its sole reliance on Victoria as a benchmark for assessing the efficiency of NSW compliance costs…NRAR… is not aware of any like-for-like water compliance data currently collected across Australian jurisdictions that would enable precise inter-jurisdictional comparisons, especially for the purpose of determining compliance costs. At best, such comparisons may be useful as a high level cross check on the order of magnitude of proposed costs. NRAR strongly suggests that Cardno reconsider using benchmarking as its sole means of proposing reasonable compliance costs, and use unvalidated benchmarking cautiously to guide discussion."*

We note NRAR's concerns regarding the validity of benchmarking. Throughout the preceding analysis we have been clear on the assumptions made and considerations for interpreting the data. We have compared between New South Wales and Victoria multiple factors that may drive compliance effort – number of licences, volume of entitlement, water applied and area of land watered and all measures provide the same conclusion: the proposed compliance effort in New South Wales and Victoria is three to four times larger than that in Victoria. Our position is that this difference is due to a history of ineffective compliance management in the State and by the Government's lack of urgency in undertaking metering reform and that costs to address these shortcomings are not efficient and therefore users should not pay for these costs. We do agree that NRAR's total costs are justified by its operating context though and that the portion of costs not assessed as efficient for inclusion in user charges should be funded by Government.

Table 8-60 provides estimates of comparative levels of resourcing for on the ground compliance officers that would be justified in New South Wales based on the Victorian resourcing benchmarks. For our analysis, we have used on the ground compliance officers as a proxy for the overall level of compliance effort required as on the ground officers represent the great majority (69%) of the compliance effort in New South Wales.

Table 8-60 Comparison of potential level of resourcing for compliance using Victorian benchmarks

Basis for comparison	Comparative level of resourcing in New South Wales using Victorian benchmark
No. licences	17
Volume of entitlements	24
2018/19 water use for agriculture	19
Area of land watered for agriculture	15

On the basis of this analysis, we recommend that the efficient level of expenditure used to determine user charges is based on a proportional level of total expenditure pro-rata to a total number of compliance officers of 24 rather than the 64 proposed by NRAR. The volume of entitlements benchmark has been used for this calculation so as to be conservative. This represents a reduction in total proposed expenditure by 62% and we recommend that the efficient costs used to calculate user shares is based on this level of expenditure. In making this recommendation we have used the most conservative comparator (e.g. if we had used area of land water for agriculture the recommended reduction would have been 77%). This is to recognise some of the data limitations inherent in benchmarking.

We reiterate that we do not doubt NRAR's justification for its proposed expenditure (including for 64 compliance officers on the ground in the future period) and nor do we question the robustness of its business planning. We consider that NRAR's proposed expenditure, net of catch-up and continuing efficiency adjustments, should be fully funded by Government and users. We are only questioning what represents the efficient level of expenditure that users should pay for. The derivation of our recommended expenditure for this activity is set out in Table 8-61.

In determining the recommended level of efficient expenditure, we propose that NRAR by subject to the lower level of catch-up efficiency (0.9% per year) reflecting the robustness of its forward planning. In response to the draft version of this report, NRAR stated that:

> *NRAR has already implicitly committed to efficiency improvements in the construction of its business case presented in the IPART submission.*
>
> *The NRAR Compliance FTE is based on the assumptions that:*
>
> - *an investigation takes 13 days on average to finalise*
> - *an auditor can complete 60 audits per year*
>
> *The current rates in the first half of 2020 are 15.5 days to finalise an investigation and 55 audits/inspections per auditor per year.*
>
> *NRAR has therefore already committed to efficiency improvements of 16% for its reactive compliance investigation work and 9% efficiency improvements for audit and inspection work. NRAR will realise these efficiencies through a combination of better use of data analytics and intelligence, increased reliance on technology such as satellite and drones, improved staff capability, and constant review of procedures within a quality management framework.*
>
> *NRAR therefore requests that Cardno reconsider an "efficiency catch up" factor for NRAR's forecast costs in its final review, as this would, in effect, apply the principle twice to NRAR.*

We note NRAR's concerns over the appropriateness of applying catch-up efficiency to its proposed expenditure. We consider that NRAR has taken an optimistic (or risk seeking) position regarding the level of efficiencies that it can achieve in the forward period and that this is supported by evidence such as that cited by NRAR. However, the reality is that NRAR is still in its infancy as an organisation and a regulator and it is reasonable to assume that further and ongoing efficiencies will be identified as the business matures. Therefore, and on balance, we still consider that the lower level of catch-up efficiency is appropriate to apply to NRAR's proposed expenditure.

If implemented, our recommendation will in effect represent a greater share of costs borne by Government compared with users. We recommend that NRAR be funded $73.994 million for the future period being its proposed expenditure net of continuing and catch-up efficiency. We recommend that $27.748 million of expenditure be included in the calculation of user charges. As the user share currently and recommended by us for the future period is 100%, all of this total would be borne by users. We recommend that the balance of expenditure, $46.246 million, should be contributed by Government to reflect the elevated level of expenditure required to address this initial intensive phase to establish NRAR and to address the historical shortcomings in creating a compliance culture in the State and implementing an effective approach to metering.

Table 8-61 Derivation of recommended expenditure for Government and user charges for compliance management

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Proposed operating expenditure	15,782	15,782	15,348	15,348	15,348	77,606
Catch-up efficiency (%)	-0.9%	-1.8%	-2.7%	-3.6%	-4.4%	

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
Catch-up efficiency ($)	-142	-283	-411	-545	-678	-2,059
Proposed expenditure net of catch-up efficiency	15,640	15,499	14,937	14,803	14,669	75,547
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	-3.5%	-10.4%
Continuing efficiency ($)	-109	-216	-311	-410	-506	-1,554
Recommended efficient expenditure to be funded by Government and users	15,530	15,283	14,626	14,393	14,163	73,994
Adjustment to arrive at steady state efficient costs (-62.5%)	-9,706	-9,552	-9,141	-8,995	-8,852	-46,246
Recommended efficient (steady state) expenditure to be used to determine user charges	5,824	5,731	5,485	5,397	5,311	27,748
Balance of proposed expenditure (net of catch-up and continuing efficiency) to be funded by Government	9,706	9,552	9,141	8,995	8,852	46,246

8.18.6 Conclusion

The most significant feature of the current period was the establishment of NRAR in response to strong community expectations arising initially from an investigative report into alleged corruption, misconduct and maladministration in water management and compliance. Actual expenditure in the current period has averaged $11.8 million per year. This is $7.2 million per year (160%) higher than allowed for in the 2016 Determination, which averaged $4.5 million per year.

This activity was initially delivered by WaterNSW before being transferred to NRAR in 2018. The first two years show underperformance against the output measures and performance indicators included in the 2016 Determination.

The proposed expenditure for the future period averages $15.7 million per year. This is $11.2 million per year (247%) higher than the average annual expenditure allowed for in the 2016 Determination, and $3.9 million per year (34%) higher than the average annual expenditure incurred during the current period. The increase in expenditure is reflective of a step change in resourcing of compliance management with the establishment of NRAR. Following the draft Matthew Report, an Establishment Plan for creation of the regulator was prepared and the final Matthew Report provided comment on progress against the Establishment Plan. NRAR reports annual on its implementation progress.

The great majority (69%) of expenditure for Compliance management is for on-the-ground compliance officers. The resourcing levels reflect those determined in the Establishment Plan and the experience gained in recent years. NRAR also notes that its resource forecasts reflect expected efficiency gains arising from increased maturity which is reflected in the ratio of resources to forecast Alleged Breach Notices. NRAR is forecasting an increase in Alleged Breach Notices of around 20% to be managed by a consistent resource base.

The relationships between compliance activities, actual compliance, and risk to overall water management objectives is not well known at this time. Even the relationship between cause and effect is uncertain. For example, it cannot be said with certainty whether an increase in Alleged Breach Notices indicate reduced compliance or an increase in awareness and understanding reflective of increased compliance more broadly across the industry.

We have compared New South Wales to Victoria to assess the scale and approach to the compliance task. In Victoria, metering reform has progressed ahead of that seen in New South Wales and Victoria has been recognised as having a stronger compliance culture than New South Wales. We compared multiple factors that may drive compliance effort – number of licences, volume of entitlement, water applied and area of land watered and all measures provide the same conclusion: the proposed compliance effort in New South Wales and Victoria is three to four times larger than that in Victoria. We consider that this difference is due to a history of ineffective compliance management in New South Wales and by the Government's lack of urgency in undertaking metering reform and that costs to address these shortcomings are not efficient and therefore users should not pay for these costs. We do agree that NRAR's total costs are justified by its operating

context though and that the portion of costs not assessed as efficient for inclusion in user charges should be funded by Government.

Accordingly, we recommend that the efficient level of expenditure included in user charges is reduced to be consistent with that suggested by the comparative benchmarks for a more mature to compliance. For this analysis, we have used on the ground compliance officers as a proxy for the overall level of compliance effort required as on the ground officers represent the great majority (69%) of the compliance effort in New South Wales. The adjustment proposed is a reduction of 62% of expenditure to reflect a commensurate with an estimated 24 compliance officers required for a matured compliance function.

This adjustment is only to arrive at a recommended level of efficient expenditure that should be included in user charges. We consider that NRAR has made a strong case for the level of resources it needs for the future period based on the current circumstances and that the balance of NRAR's proposed costs, net of catch-up and continuing efficiency adjustments, should be funded by Government. Our recommendation is that NRAR's proposed $77.6 million of expenditure for the five years of the future period should be adjusted to $74.0 million to account for potential catch-up and continuing efficiency. Of this total, we recommend that $27.7 million be included in the calculation of user charges and the balance ($46.3 million) be funded by Government.

8.19 W10-01 Customer management

8.19.1 Background

The scope of this activity is liaising with, communicating with, and educating customers. This activity includes responding to calls to licensing and compliance information lines, producing material such as website content, and participating in customer forums. This activity is undertaken by WaterNSW and DPIE/NRAR.

Figure 8-26 shows the expenditure for this activity in the current and future periods for both WaterNSW and DPIE/NRAR.

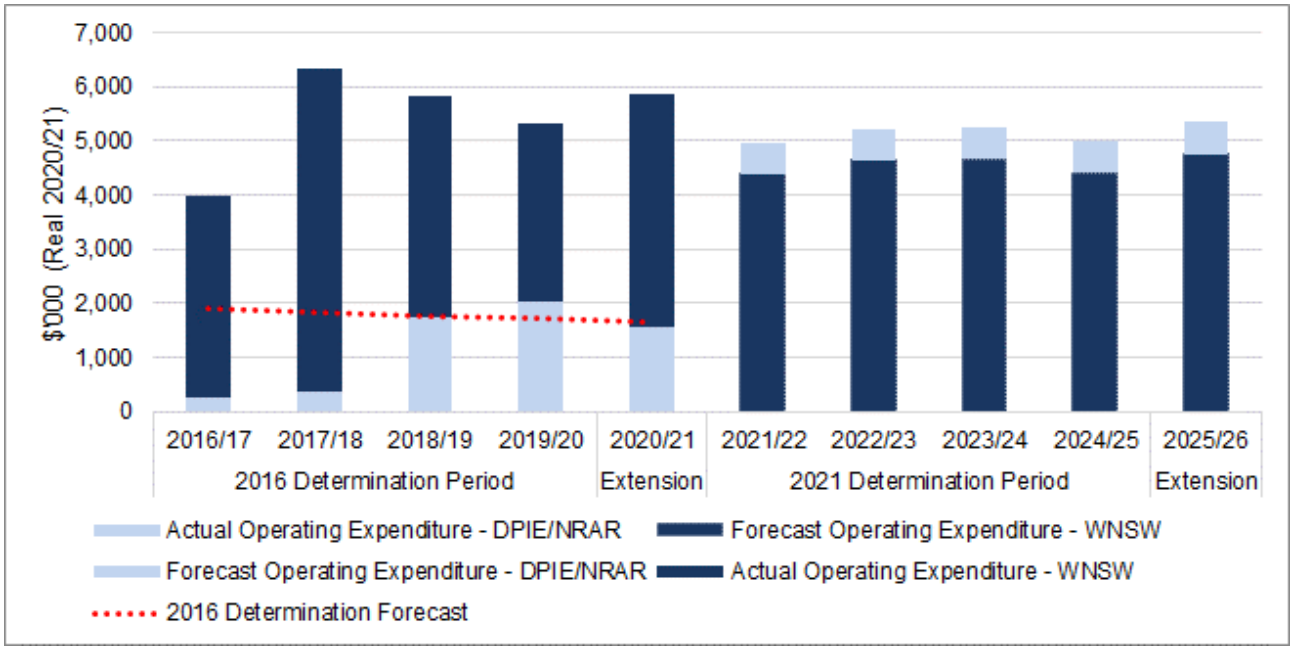

Figure 8-26 Current and future period expenditure for W10-01 Customer management

Table 8-62 presents the current period expenditure for this activity, including the average annual expenditure across all years and the variance between the 2016 Determination and annual expenditure in each year.

Table 8-62 Current period expenditure for W10-01 Customer management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
2016 Determination	1,937	1,908	1,880	1,851	1,824	9,400	1,880
Actual	3,989	6,337	5,818	5,315	5,876	27,336	5,467
Variance	2,052	4,429	3,938	3,464	4,052	17,935	3,587

Table 8-63 presents the future period expenditure for this activity, including the average annual expenditure across all years.

Table 8-63 Future period expenditure for W10-01 Customer management

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Proposed	4,970	5,226	5,257	4,996	5,346	**25,796**	**5,159**

Actual expenditure in the current period has averaged $5,467,000 per year. This is $3,587,000 per year (191%) higher than allowed for in the 2016 Determination, which averaged $1,880,000 per year.

The proposed expenditure for the future period averages $5,159,000 per year. This is $3,279,000 per year (174%) higher than the average annual expenditure allowed for in the 2016 Determination, and $308,000 per year (6%) lower than the average annual expenditure incurred during the current period.

8.19.2 Driver for expenditure

WaterNSW has customer management obligations under its Operating Licence relating in areas such as forming customer advisory groups, complaints handling, payment difficulties and water metering and monitoring. More generally, WaterNSW needs to provide information to customers, respond to customer enquiries and deliver education that supports the WAMC services.

The Deed of Transfer provided that WaterNSW should undertake “the majority of all non-statutory customer facing administrative tasks”.

NRAR also has customer functions relating to the activities it delivers including consent transactions and compliance activities.

8.19.3 Output measures and performance

The output measure for this activity code in the current period is a forecast number of enquiries of 10,000. The performance indicator is the percentage of enquiries directly responded to at the time of the call/email with a target of 90%.

DPIE/NRAR have reported 11,799 enquiries responded to and WaterNSW “more than” 30,000. The performance indicator is problematic as the intent of “directly responded” to is unclear. While some enquiries may be resolved at the time of the call or email, often follow up is required and for this reason, a more typical measure is that enquiries are resolved within a defined response time.

8.19.4 Current period

Expenditure in the current period assigned to this activity is three times more than that included in the 2016 Determination. Total operating expenditure in the period of $27.3 million has exceeded the 2016 Determination by $18.1 million. It is clear from the magnitude of the exceedance that there is a disconnect between the assumptions and expectations included in the 2016 Determination and what has transpired during the current period. WaterNSW considers that it has been underfunded for the provision of WAMC services required of it in the Deed of Transfer. WaterNSW considers that the total underfunding amounts to $2.9 million in the current period. Note that WaterNSW has been funded at a level consistent with the 2016 Determination. However, the efficiencies that apparently have been gained in water monitoring activities and account management and billing, suggest that the mismatch between funding and expenditure falls greatly within this activity.

The reason for this mismatch are not clear based on the information that is available to us. Following we consider some potential reasons for this mismatch:

- 2016 Determination understated the requirement – DPI Water’s submission for the 2016 price review outlines the activities that it expected to undertake in the current period. However, there is limited information on the resource requirement for delivering this activity. However, based on the expenditure forecast and the average salary per FTE for other activities, the forecast resourcing level can be estimated at around 15 FTE. Only limited further analysis of this activity is included in the 2016 Determination reports. However, WaterNSW notes in its submission (based on the 2016 Synergies report) that at the aggregate level, there is a mismatch between DPI Water’s forecast resourcing levels which were increasing and the expenditure forecast which was decreasing over time. It appears that on this basis, and at the aggregate level, the DPI Water submission did understate actual resourcing requirements.

Assessing the resourcing level for this activity is difficult because WaterNSW delivers this activity through staff that undertake other WAMC activities (e.g. consent transactions) and that undertake activities for rural valleys customers. There is no defined resource pool for the WAMC customer management task. Resource estimates and costs are therefore allocated between the determination and the activities. This creates uncertainties. This then raises the allocation methodology as a potential driver for the observed overspend.

> Inconsistent allocation of costs that were included in the 2016 Determination by DPI Water and inconsistent allocation of costs between WaterNSW's activities for the future period. At the 2016 Determination, the W10-01 Customer management code was used for the first time. This code was created by dividing code C09-01 Licence administration into the following new activities:

  - W08-01 – Regulation system management
  - W10-01 – Customer management

  For the future period, WaterNSW has not proposed any expenditure for W08-01, instead stating that it is included within its wider "account management and billing" activity. It is also possible that some activities and costs that were expected to be included in W08-01 Regulation system management have now been included by WaterNSW within W10-01 Customer management given the historic connection of these activities. The observed decrease in expenditure for WaterNSW's account management and billing activity (W08-01, W08-02 and W10-03) may support this hypothesis but we cannot know for certain.

> Duplication of effort or inefficiencies created by industry reform. The Deed of Transfer is clear that non-statutory customer administration tasks were to sit with WaterNSW. However, DPIE notes that it still receives customer enquiries that it needs to redirect to NRAR and WaterNSW. While this duplicated effort appears to be a source of increased expenditure, it cannot explain a $3.7 million per year increase (~30 FTE).

> New requirements relating to creation of NRAR. The industry reform also created NRAR, taking on compliance functions which did exist at the time of the 2016 Determination. However, NRAR has significantly increased its scope of activity which will inevitably lead to increased customer enquiries and interactions. NRAR's forecast expenditure for this activity in the future period is $585,000 per year. While the 2016 Determination will have implied some customer management arising from compliance, this is likely to be small compared to the total estimate given that it covered all WAMC activities. We can therefore conclude that almost all of the $585,000 per year of NRAR expenditure relates to additional scope of activity arising from increased compliance and enforcement.

Based on the preceding analysis we conclude that inefficiencies arising from industry reform cannot explain the magnitude of over expenditure observed for this activity in the current period. A partial explanation is the increased scope of customer engagement arising from increased compliance and enforcement. If NRAR's estimated $585,000 per year for the future period is a good proxy for this additional scope in the current period, there remains $3.2 million per year that is still to be explained. The two remaining hypotheses – that the 2016 Determination underestimated requirements and that the difference is due to cost allocation – are left standing to explain the variance. Based on the limited information available to us, we are unable to quantify further the potential reasons for the significant variance observed for this activity in the current period.

8.19.5 Future period

The forecast expenditure for this activity for the future period split out between NRAR and WaterNSW is shown in Table 8-64. NRAR's forecast of $585,000 per year accounts for 11% of the total. WaterNSW forecasts $4.6 million per year.

Table 8-64 Forecast expenditure for W10-01 customer management (NRAR, WaterNSW)

	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	Total	Average
NRAR	585	585	585	585	585	**2,927**	**585**
WaterNSW	4,385	4,640	4,672	4,411	4,761	**22,869**	**4,574**
Total	4,970	5,226	5,257	4,996	5,346	**25,796**	**5,159**

Our task is to recommend to IPART an efficient level of expenditure for this activity in the future period. As outlined in the preceding section, we are concerned that comparisons between the 2016 Determination, actual expenditure in the current period and forecast expenditure for the future period are undermined by the

possibility that the starting point was understated and that the observed variances are due to different allocation approaches between and within the agencies.

In developing its forecast for the future period, WaterNSW advised that it based its forecast on a top-down average of the costs incurred in the last four years for this activity. However, the average of the proposed expenditure for the future period is a small amount higher (3.8%, or $165,000 per year) than the four year average. Within the historical costs recorded by WaterNSW to this activity there is a portion of costs that are directly costed and a portion that are allocated from across the business (predominantly for the Customer and Community business unit). However, a large portion of costs are directly costed to the WAMC business.

The review of WaterNSW's corporate costs has identified scope for efficiencies though increased output from the existing resource base and arising from the implementation of the ICT program. While these efficiencies are material, they are relatively small compared with the step change in expenditure between the 2016 Determination and the future period. In our draft report, we recommend that only one quarter of the step change be included in efficient users costs until much greater link between costs and WAMC activities can be demonstrated.

In response to the draft report, WaterNSW raised the following concerns with the conclusion and recommendation included in the draft report:

- the recommendation places too much emphasis on the assumed accuracy of the 2015 DPI Water budget proposal and ignores our actual/realised cost.
- There is more evidence that DPI Water's forecasting, cost control and cost allocation at the time of the 2016 review was not robust
- WaterNSW has applied strict budget scrutiny in formulating its expenditure plans, adopting both 'bottom up' and 'top down' assessments
- WaterNSW's proposed expenditure is supported actual costs over the past four years, which we consider to be strong evidence of the reasonableness of our proposed expenditure.

We requested WaterNSW to provide costs for the customer management function for the year to date if available. WaterNSW responded that its costs for 2020/21 to the end of November were $1.38 million which if pro-rated, suggest a full year outturn of $3.32 million. WaterNSW noted that the implied outturn is less than the forecast included in its submission which averages $4.57 million per year. However, WaterNSW cautioned that it had not yet undertaken management review of costs for the current quarter and that the current costs were "likely understated".

NRAR also responded to the draft report that it considered the proposed adjustment arbitrary and did not account for the business case put forward by NRAR for these costs.

We have considered the concerns raised by WaterNSW and we have also reviewed the further information it has provided. We believe that it is appropriate that increased expenditure is allowed for this activity. We are still concerned regarding WaterNSW's ability to link expenditure with customer management activities for WAMC customers and therefore propose that the costs allowed for the future period in in line with those for the financial year to date $3.32 million (average annual, pre-efficiency adjustments) as this is the most current estimate of efficient costs available. This recommendation represents an increase of $1.1 million compared with the draft report.

We have considered NRAR's customer management further in light of our proposed treatment of W08-03 Compliance management costs. We consider that there is a proportion of NRAR's customer management costs, which while justified under the current operating environment, do not represent the costs of steady state activities in this area in the medium to long term. Accordingly we recommend that the NRAR proportion of costs be treated consistently with our recommendation for Compliance management costs such that the proposed costs net of efficiency adjustments are funded by Government and users but users only fund the proportion of costs consistent with the steady state. We recommend that the proportion of customer management costs that NRAR has been funded in the current period based on the Deed of Transfer be used as a measure of the steady state costs for this service. This amount is $283,000 per year (in real $20/21). This leaves a balance of $275,000 per year to be funded by the State Government. The derivation of this recommendation is shown in Table 8-65.

Table 8-65 Derivation of recommended expenditure for Government and user charges for customer management

	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Avg.
Proposed operating expenditure	585	585	585	585	585	**2,927**	**585**
Catch-up efficiency (%)	-0.9%	-1.8%	-2.7%	-3.6%	-4.4%		

	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Avg.
Catch-up efficiency ($)	-5	-10	-16	-21	-26	**-78**	**-16**
Proposed expenditure net of catch-up efficiency	580	575	570	565	560	**2,849**	**570**
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	-3.5%		
Continuing efficiency ($)	-4	-8	-12	-16	-19	**-59**	**-12**
Recommended efficient expenditure to be funded by Government and users	576	567	558	549	540	**2,790**	**558**
Recommended efficient (steady state) expenditure to be used to determine user charges	283	283	283	283	283	**1,414**	**283**
Balance of proposed expenditure (net of catch-up and continuing efficiency) to be funded by Government	293	284	275	266	257	**1,376**	**275**

To provide greater confidence in the forecasts costs in this area at future reviews, we expect WaterNSW and NRAR to be able to demonstrate that they have undertaken and accounted for the following in forecasts:

- Engagement with customers on the desired level of service for customer management
- Detailed capture of actual costs to the fullest extent that is practical and cost-effective. Cost capture should also differentiate between costs to serve the customers of the different regulated businesses to the fullest extent that is practical and cost-effective.
- A sound and tested methodology is in place using appropriate driver(s) for allocating time for customer management tasks between the regulated businesses
- A sound methodology for allocating supervisory and support time to customer management has been employed
- Management review and independent (internal) audit of costs and the methodology for determining customer management costs has been undertaken
- Robust and documented business processes are in place
- Opportunities for improvement have been identified and implemented over the preceding years
- Staff undertaking the activities have the right capabilities and training and the resourcing mix has been optimised.

8.19.6 Conclusion

Customer management is required to provide information to customers, respond to customer enquiries, deliver education and to participate in customer forums and other engagement activities. The Deed of Transfer provided that WaterNSW should undertake “the majority of all non-statutory customer facing administrative tasks”. NRAR also has customer functions relating to the activities it delivers including consent transactions and compliance activities.

Expenditure in the current period assigned to this activity is three times more than that included in the 2016 Determination. Total operating expenditure in the period of $27.3 million has exceeded the Determination by $17.9 million. It is clear from the magnitude of the exceedance that there is a disconnect between the assumptions and expectations included in the 2016 Determination and what has transpired during the current period. We considered the following possibilities for explaining the observed difference in expenditure:

- 2016 Determination understated the expenditure requirement (possibly a moderate to high impact)
- Inconsistent allocation of costs that were included in the 2016 Determination (possibly only a moderate impact but possibly high if allocation materially inconsistent)
- Duplication of effort or increased inefficiencies due to industry reform (potentially only a moderate impact)
- New requirements relating to the creation of NRAR (potentially only a moderate impact)

We consider that inefficiencies arising from industry reform cannot explain the magnitude of over expenditure observed for this activity in the current period. A partial explanation is the increased scope of customer engagement arising from increased compliance and enforcement. The most probable reasons for the observed overspend for this activity are that the 2016 Determination underestimated requirements and that the difference is due to cost allocation. We have not been able to confirm or quantify the extent that these two reasons explain the significant observed variance.

The forecast expenditure for this activity for the future period averages $5.2 million per year of which $4.6 million per year is for WaterNSW (89%) and $0.6 million per year is for NRAR (11%). In our draft report, we recommend that only one quarter of the step change be included in efficient users costs until much greater link between costs and WAMC activities can be demonstrated. In response to the draft report, WaterNSW raised the concerns with the basis of the recommendation made and provided further information on costs in the current year. We have considered the concerns raised by WaterNSW and we have also reviewed the further information it has provided. We believe that it is appropriate that increased expenditure is allowed for this activity. We are still concerned regarding WaterNSW's ability to link expenditure with customer management activities for WAMC customers and therefore propose that the costs allowed for the future period in in line with those for the financial year to date $3.32 million as this is the most current estimate of efficient costs available. This recommendation represents an increase of $1.1 million compared with the draft report. While WaterNSW notes that it considers these costs are likely understated, this suggests that there is need for better cost recording and reporting in this area.

We have considered NRAR's customer management further in light of our proposed treatment of W08-03 Compliance management costs. We consider that there is a proportion of NRAR's customer management costs, which while justified under the current operating environment, do not represent the costs of steady state activities in this area in the medium to long term. Accordingly we recommend that the NRAR proportion of costs be treated consistently with our recommendation for Compliance management costs such that the proposed costs net of efficiency adjustments are funded by Government and users but users only fund the proportion of costs consistent with the steady state. We recommend that the proportion of customer management costs that NRAR has been funded in the current period based on the Deed of Transfer be used as a measure of the steady state costs for this service. This amount is $283,000 per year (in real $20/21). This leaves a balance of $275,000 per year to be funded by the State Government.

We have identified areas where the agencies can improve their forecasts and evidence to support their forecasts for future expenditure reviews. These include improved capture of actual costs, engagement with customers and continual improvement of business processes.

9 Water consent transaction services

9.1 Overview

Consent transactions cover a range of services that undertaken by both WaterNSW and NRAR on a fee-for-service basis, and are recorded under W09-1 Consent transactions. The transactions include gaining approvals for works, new licence approvals, dealings in licences, and changes to licence conditions. Dealings in licenses include activities such as assigning share components, consolidating licences, subdividing licences, and surrendering licences.

The 2016 Determination included an activity W08-99 for Water consent transaction overheads. This activity was used to capture support costs for administering customers' licence information, and processing approvals. This activity has been discontinued for the current determination process, with it being incorporated into W09-01 Consent transactions.

To provide perspective, it should be noted that many of the consent transactions have relatively low volumes and that only three transactions comprise two-thirds of WaterNSW's total forecast costs in this area:

- Extension of approval – lodged before expiry date (28%)
- New basic rights bore approval (26%)
- New or amended works and/or use approval (12%).

9.2 Current and forecast expenditure

While the total level of expenditure is not directly relevant for a fee-for-service activity, it is instructive to consider the total actual or forecast expenditure where it provides insight into the assumptions and methodology used to arrive at the proposed fees for the services.

Figure 9-1 shows the expenditure for this activity in the current and future periods for both WaterNSW and DPIE/NRAR. As this is a fee-for-service activity, there is no specific inclusion of expenditure within the 2016 Determination. All expenditure for this activity is operating expenditure. This figure shows that expenditure approximately doubled through the first four years of the current period. Expenditure is forecast to decline off this peak for the current year of 2020/21. Both agencies report that the drought was a driver of increased demand for these services as users sought to shore up access to water.

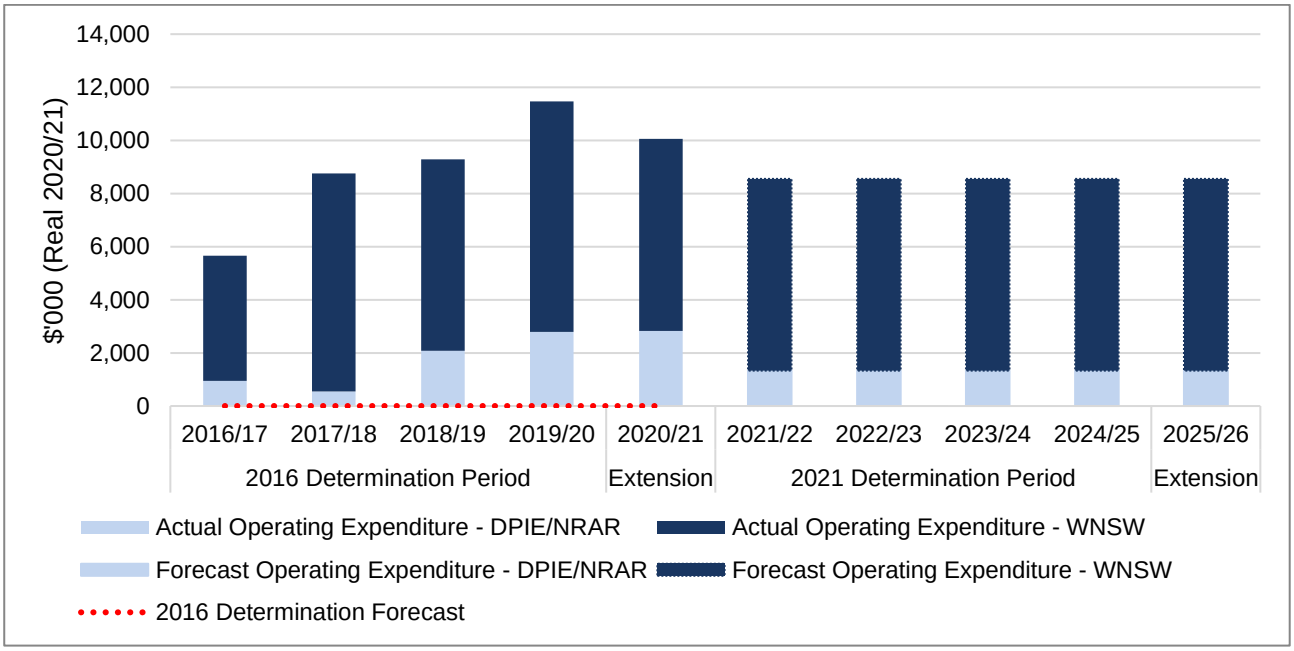

Figure 9-1 Current and future period expenditure for W09-01 Consent transactions (WaterNSW and DPIE/NRAR)

Table 9-1 shows expenditure in the current period separately for WaterNSW and DPIE/NRAR.

Table 9-1 Current period expenditure for W09-01 Consent transactions (WaterNSW and DPIE/NRAR)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
WaterNSW	4,709	8,199	7,200	8,671	7,228	**36,006**	**7,201**
DPIE/NRAR	945	554	2,085	2,795	2,831	**9,210**	**1,842**
Total	5,654	8,753	9,285	11,466	10,059	**45,216**	**9,043**

Table 9-2 presents the future period expenditure for this activity, including the average annual expenditure across all years. Forecast expenditure is shown separately for WaterNSW and DPIE/NRAR.

Table 9-2 Future period expenditure for W09-01 Consent transactions (WaterNSW and DPIE/NRAR)

	Expenditure ($ thousand) (real 2020/21 price base)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
WaterNSW	7,228	7,228	7,228	7,228	7,228	**36,140**	7,228
DPIE/NRAR	1,327	1,327	1,327	1,327	1,327	**6,637**	1,327
Total	8,555	8,555	8,555	8,555	8,555	**42,776**	8,555

Actual expenditure in the current period has averaged $9,043,000 per year. WaterNSW accounted for 80% of all expenditure for this activity in the current period. For the future period, both agencies have provided flat forecasts which total $8,555,000 per year. WaterNSW comprises 85% of this forecast and DPIE/NRAR 15%. WaterNSW's forecast for the future period is very similar to average expenditure in the current year, which also happens to be the same as the forecast for the current year 2020/21. NRAR's forecast of total expenditure represents a 28% reduction in actual expenditure in the current period. It also represents a substantial reduction on that forecast for the current year of 2020/21. NRAR has forecast $2.83 million expenditure for this year. Its forecast of $1.3 million per year for the future period is therefore a substantial step down in expenditure of 53% ($1.5 million).

9.3 Driver for expenditure

The Water Management Act 2000 has requirements relating to water access licences and water management works approvals. There are also some remaining provisions in effect under the *Water Act 1912*. These provisions implement water management as set out in water sharing plans such that users are granted access to water consistent with the regulatory framework.

At the time of the Deed of Transfer of activities from DPI Water to WaterNSW, the scope of most of these functions was transferred to WaterNSW. However, the Minister retained responsibility for these functions for the following categories of users:

- government agencies
- state owned corporations
- water utilities and water supply authorities
- licensed network operators
- mining companies
- irrigation corporations
- aboriginal communities and businesses
- floodplain harvesting
- major developments
- schools and hospitals.

DPIE initially undertook the consent transactions function for the user categories listed above. However, the delegation was changed to NRAR upon its establishment.

This separation of responsibilities means that WaterNSW is generally responsible for a larger volume of users (about 95% of all licences issued), which are typically using water for farming or stock and domestic

use. NRAR is responsible for a smaller volume of users but which generally have larger use volumes and more complex requirements. NRAR states that its applicant base, while comprising only around 5% of all licences, comprise around 43% of the regulated water share. NRAR accordingly considers that its larger and more complex consent transaction requirements need to be considered separately to that proposed by WaterNSW, and distinct from that considered for the 2016 Determinations where all customer groups were considered together.

The *Water Supply (Critical Needs) Act 2019* allows the Minister to approve critical infrastructure that is urgently needed to prevent a town or locality from running out of water. This has created a new approval pathway that involves a reduce timescale to the usual planning approval pathways. DPIE is required to undertake assessment and approval of applications for infrastructure under this act, and proposes a new consent transaction fee for this activity in the future period.

9.4 Output measures and performance

The output measure for this activity was that 6,000 applications are received are processed. DPIE reported that for 2018/19, NRAR received 3,279 applications and issued 2,140 licenses. WaterNSW reported 7,392 applications processed (which includes some NRAR applications). This indicates that, for this timeframe, the number of licenses processed exceeded the output measure set forth by IPART. However, it should be noted that this is a result of drought conditions and is not anticipated to be typical in a non-drought year. The agencies have assumed "typical" conditions in determining their proposed charges and a return to historic levels of applications.

The performance indicators and targets set for this activity in the 2016 Determination along with the performance is shown in Table 9-3. WaterNSW has generally met its performance measures, especially considering the increased number of applications as a result of the drought.

Table 9-3 Performance against water consent transaction performance indicators 2018/19

	Target	DPIE/NRAR	WaterNSW
Percentage of applications for licence dealings assignment of shares (71Q) processed within 20 days	90%	N/a	
Percentage of applications for new access licences processed within 40 days	80%		
Percentage of applications for water management work and use approvals processed within 60 days	80%		
Percentage of applications to extend a water management work approval processed within 20 days	90%		
Percentage of applications for an approval for a bore for domestic and stock rights processed within 10 days	90%	Not provided	
Percentage of legal searches completed within the preferred processing time frame	95%	Not provided	

9.5 Proposal for future consent transaction fees

9.5.1 Consent transactions undertaken by WaterNSW

In its initial submission, WaterNSW proposed to increase transaction charges for the future period by 175% on average above current levels. The existing charges were developed by DPI Water for the 2016 Determination and were accepted at that time with application of an efficiency adjustment of 1.5% per year. WaterNSW considers that these costs substantially underestimate the cost of delivering these services and hence the increase is justified.

WaterNSW's proposed consent transaction charges have been set based on the outturn costs for FY19. That is, the costs for activities have been adjusted upward until it was found that the calculated revenue from the demand seen in that year was equal to the total costs recorded. It was found that an overall increase in prices of 175% was required to achieve break-even between costs and calculated revenue. This top-down approach maintains the same relative price for each activity as set at the time of the 2016 Determination with one exception – water allocation assignments for unregulated rivers and groundwater are proposed to be reduced to $50 from its existing level of $337.36 (online) as WaterNSW considered that there was clearly less resource effort required than reflected in the price.

The proposed transaction charges proposed by WaterNSW are based on the three year average of activity levels from 2016/17 to 2018/19.

WaterNSW's consent transaction charges proposed in its initial submission are summarised in Table 9-4. This table also shows the variance of the proposed fees to the FY21 fees for online and paper transactions.

Table 9-4 WaterNSW proposed fees for water consent transactions (initial submission in pricing proposal)

Consent transaction activity	FY21 Prices Online ($)	FY21 Prices Paper ($)	Proposed Prices ($)	Variance to FY21 online price	Variance to FY21 paper price
Any new water access licence					
Zero share	308.56	344.64	885.72	187%	157%
Specific purpose	308.56	344.64	898.72	191%	161%
Controlled allocation	308.56	344.64	861.72	179%	150%
Water access licence dealings					
Dealings - regulated rivers	337.36	371.85	937.41	178%	152%
Unregulated Rivers and Groundwater (All applications unless specified below as Low Risk or Administrative)	1080.60	1116.69	2995.11	177%	168%
Unregulated Rivers and Groundwater – Low Risk	491.55	526.03	1357.21	176%	158%
Dealings - administrative	217.86	253.94	599.50	175%	136%
Water allocation assignments					
Unregulated rivers and Groundwater	337.36	371.85	50.00	-85%	-87%
Approvals					
New or amended works and/or use approval	2020.84	2056.92	5562.17	175%	170%
New or amended works and/or use approval – low risk	1075.78	1111.86	3013.75	180%	171%
New basic rights bore approval	389.34	425.42	1104.44	184%	160%
Amended approval – administrative	217.86	253.94	663.25	204%	161%
Extension of approval – lodged before expiry date	221.00	257.08	637.95	189%	148%
Extension of approval – lodged after expiry date	NA	428.47	1179.05	NA	175%
Other					
Application for new NSW Drillers Licence	346.50	346.50	953.49	175%	175%
Change in a Drillers Licence	150.00	150.00	412.77	175%	175%

WaterNSW states that as it does not know the basis on which DPI Water made its 2016 submission, it cannot comment on the basis of the current fees. It sets out that its own expenditure estimates are a fair reflection of the actual costs of undertaking this activity and therefore should be accepted as the basis for efficient prices for the future period.

We challenged WaterNSW as to why the FY19 year has been used as the basis of the estimate. WaterNSW responded that this represented the "most typical" year available to it. For earlier years, it is uncertain around costs allocated to the activity and for later years, the drought impacted volumes and processing times. We challenged WaterNSW whether any assurance activities have been undertaken over the costs recorded against this activity. WaterNSW responded that it considers that it has sound oversight over costs through its cost allocations processes and management review. We note that WaterNSW has sought to provide a central estimate of costs for this activity. However, the variability in costs in the current period and the lack of

verification of historic costs means that there is considerable uncertainty over the costs for this activity that have been used as the basis for the proposed charges.

WaterNSW also considers that there is greater effort required for this activity due the establishment of NRAR, as there are additional complexities that require additional works approval licenses which must be processed by WaterNSW.

WaterNSW's proposed consent transaction charges do not include recovery of costs that may be incurred by DPIE, particularly groundwater assessment costs. WaterNSW's submission states that it anticipates that these costs would be recovered under the DPIE/NRAR pricing proposal. DPIE considers that WaterNSW's consent transaction charges should also include DPIE's groundwater assessment costs for transparency and consistency. We agree with this position. It is also desirable for customers to have a single charge to pay.

DPIE provided its estimate of its charges for groundwater assessments in its submission to IPART's Issues Paper. Table 9-5 details DPIE's proposed charges for groundwater assessment and how this impacts the relevant WaterNSW charge category.

Table 9-5 WaterNSW proposed consent transaction fees adjusted for DPIE costs

Consent transaction activity	Current charge		WaterNSW proposed charge	DPIE proposed GW assessment charge	Total proposed charge
	Online lodgement	No online lodgement	2021–22 to 2024–25	2021–22 to 2024–25	2021–22 to 2024–25
New water access licence					
Controlled allocation	$308.56	$344.64	$861.72	$3,147.62	$4,009.34
Water access licence dealings					
Dealings—unregulated rivers and groundwater	$1,080.60	$1,116.69	$2,995.11	$3,147.62	$6,142.73
Water allocation assignments					
Unregulated rivers and groundwater	$337.36	$371.85	$50.00	$177.80	$228.00
Approvals					
New or amended works and/or use approval	$2,020.84	$2,056.92	$5,562.17	$3,147.62	$8,709.79
New basic rights bore approval	$389.34	$425.42	$1,104.44	$178.00	$1,282.00

Source: DPIE submission to IPART Issues Paper. Note that DPIE has made a transcription error in its submission and applied wrong WaterNSW charge for controlled allocations ($898.72). The above table has corrected this figure to be $861.72 as proposed by WaterNSW.

9.5.2 Consent transactions undertaken by NRAR

NRAR has used a detailed bottom-up model to develop its proposed consent transaction fees. The model was developed by an external consultant and uses estimates of the time taken to complete activities for staff at different salary grades to arrive at the proposed fee. We queried whether NRAR had analysed historic costs in arriving at its proposed fees. NRAR responded that it was challenging to analyse historic costs because of difficulties in understanding the basis of the DPI Water costs and because not all of its historical costs had been allocated against the appropriate categories. NRAR has proposed consent transaction charge categories that are different to those currently in place as set by the 2016 Determination. NRAR states that it has changed the category structure as some categories are no longer relevant to the transactions it undertakes. We note however that NRAR has not simply discarded irrelevant transaction categories but introduced new, more detailed categories. It has apparently not consulted with WaterNSW or customers on its proposed changed categories.

NRAR has a licencing and approvals team that deals with activities outside of consent transactions for WAMC. These activities include Controlled Activity Approvals under the *Water Management Act 2000* and Integrated Development Assessments under the Environmental Planning and Assessment Act. NRAR

reports that it deals with around 8,700 licencing and approvals matters each year of which only around 10% are for WAMC services. This provides NRAR with flexibility in resourcing this function.

We queried whether NRAR had incorporated efficiencies into its model and forecast prices. NRAR responded that the model does not include ongoing efficiencies; and that it has been assumed that the processes and procedures inherited by NRAR from DPI Water are efficient, based on the findings from the consultant's (Synergies) report from the 2016 Determination which concluded that the proposed prices appear efficient. NRAR states that it has not substantially changed the procedures since it commenced this activity.

NRAR and DPIE have identified that its original submission of consent transaction fee underestimated the groundwater assessment cost component. Subsequent to its initial pricing submission, DPIE and NRAR submitted a revised schedule of proposed consent transaction fees as summarised in Table 9-6.

NRAR has included in its pricing proposal fees for Flood Works Approvals. However, these charges are not regulated by IPART. DPIE and NRAR propose that charges be differentiated for whether a groundwater assessment is required or not. We support this suggestion to improve cost reflectivity and consider that it would be relatively simple to implement.

Table 9-6 NRAR proposed fees for water consent transactions

Fee Category	Type	Sub-type			As submitted incl. GW costs of 15 hrs	Fees with GW set at zero in model	GW Cost per assessment	Possible Total
Water Supply Works and Water Use Approvals	New	Surface (No Groundwater assessments needed)	Pump	No advertising	$3,064.47	$2,988.32	NA	$2,988.32
				Advertising	$3,741.72	$3,655.56	NA	$3,655.56
		Water (No Groundwater assessments needed)	Dam	No advertising	$3,033.15	$2,956.98	NA	$2,956.98
				Advertising	$3,804.14	$3,727.99	NA	$3,727.99
		Ground water i.e. bore (Groundwater assessments needed)		No advertising	$2,490.80	$2,414.63	$3,147.62	$5,562.25
				Advertising	$2,920.72	$2,844.56	$3,147.62	$5,992.18
	Amend	Specify as inactive (No Groundwater assessments needed)			No Charge	No Charge	NA	No Charge
		Remove supply work (No Groundwater assessments needed)			No Charge	No Charge	NA	No Charge
		Update holder contact details, change land description for water use or construct a replacement bore GW assessment may be required for replacement bore if bore has different capacity from previous (determined on case by case basis)			$219.93	Modelled at $1,258.80	$3,147.62	$4,406.42
		Add and change water supply works, add and change water use or changes to conditions. GW assessment may be required for changes to GW supply works if new bore has different capacity from previous (determined on case by case basis)			$1,927.51	$1,851.36	$3,147.62	$4,998.98
	Extension (No Groundwater assessments needed)				$514.23	$438.07	NA	$438.07
Water Licences	Zero shares (No Groundwater assessments needed)				$1,598.88	$1,432.63	NA	$1,432.63
	Controlled Allocation Licences (GW assessment may be required (determined on case by case basis)				$2,044.31	$1,878.07	$3,147.62	$5,025.69

Fee Category	Type	Sub-type		As submitted incl. GW costs of 15 hrs	Fees with GW set at zero in model	GW Cost per assessment	Possible Total
	Specific purpose	Subtract any amount from existing licence		$1,597.06	$1,430.82	NA	$1,430.82
		(No Groundwater assessments needed)					
		<=10ML	GW assessment may be required (determined on case by case basis)	$2,711.09	$2,544.85	$3,147.62	$5,692.47
			Add to existing licence GW assessment may be required (determined on case by case basis)	$3,455.22	$3,288.98	$3,147.62	$6,436.60
		>10ML	New or add to existing licence GW assessment may be required (determined on case by case basis)	$3,953.98	$3,787.73	$3,147.62	$6,935.35

The groundwater assessment component has been determined based on an estimate by DPIE of the costs required to undertake each task and the salary cost of the staff member undertaking the assessment. The estimate has been based on analysis of the time taken to undertake task historically as well as professional judgement. These estimated groundwater assessment costs are consistent with those proposed by DPIE for inclusion in WaterNSW's consent transaction charges for access licences (see Table 9-5).

NRAR is proposing to loosen the service standards for consent transactions for the future period. It considers that longer approval times are appropriate for the more complex applications it needs to processes and are also in line with its current processing times. NRAR has not undertaken any customer engagement to gain feedback on its proposed changes to performance standards. NRAR proposes an additional five days processing time for the three performance indicators it proposes, as set out in Table 9-7. We consider that additional processing times are reasonable given the likely additional complexity of NRAR's applications.

Table 9-7 NRAR's proposed performance standards for consent transactions

Performance indicators	Current (days)	Proposed (days)	% change in standard
Percentage of applications for new access licences processed within x days	40	45	13%
Percentage of applications for water management work and use approvals processed within x days	60	65	8%
Percentage of applications to extend a water management work approval processed within x days	20	25	25%

9.5.3 Water Supply (Critical needs) Act approvals

In 2019, the Water Supply (Critical Needs) Bill was passed and came into force. There has been two applications under this Act in the current period. DPIE proposes to introduce a consent transaction charge to cover costs of future applications under this Act. DPIE considers, and we agree, that a consent transaction for this activity is consistent with the impactor pays principle. The legislation expires in 2022 unless extended before this time.

DPIE anticipates that only a small number of applications will be received in the future period. It has estimated five to six applications per year, but this seems high given that only two applications have been received to date and that drought conditions have eased across the state.

The proposed fee has been based on the actual and estimated costs for the two applications received to date, which have been analysed to derive a bottom-up forecast of application assessment costs as shown in Table 9-8.

Table 9-8 Derivation of Water Supply (Critical Needs) consent transaction

Item	Function	Unit	Staff time (hours)	Cost ($20/21)	Stage Cost ($20/21)
1	Applicant liaison, strategic coordination with agencies, process and reporting	Water Assessments	256	24,725	$47,006
2	Assessment of issues and risk, developing the authorisation and associated conditions	Water Policy	204	21,596	
3	Assessment critical town supplies and suitability for declaring towns and developments under the Act	Water Utilities	6	685	
4	Assessment of impacts and risk mitigation measures	Water Science	26	3,112	$80,920
5	Assessment of impacts and risk mitigation measures	Planning and Assessment	383	33,658	
6	Assessment of impacts and risk mitigation measures	Biodiversity and Conservation	3	389	
7	Assessment of impacts and risk mitigation measures	Department of Primary Industries	511	43,762	
	Water Supply (Critical Needs) Authorisation Assessment Charge		**1,389**	**127,926**	**$127,926**

We note that the cost build-up is line with the actual costs for the applications received to date. DPIE notes that the tasks required to be undertaken are prescribed and must be undertaken by the specific units as detailed within the table. DPIE suggests that the fee be separated into two stages (Items 1-3 and Items 4-7) as applications may not progress past the first stage. We agree with this proposal.

9.6 Conclusions and recommendations

9.6.1 Transaction charge categories

As noted, NRAR has proposed consent transaction charge categories that are different to those currently in place as set by the 2016 Determination. WaterNSW has adopted the existing charge categories (consistent with the 2016 Determination). While a change in categories may not materially impact customers as the customers of each agency are sufficiently different, we consider that it is desirable for fee categories to be as consistent as possible to enable comparison between the agencies. Even if the effort required to complete the transactions for the different customer bases is different, there are still similarities in the transaction requirements and the outcome sought.

We have made a comparison of the consent transaction charge categories proposed by each agency with the existing charge categories. This comparison is shown in Table 9-9. In this table, we have also considered the materiality of each category using proportion of total revenue for WaterNSW (received for consent transactions) and forecast annual number of transactions for NRAR. We have then made on assessment of our recommended transaction charge structure considering the information provided. For some categories, the agencies are already aligned or the consent transaction is only undertaken by WaterNSW. In these cases, no change is required. For two categories – water access licence - specific purpose and amended approval - administrative we see no grounds for NRAR's proposed increased complexity in charge categories. For new or amended works approval, we recognise that these are material and significantly different such that additional categories are warranted. We also recommend that the charges levied should vary whether groundwater assessment is required or not. This would increase cost reflectivity without creating uncertainty or complexity that is not manageable. This is because it will typically be quite clear where the consent relates to groundwater or not.

We agree with DPIE's proposal to structure Water Supply (Critical Needs) charges into a Stage 1 and Stage 2 charge.

Table 9-9 Recommended transaction charge categories

2016 Determination category	Proposed category		Materiality		Recommendation
	WNSW	NRAR proposal	WNSW - % revenue	NRAR-annual forecast(No.)	
Any new water access licence					
Zero share	No change	No change	2.2%	7	Maintain existing charge structure as aligned between agencies
Specific purpose	No change	NRAR proposes three sub-categories: a) subtraction from licence, b)<- 10ML, c) >= 10ML	0.2%	2	Maintain existing charge structure. NRAR volumes are too low to justify disaggregation
Controlled allocation	No change	No change	0.2%	7	Maintain existing charge structure as aligned between agencies
Water access licence dealings					
Dealings - regulated rivers	No change	N/a	7.4%	N/a	Maintain existing charge structure. Applicable to WaterNSW only
Unregulated Rivers and Groundwater (All applications unless specified below as Low Risk or Administrative)	No change	N/a	4.6%	N/a	Maintain existing charge structure. Applicable to WaterNSW only
Unregulated Rivers and Groundwater – Low Risk	No change	N/a	3.1%	N/a	Maintain existing charge structure. Applicable to WaterNSW only
Dealings - administrative	No change	N/a	0.1%	N/a	Maintain existing charge structure. Applicable to WaterNSW only
Water allocation assignments					
Unregulated rivers and Groundwater	No change	N/a	0.6%	N/a	Maintain existing charge structure. Applicable to WaterNSW only
Approvals					
New or amended works and/or use approval	No change	NRAR proposes to separate transactions into surface, water and groundwater and then split based on whether advertising is required or not	12.4%	131	Allow additional categories proposed by NRAR to reflect different customer base and different range of approvals. Volumes of work are material.
New or amended works and/or use approval - low risk	No change	As above	4%		As above
New basic rights bore approval	No change	N/a	26.4%	N/a	Maintain existing charge structure. Applicable to WaterNSW only

2016 Determination category	Proposed category		Materiality		Recommendation
	WNSW	NRAR proposal	WNSW - % revenue	NRAR-annual forecast(No.)	
Amended approval - administrative	No change	NRAR proposes two categories for which it will not levy a charge: "specify as inactive" and "remove supply work"	1.0%	Not specified	Propose one category only to simplify. A zero charge proposed by NRAR is not cost reflective.
Extension of approval - lodged before expiry date	No change	NRAR does not propose to differentiate between applications received before and after the expiry date	27.7%	269	Maintain existing charge structure to reflect costs and as an incentive to customers
Extension of approval - lodged after expiry date	No change	NRAR does not propose to differentiate between applications received before and after the expiry date	2.7%		Maintain existing charge structure to reflect costs and as an incentive to customers

9.6.2 Efficient charges

Both WaterNSW and NRAR propose significantly increased consent transaction fees for the future period. The same conclusion has been arrived at from different approaches: WaterNSW has undertaken a top-down assessment of historical costs assigned to its activities in FY19, while NRAR has built a comprehensive bottom-up model that relies on resource estimates for tasks to build up an overall cost. There are potential shortcomings in both approaches: WaterNSW's top-down approach may be limited by the efficacy of its cost allocation and recording of direct costs while bottom-up models tend to overstate effort by not recognising synergies and overstating risk.

Groundwater assessment costs also need to be considered in the efficient charges. DPIE undertakes groundwater assessment for consent transactions. WaterNSW did not include these costs in its charges submitted in its pricing proposal and NRAR submitted revised charges to adjust for the groundwater assessment component.

We are required to assess the adequacy of the rationale for the charges. The charges proposed are for the same activities considered in the 2016 Determination. As detailed in Section 9.6.1, while WaterNSW has used the same fee categories as for the 2016 Determination, NRAR has proposed different categories. We have recommended adjusted transaction charge categories that provide increased alignment between the transactions undertaken by both agencies. We propose to keep the increased number of charge categories proposed by NRAR for approvals given the materiality of these categories. However, we suggest other categories suggested by NRAR are add unnecessary complexity and should not be included in the charge structure. We agree that a different charge should be levied where groundwater assessment is required.

We are also required to make recommendations on the efficient incremental cost of providing the relevant consent transaction services. Both agencies have taken an incremental cost approach to arrive at the proposed charges. For WaterNSW the basis of its costs are the costs included in the FY19 year and for NRAR the basis of its costs are resource estimates. While both agencies have implemented transparent and defensible methodologies, it is concerning to us given the very large increases proposed that no validation (e.g. audit) of the key assumptions has been undertaken. A further concern regarding WaterNSW's costs is the issues with recording costs to a granular level and accurate allocation of costs to the WAMC activities. We are also concerned that despite the very large increases proposed that neither agency has engaged with customers to test the affordability or willingness to pay for such large increases. If this had occurred, the agencies may have arrived at a different trade-off between cost and service.

On a simple inspection of the existing fees we consider that they appear too low for the likely effort involved in the activities given the labour rates (and on-costs) to deliver the work. That both agencies propose material increases also suggests that the existing charges are not reflective of actual costs. However, we do not have confidence that the costs submitted by WaterNSW and NRAR are efficient and suggest that these represent an upper-bound of efficient costs. Bottom approaches such as that undertaken by NRAR tend to overestimate effort required as there is an incentive at each step to include a risk component and synergies in delivering tasks are overlooked. For the top down approach, the concern is that the costs presented reflect the actual work undertaken. Without validation of costs and assumptions we consider that the approaches are relatively immature, especially given the large increases proposed which should have been cause for greater assurance over the proposed increased charges by the agencies.

We undertook benchmarking of consent transaction activities cross jurisdictions as shown in Table 9-10. There is only a small number of transaction types which are described consistently across jurisdictions which limits the analysis. Further limitations are that the charge types, even though having a similar description, may have a different scope and that the charges proposed may not reflect efficient costs. The benchmarking shows that the charges proposed by New South Wales for a new water licence is much higher than that in other jurisdictions. The charge for a new or amended works approval is lower than that in Western Australia. The basic bore approval is higher than the two other jurisdictions compared. WaterNSW responded in its review of this report that benchmarking of consent transactions lacks validity because of the significant uncertainty that the charges in jurisdictions are cost reflective and that the charge categories are consistent across jurisdictions. These concerns reflect those held by us and stated above. This benchmarking analysis has not been used to inform our final conclusion and is included to provide some context.

Table 9-10 Benchmarking of selection of consent transaction charges

Transaction Type	New South Wales (proposed, excluding groundwater assessment))	Western Australia[1]	South Australia[2]	Victoria[3]	Queensland[4]
Any new water access licence	886 – 3,787	200	254	201	135
New or amended works and/or use approval	2,956 – 5,562	5,900-9,000	471-788		
New basic rights bore approval	1,104	172-269		235	

Data sources:

1. https://water.wa.gov.au/licensing/water-licensing-fees
2. https://www.environment.sa.gov.au/topics/water/water-markets-and-trade/fees-and-charges
3. https://waterregister.vic.gov.au/about/forms-and-fees/fees#:~:text=Form%2040%20Application%20to%20Link,added%20to%20the%20allocation%20account.
4. https://www.business.qld.gov.au/industries/mining-energy-water/water/authorisations/application-forms

We consider that, given the lack of validation of the costs that drive the proposed charges and the relative immaturity of the business processes in both agencies to capture and record costs that reflect the activities, that a relatively large efficiency challenge of 20% should be applied to the charges proposed by the agencies to arrive at efficient costs. Further adjustments made to arrive at efficient costs are:

- Adopt the average of NRAR's proposed water licence – specific purpose charge category as the charge for the single category
- For extension of approvals, maintain the charge categories for applications received before and after the due date and derive NRAR charge based on relativity of WaterNSW charges.

The methodology for deriving the recommended charges is summarised in Table 9-11.

The recommended charges arising from the methodology are detailed in Table 9-12.

For Water Supply (Critical Needs) Act approvals, we consider that the costing approach applied by DPIE is reasonable and uses actual costs of the two assessments completed. However, recognising that this is a new activity, considerable efficiencies should be gained for future assessments. This is balanced by the expectation that few, if any, assessments will be undertaken in future. We therefore recommend an efficiency challenge of 10% be applied to the charges proposed by DPIE. The recommended charges are detailed in Table 9-13.

Table 9-11 Derivation of recommended consent transaction charge components

Recommended category	Proposed charges				Notes on approach	Recommended charge components		
	Transactions for WNSW customers	Transactions for NRAR customers	GW assess. may be required?	DPIE GW assess.		Transactions for WNSW customers	Transactions for NRAR customers	GW assess.
Any new water access licence								
Zero share	$885.72	$1,432.63	No	N/a	Apply 20% efficiency adjustment	$708.58	$1,146.10	N/a
Specific purpose	$898.72	$2,544.85 - $3,787.73	Yes	$3,147.62	Adopt average of the three categories proposed	$718.98	$2,565.75	$2,518.10
Controlled allocation	$861.72	$1,878.07	No	N/a	Apply 20% efficiency adjustment	$689.37	$1,502.46	N/a
Water access licence dealings								
Dealings - regulated rivers	$937.41	N/a	No	N/a	Apply 20% efficiency adjustment	$749.93		N/a
Unregulated Rivers and Groundwater (All applications unless specified below as Low Risk or Administrative)	$2,995.11	N/a	Yes	$3,147.62	Apply 20% efficiency adjustment	$2,396.09		$2,518.10
Unregulated Rivers and Groundwater – Low Risk	$1,357.21	N/a	No	N/a	Apply 20% efficiency adjustment	$1,085.77		N/a
Dealings - administrative	$599.50	N/a	No	N/a	Apply 20% efficiency adjustment	$479.60		N/a
Water allocation assignments								
Unregulated rivers and Groundwater	$50.00	N/a	Yes	$177.80	Adopted WNSW proposed cost of $50 as efficient. Apply 20% efficiency	$50.00		$142.24

Recommended category				Proposed charges				Notes on approach	Recommended charge components		
				Transactions for WNSW customers	Transactions for NRAR customers	GW assess. may be required?	DPIE GW assess.		Transactions for WNSW customers	Transactions for NRAR customers	GW assess.
								adjustment for GW assessment			
Approvals											
New or amended works and/or use approval				$5,562.17	N/a	Yes	$3,147.62	Apply 20% efficiency adjustment	$4,449.73	N/a	$2,518.10
New or amended works and/or use approval - low risk				$3,013.75	N/a	No	$3,147.62	Apply 20% efficiency adjustment	$2,411.00	N/a	$2,518.10
New	Surface (No Groundwater assessments needed)	Pump	No advertising	N/a	$2,988.32	No	N/a	Apply 20% efficiency adjustment	N/a	$2,390.66	N/a
			Advertising	N/a	$3,655.56	No	N/a	Apply 20% efficiency adjustment	N/a	$2,924.45	N/a
	Water (No Groundwater assessments needed)	Dam	No advertising	N/a	$2,956.98	No	N/a	Apply 20% efficiency adjustment	N/a	$2,365.58	N/a
			Advertising	N/a	$3,727.99	No	N/a	Apply 20% efficiency adjustment	N/a	$2,982.39	N/a
	Ground water i.e. bore (Groundwater assessments needed)		No advertising	N/a	$2,414.63	Yes	$3,147.62	Apply 20% efficiency adjustment	N/a	$1,931.70	$2,518.10
			Advertising	N/a	$2,844.56	Yes	$3,147.62	Apply 20% efficiency adjustment	N/a	$2,275.65	$2,518.10
Amend	Add and change water supply works, add and change water use or changes to conditions. GW assessment may be required for changes to GW supply works if new bore has different capacity from previous (determined on case by case basis)			N/a	$1,851.36	Yes	$3,147.62	Apply 20% efficiency adjustment	N/a	$1,481.09	$2,518.10

Recommended category	Proposed charges				Notes on approach	Recommended charge components		
	Transactions for WNSW customers	Transactions for NRAR customers	GW assess. may be required?	DPIE GW assess.		Transactions for WNSW customers	Transactions for NRAR customers	GW assess.
New basic rights bore approval	$1,104.44	N/a	Yes	$178.00	Apply 20% efficiency adjustment	$883.55	N/a	$142.40
Amended approval - administrative	$663.25	$219.93	Typically not required. Possibly required if bore is proposed to have different capacity	$3,147.62	Apply 20% efficiency adjustment	$530.60	$175.94	$2,518.10
Extension of approval - lodged before expiry date	$637.95	$438.07	No	N/a	Apply 20% efficiency adjustment	$510.36	$350.46	N/a
Extension of approval - lodged after expiry date	$1,179.05		No	N/a	Apply 20% efficiency adjustment. Derive NRAR charge based on relativity of WNSW charges	$943.24	$647.71	N/a

Table 9-12 Recommended consent transaction charges

Recommended category	No GW assessment		GW assessment is required	
	Transactions for WNSW customers	Transactions for NRAR customers	Transactions for WNSW customers	Transactions for NRAR customers
Any new water access licence				
Zero share	$708.58	$1,146.10	N/a	N/a

Recommended category				No GW assessment		GW assessment is required	
				Transactions for WNSW customers	Transactions for NRAR customers	Transactions for WNSW customers	Transactions for NRAR customers
Specific purpose				$718.98	$2,565.75	$3,237.07	$5,083.85
Controlled allocation				$689.37	$1,502.46	N/a	N/a
Water access licence dealings							
Dealings - regulated rivers				$749.93	N/a	N/a	N/a
Unregulated Rivers and Groundwater (All applications unless specified below as Low Risk or Administrative)				$2,396.09	N/a	$4,914.18	N/a
Unregulated Rivers and Groundwater – Low Risk				$1,085.77	N/a	N/a	N/a
Dealings - administrative				$479.60	N/a	N/a	N/a
Water allocation assignments							
Unregulated rivers and Groundwater				$50.00	N/a	$50.00	$142.24
Approvals							
New or amended works and/or use approval				$4,449.73	N/a	$6,967.83	N/a
New or amended works and/or use approval - low risk				$2,411.00	N/a	$4,929.09	N/a
New	Surface (No Groundwater assessments needed)	Pump	No advertising	N/a	$2,390.66	N/a	N/a
			Advertising	N/a	$2,924.45	N/a	N/a
	Water (No Groundwater assessments needed)	Dam	No advertising	N/a	$2,365.58	N/a	N/a
			Advertising	N/a	$2,982.39	N/a	N/a
	Ground water i.e. bore (Groundwater assessments needed)		No advertising	N/a	$1,931.70	N/a	$4,449.80
			Advertising	N/a	$2,275.65	N/a	$4,793.74
Amend	Add and change water supply works, add and change water use or changes to conditions. GW assessment may be required for changes to GW supply works if new bore has different capacity from previous (determined on case by case basis)			N/a	$1,481.09	N/a	$3,999.18
New basic rights bore approval				$883.55	N/a	$1,025.95	N/a
Amended approval - administrative				$530.60	$175.94	$3,048.70	$2,694.04
Extension of approval - lodged before expiry date				$510.36	$350.46	N/a	N/a
Extension of approval - lodged after expiry date				$943.24	$647.71	N/a	N/a

Table 9-13 Recommended charge for Water Supply (Critical Needs) Authorisation Assessments

Charge type	Recommended charge
Stage 1 assessment	42,305
Stage 2 assessment	72,828

9.6.3 Considerations for future

The recommendation on efficient charges arrived at is based on

To provide greater confidence in the forecasts costs in this area at future reviews, we expect WaterNSW and NRAR to be able to demonstrate that they have undertaken and accounted for the following in developing proposed charges:

- Engagement with customers on the desired level of service for each of the transaction charges
- Engagement with customers on affordability of consent transaction chargers
- Detailed capture of actual costs at a granular level. This should be, where practical, to the level of the different transactions
- A sound methodology for allocating supervisory and support time to the transactions
- Management review and independent (internal) audit of costs and the methodology for determining consent transaction charges
- Robust and documented business processes are in place
- Opportunities for improvement have been identified and implemented over the preceding years
- Staff undertaking the activities have the right capabilities and training and the resourcing mix has been optimised.

10 Water take measurement services

10.1 Overview

10.1.1 Overview of activity group

Since the transfer of some WAMC functions from DPIE to WaterNSW on 1 July 2016, WaterNSW has held responsibility for the delivery of water take measurement services. In contrast with the activities discussed in Section 8, for which all three agencies have proposed a single set of “water management” prices, water take measurement services are considered to be “fee-for-service” activities that are specific to WaterNSW.

Currently, water take measurement services are captured under the W03 activity group (Water take monitoring), comprising W03-01 Water take data collection and W03-02 Water take data management and reporting. The 2016 Determination included both operating expenditure and capital expenditure for the W03 activity group. However, for the future period, WaterNSW has only provided forecasts for operating expenditure because of the uncertainty over the State metering strategy. Additionally, as noted in Section 4.2, WaterNSW has proposed to discontinue the use of W03-02, with all proposed operating expenditure attributed to W03-01 in the future period.

Further to the above proposed changes, WaterNSW has proposed a shift from W-codes to “service areas” for all its activities, including water take measurement services, as outlined in Section 4.2. As part of this shift, WaterNSW has proposed to separate the former W03-01 activity into two service areas, with a separate fee-for-service charge proposed for each service area:

1. Meter maintenance services (meter maintenance charge)
2. Water take assessment services (water take assessment charge).

Meter maintenance charges (meter service charges) are detailed further in Section 10.3, while water take assessment charges are detailed further in Section 10.4.

10.1.2 Overview of operating and capital expenditure

Figure 10-1 and Figure 10-2, respectively, show the operating expenditure in the current and future periods for W03-01 and W03-02. For the current period, both the 2016 Determination and actual expenditure are shown. As this is a fee for service activity, there was no explicit forecast of efficient expenditure in the 2016 Determination.

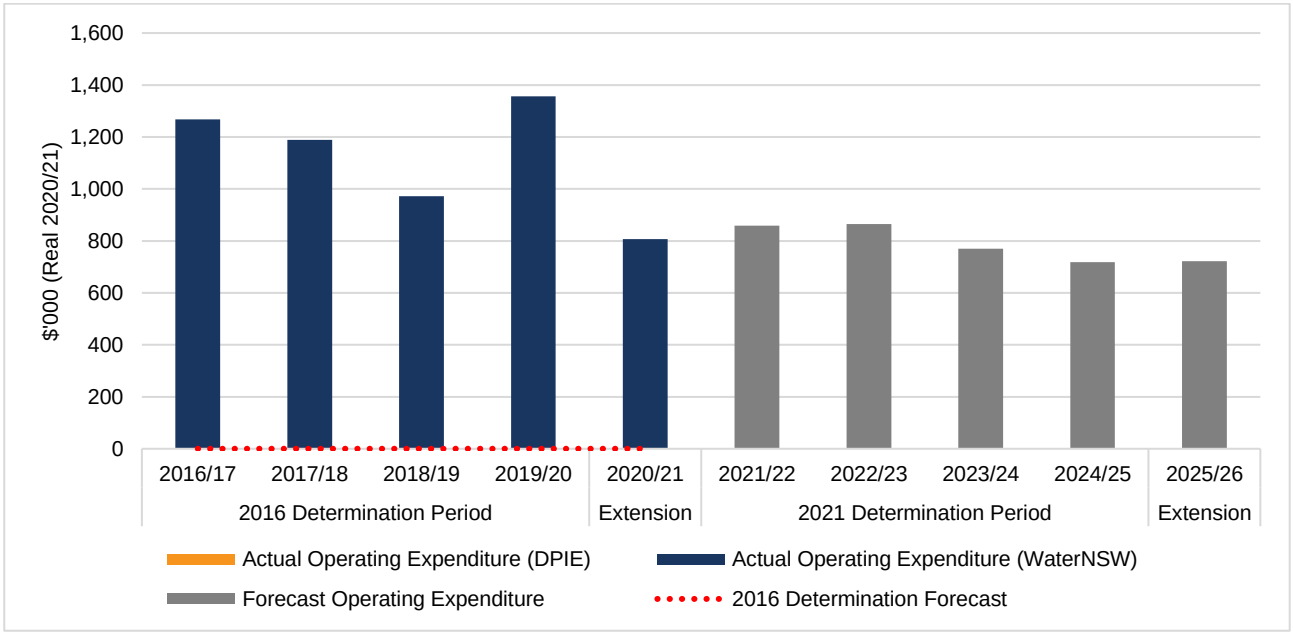

Figure 10-1 Current and future period operating expenditure for W03-01 Water take data collection

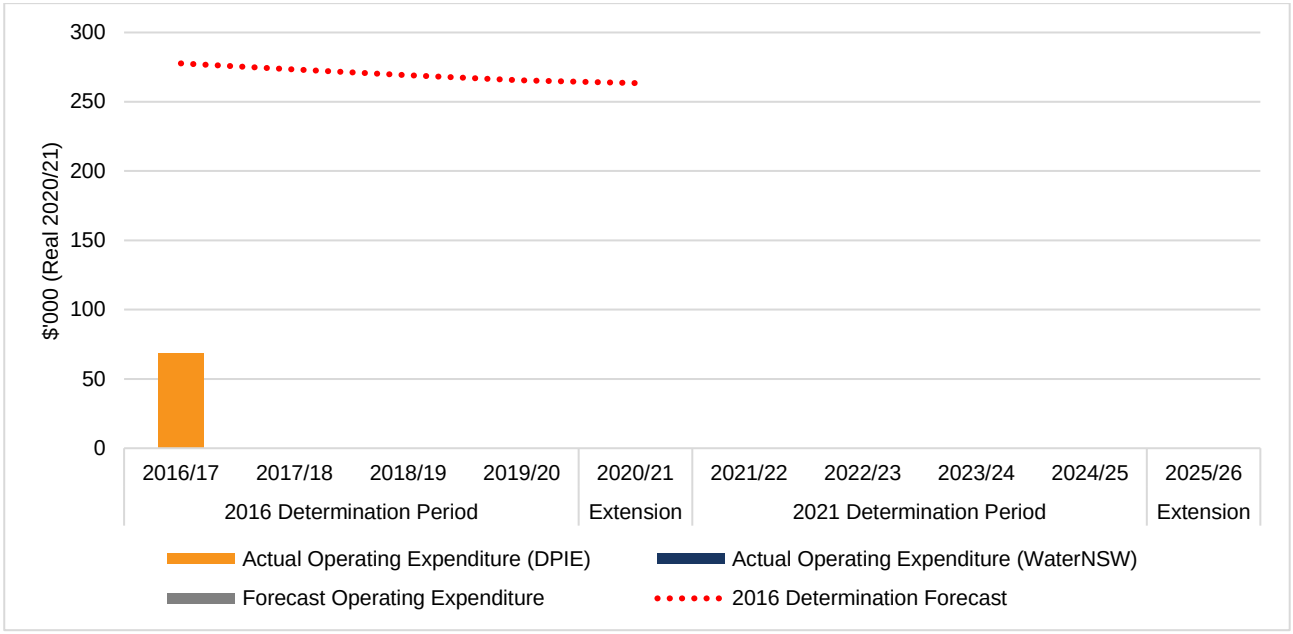

Figure 10-2 Current and future period operating expenditure for W03-02 Water take data management and reporting

Figure 10-3 shows the capital expenditure in the current period for the W03 activity group as a whole. While a separate graph was presented for each activity in the case of operating expenditure, the 2016 Determination only included capital expenditure for W03-02. As noted earlier, capital expenditure has not been proposed by WaterNSW for the W03 activity group in the future period at this time given the uncertainty in the State metering strategy.

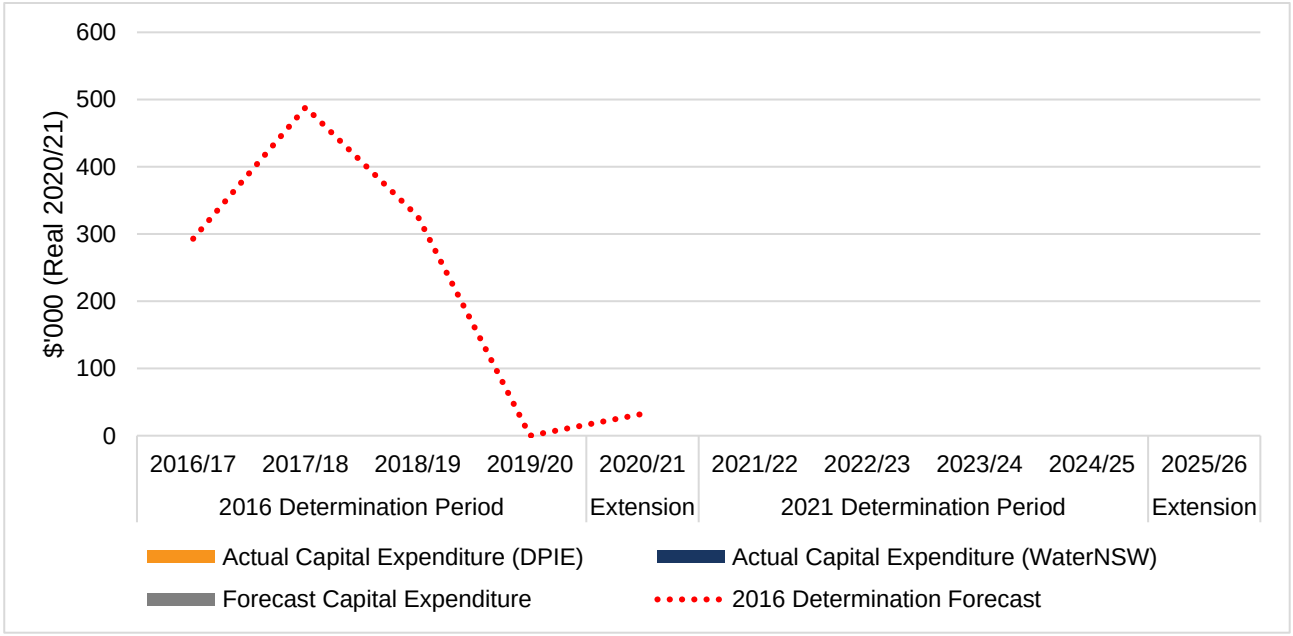

Figure 10-3 Current and future period capital expenditure for W03 Water take monitoring*

* The 2016 Determination only included capital expenditure for W3-02 Water take data management and reporting. Only operating expenditure was included for W3-01 Water take data collection in the 2016 Determination. In the future period, only operating expenditure has been proposed by WaterNSW across both activities.

Table 10-1 and Table 10-2 present the above figures in a tabular form. Each table also includes the average annual expenditure and total expenditure across all years. Where current period expenditure is presented (Table 10-1), the variance between 2016 Determination and actual expenditure is also offered.

Table 10-1 Current period total expenditure for W03 Water take monitoring

		Expenditure ($ thousand) (real 2020/21 price base)						
		2016/17	2017/18	2018/19	2019/20	2020/21	Total	Average
Operating expenditure								
W03-01 Water take data collection	2016 Determination	0	0	0	0	0	**0**	**0**
	Actual	1,267	1,188	972	1,357	806	**5,591**	**1,118**
	Variance	*1,267*	*1,188*	*972*	*1,357*	*806*	***5,591***	***1,118***
W03-02 Water take data management and reporting	2016 Determination	278	268	260	251	243	**1,298**	**260**
	Actual	69	0	0	0	0	**69**	**14**
	Variance	*-209*	*-268*	*-260*	*-251*	*-243*	***-1,229***	***-246***
Capital expenditure								
W03-01 Water take data collection	2016 Determination	0	0	0	0	0	**0**	**0**
	Actual	0	0	0	0	0	**0**	**0**
	Variance	*0*	*0*	*0*	*0*	*0*	***0***	***0***
W03-02 Water take data management and reporting	2016 Determination	293	478	314	0	30	**1,116**	**223**
	Actual	0	0	0	0	0	**0**	**0**
	Variance	*-293*	*-478*	*-314*	*0*	*-30*	***-1,116***	***-223***
Total expenditure								
W03 Water take monitoring	2016 Determination	**571**	**746**	**574**	**251**	**273**	**2,414**	**483**
	Actual	**1,336**	**1,188**	**972**	**1,357**	**806**	**5,660**	**1,132**
	Variance	***765***	***442***	***398***	***1,106***	***533***	***3,246***	***649***

Table 10-2 Future period total expenditure for W03 Water take monitoring

		Expenditure ($ thousand) (real 2020/21 price base)						
		2021/22	2022/23	2023/24	2024/25	2025/26	Total	Average
Operating expenditure								
W03-01 Water take data collection	Proposed	858	865	770	718	722	**3,933**	**787**
W03-02 Water take data management and reporting	Proposed	0	0	0	0	0	**0**	**0**
Capital expenditure								
W03-01 Water take data collection	Proposed	0	0	0	0	0	**0**	0
W03-02 Water take data management and reporting	Proposed	0	0	0	0	0	**0**	0
Total expenditure								
W03 Water take monitoring	Proposed	**858**	**865**	**770**	**718**	**722**	**3,933**	**787**

Based on the above tables and figures, the following broad observations are made:

> Actual operating expenditure on W03-01 in the current period has averaged $1,118,000 per year. The 2016 Determination did not include expenditure on W03-01 as this is a fee-for-service activity.

- Conversely, the 2016 Determination did provide for both operating and capital expenditure on W03-02. However, the majority of this expenditure was not incurred on W03-02, with only $69,000 of operating expenditure incurred by DPIE on W03-02 in 2016/17.
- In the future period, only operating expenditure has been proposed at this time because of the uncertainty of the State metering strategy. As previously noted, WaterNSW does not propose to use W03-02 in the future. All operating expenditure has, therefore, been proposed for W03-01 in the future period.

10.1.3 Overview of charge categories

Consistent with the 2016 Determination, charges for water take measurement services are separated into three charge categories:

1. Meter service charges
2. Water take assessment charges
3. Ancillary charges.

We review each of these charge categories in Sections 10.3 to 10.5.

10.2 Metering strategy

New South Wales has been implementing a framework reform to metering for non-urban water in recent years. The framework that is being implemented includes a policy which explains the requirements of the framework. The requirements are implemented through provisions within the Water Management (General) Regulations 2018 and the Water Management Act.

The metering policy requires that a work will require a meter if it meets any of the following thresholds:

- already required to meter or measure
- infrastructure size. For surface water, all pumps >100mm and for groundwater, all bores >200mm.
- multiple pumps or multiple bores on the same licence, approval or landholding, except pumps and bores below the capacity threshold
- at-risk groundwater sources.

The policy is being progressively rolled out across different licence holder groups. The present rollout timetable is shown in Figure 10-4.

Figure 10-4 Program for roll-out of metering policy

The program has been subject to a number of changes in recent years. There is also uncertainty over the ownership of meters and roles and responsibilities between users and Government. As a result, WaterNSW did not include information on its forecast costs of implementing the metering strategy in its pricing proposal. It subsequently provided these forecasts in late 2020 and these forecasts are subject to a separate review.

10.3 Meter service charges

10.3.1 Overview of meter service charges

Meter service charges are fee-for-service charges that intend to recover the costs of operating and maintaining WaterNSW-owned meters in groundwater and unregulated river systems. Two sets of meter service charges are in effect in the current period, with one set of charges applicable to telemetered meters and the second set of charges applicable to non-telemetered meters. Within each set of charges, three tiers are present, where each tier represents a different range of meter sizes (50 – 300 millimetres, 350 – 700 millimetres and 750 - 1,000 millimetres).

Meter maintenance services are currently outsourced by WaterNSW to Comdain through a five-year meter maintenance contract, which is due to expire on 31 December 2020. The meter maintenance contract specifies a schedule of annual maintenance fees that vary incrementally by meter size. Due to the uncertainty surrounding Stage 1 of the upcoming non-urban metering reforms in New South Wales, which are outlined in Section 3.4, WaterNSW "believes it would be prudent to extend the [meter maintenance] contract a further year [to 30 June 2021] without going to tender"[43]. Accordingly, Comdain has provided a schedule of annual maintenance fees for the activation of any optional additional terms for its current meter maintenance contract. While WaterNSW is looking to extend the Comdain meter maintenance contract to 30 June 2021, it has a "strong desire to engage the market going forward"[44] and intends to release an open tender for the supply, maintenance and replacement of meters from 1 July 2021.

10.3.2 Review of meter service charges

Table 10-3 provides a comparison between the meter service charges for the current period as per the 2016 Determination, and the meter service charges proposed by WaterNSW for the future period. WaterNSW has proposed charges that are between 3.3% to 3.5% less in real terms than the charges in the current period.

Table 10-3 Comparison of 2016 Determination meter service charges and meter service charges proposed by WaterNSW

		Meter service charges (annual) (real 2020/21 price base)			
Telemetered/ non-telemetered	**Meter size**	**2016 Determination (including extension)**	**WaterNSW's 2020 pricing proposal**	***Variance***	***Variance (%)***
Telemetered	50 - 300	532.09	514.31	*-17.78*	-3.3%
	350 - 700	553.11	534.41	*-18.70*	-3.4%
	750 - 1,000	601.79	580.97	*-20.82*	-3.5%
Non-telemetered	50 - 300	418.15	403.47	*-14.68*	-3.5%
	350 - 700	433.64	419.24	*-14.40*	-3.3%
	750 - 1,000	471.25	455.77	*-15.48*	-3.3%

Table 10-4 provides a comparison between the contractor maintenance fees in effect for the first five years of the maintenance contract, which is in place until 31 December 2020, and the contractor maintenance fees for optional additional terms.

Table 10-4 Comparison of current contractor maintenance fees and contractor maintenance fees for optional additional terms

		Annual maintenance fee for contract years 1 – 5[45] (real 2020/21 price base)		Annual maintenance fee for optional additional terms[46] (real 2020/21 price base)	
Telemetered/ non-telemetered	**Meter size**	**Minimum**	**Maximum**	**Minimum**	**Maximum**
Telemetered	50 - 300	354.53	360.64	431.43	431.43
	350 - 700	373.91	400.13	431.43	431.43

[43] WaterNSW 2020, *WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Water Licensing and Monitoring Services from 1 July 2021*
[44] "RFI 40.docx" provided by WaterNSW to Cardno for the purpose of this review
[45] "RFI 40.docx" provided by WaterNSW to Cardno for the purpose of this review
[46] "RFI 40.docx" provided by WaterNSW to Cardno for the purpose of this review

		Annual maintenance fee for contract years 1 – 5[45] (real 2020/21 price base)		Annual maintenance fee for optional additional terms[46] (real 2020/21 price base)	
Telemetered/ non-telemetered	**Meter size**	**Minimum**	**Maximum**	**Minimum**	**Maximum**
	750 - 1,000	427.57	427.57	431.43	431.43
Non-telemetered	50 - 300	354.53	360.64	397.40	432.54
	350 - 700	373.91	400.13	469.70	490.57
	750 - 1,000	427.57	427.57	556.70	556.70

At the time of the 2016 Determination, the consultant identified "very different cost differentials by meter size than that implied by the ACCC's [Australian Competition and Consumer Commission] fee schedule"[47], which was used by the former Department of Primary Industries – Water as the starting point for its proposed meter service charges. Notably, the outsourced maintenance fees were relatively constant across the range of meter sizes, varying by approximately 21% between the 50-millimetre and 800-millimetre meters. Conversely, the meter service charges proposed by the former Department of Primary Industries – Water varied by more than 95% between the 50-millimetre and 1,000-millimetre telemetered meters. A "flatter", three-tiered charging structure was consequently decided by IPART in the 2016 Determination[48], with a difference of 13% between the 50-millimetre and 1,000-millimetre telemetered meters.

For the future period, WaterNSW has proposed to continue with a relatively flat, three-tiered charging structure. A comparison between the charges proposed by WaterNSW and the current contractor maintenance fees is illustrated in Figure 10-5. Figure 10-6 replicates this comparison, with the exception that the contractor maintenance fees for optional additional terms are substituted for the current contractor maintenance fees.

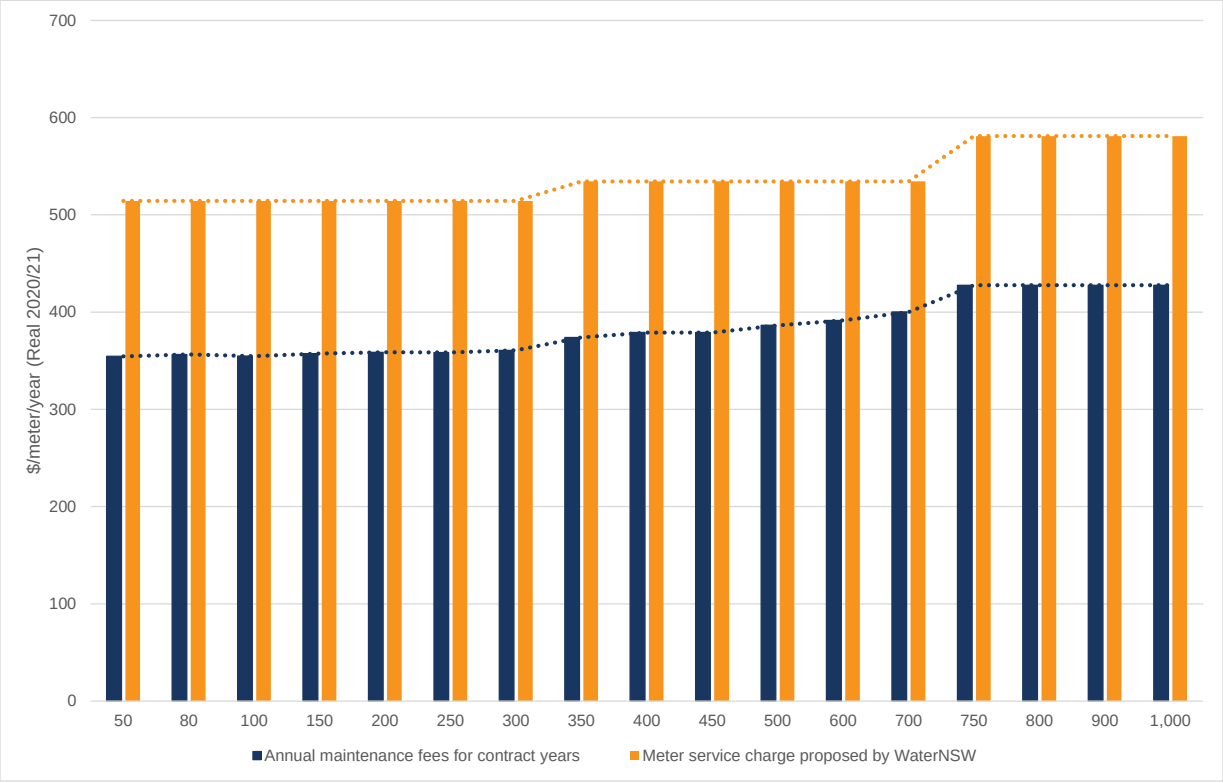

Figure 10-5 Comparison of current contractor maintenance fees and meter service charges proposed by WaterNSW

[47] Synergies Economic Consulting 2016, *DPI Water Expenditure Review*, Final Report prepared for IPART
[48] IPART 2016, *Review of prices for the Water Administration Ministerial Corporation*, Water – Final Report, ISBN 978-1-925340-88-4

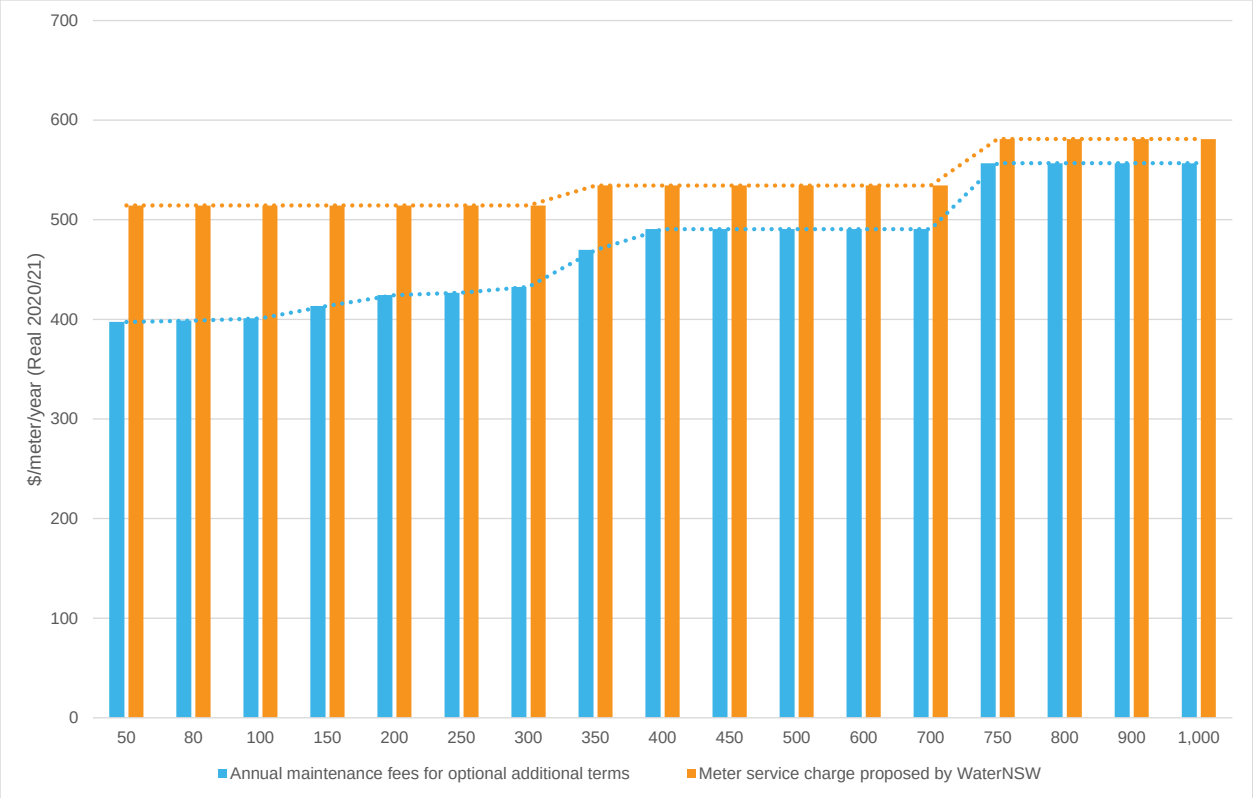

Figure 10-6 Comparison of contractor maintenance fees for optional additional terms and meter service charges proposed by WaterNSW

These figures illustrate that the overall "shape" of the charging structure proposed by WaterNSW remains reflective of both the current contractor maintenance fees and the contractor maintenance fees under the optional extension, with an approximate tiered structure observed in all three datasets. However, the maintenance fees imposed by the contractor are set to increase by 12% to 30%, depending on the meter size, from current prices to those under the optional extension. This increase is particularly evident in the middle (350 – 700 millimetres) and highest (750 – 1,000 millimetres) tiers, with only a small (4%) difference observed between WaterNSW's proposed charge for the highest tier and the corresponding contractor maintenance fee under the optional extension. This correlates with WaterNSW's statement that it "has not factored in any potential price increases arising from the Comdain contract"[49]. On the basis of its proposal, WaterNSW will bear the risk of increased costs if the new Comdain costs do come in to force. However, WaterNSW is also able go to market to mitigate this risk. The uncertainty over the Government metering policy has delayed WaterNSW from going to market sooner.

In addition to the exclusion of "potential price increases arising from the Comdain contract", it is possible that the meter service charges proposed by WaterNSW do not fully recover additional costs associated with this activity, such as contract management, data collection and management, and overheads. This is almost certainly true if the optional extension is activated, given that the difference between WaterNSW's proposed charges and the increased contractor maintenance fees is insufficient to recover the additional costs. As WaterNSW has proposed to retain its charges at existing levels, in real terms, provisions for meter replacement and telemetry replacement also appear to be excluded from the proposed charges.

At the time of the 2016 Determination, IPART's consultant identified a disconnect between the proposed discount applied for customers who performed their own meter reads on non-telemetered meters ($118.45 in a 2015/16 price base) and the proposed water take assessment charge ($198 in a 2015/16 price base). The consultant viewed the discount as an avoided cost and the water take assessment charge as the assessed incremental cost of providing a meter reading service. This disconnect is exacerbated for the future period, with WaterNSW proposing to increase the water take assessment charge to $416 (in a 2020/21 price base) but with a discount of $110 - $125 being apparent in WaterNSW's proposed meter service charges. WaterNSW's proposed water take assessment charge is discussed further in Section 10.4.

[49] "RFI 40.docx" provided by WaterNSW to Cardno for the purpose of this review

The meter service charges proposed appear cost reflective for the core activity of servicing the meter, but we note that there is sufficient evidence that the proposed charges understate other cost components such as corporate overheads. WaterNSW also has proposed these charges to remain relatively flat in real terms between the current and future period even though it considers that costs will increase based on information provided by the existing contractor. WaterNSW has not made any allowance for the impacts of metering reform in its initial pricing proposal, e.g. activities to bring existing meters to the required standard. WaterNSW has subsequently submitted forecasts of the costs of implementing metering reform and these are subject to a separate review. We consider that the meter service charges proposed by WaterNSW represent efficient costs and we therefore recommended the charges as set out in Table 10-5. WaterNSW has accepted risk in its proposed costs given the expectation that costs will rise during the period. This creates an appropriate incentive for WaterNSW to control any future increases. This analysis has not considered the impact of the State metering strategy.

Table 10-5 Recommended meter service charge

Telemetered/ non-telemetered	Meter size (mm)	Recommended charge ($2020/21)
Telemetered	50 - 300	514.31
	350 - 700	534.41
	750 - 1,000	580.97
Non-telemetered	50 - 300	403.47
	350 - 700	419.24
	750 - 1,000	455.77

10.4 Water take assessment charges

Water take assessment charges are fee-for-service charges that intend to recover the costs of physically reading user-owned meters and meter equivalents in groundwater and unregulated river systems. The reading of meters and meter equivalents is undertaken to assist WaterNSW in performing its account management, billing and reporting functions in line with clause 6.3.1 of its operating licence. In contrast with meter maintenance services, water take assessments are undertaken internally by WaterNSW.

Water take assessment charges are developed based on the estimated total expenditure requirement and the assumed number of sites read per year. Prior to 2017, the former Department of Primary Industries – Water was responsible for undertaking water take assessments, contracting WaterNSW to read some meters in inland New South Wales and electing to conduct some meter read functions itself. To this end, in 2014/15, a Service Level Agreement was put in place between the two agencies. Since 2014/15, the number of meters read per year has generally decreased, reducing from 7,918 in 2014/15 to 1,680 in 2018/19. This is consistent with the expectations of the former Department of Industry, which anticipated the number of meter reads to decline “due to an expected increase in the uptake of telemetry and self-customer reads”. Further, this declining trend reflects advice issued from WaterNSW to customers in 2016, encouraging customers to report meter reads through online usage surveys.

Table 10-6 provides a comparison between the water take assessment charges for the current period, as per the 2016 Determination, and the water take assessment charges proposed by WaterNSW for the future period.

Table 10-6 Comparison of 2016 Determination water take assessment charges and water take assessment charges proposed by WaterNSW

2016 Determination: 2016/17 – 2019/20	Extension: 2020/21	WaterNSW’s 2020 pricing proposal: 2021/22 – 2024/25	*Variance from 2020/21 to 2021/22 – 2024/25*	*Variance from 2020/21 to 2021/22 – 2024/25 (%)*
214.34	207.08	416.00	*208.92*	*100.89%*

WaterNSW has proposed a significantly greater water take assessment charge for the future period, equating to more than double the water take assessment charge in 2020/21. Costs have been determined by an allocation of WaterNSW’s field staff to this activity. WaterNSW has stated that this considerable increase is due to a “relatively fixed cost” (although it proposes a 19% reduction in resourcing for the future period) being required to undertake a reduced number of meter reads per year. In calculating its proposed water

take assessment charge, WaterNSW has used the average number of meters read per year from 2016/17 to 2018/19 (1,935 meter reads).

Table 10-7 summarises the water take assessment charges proposed by WaterNSW, its resource estimate, and its calculated expenditure requirement for the future period. Within this table, the corresponding values for 2020/21 are also included for comparison.

Table 10-7 Water take assessment charges, resource estimate, and expenditure requirement proposed by WaterNSW

	2020/21	2021/22	2022/23	2023/24	2024/25	Average (2021/22 – 2024/25)
Proposed water take assessment charge ($/meter/year) (real 2020/21 price base)	207.08	416.00	416.00	416.00	416.00	**416.00**
Proposed resources (full-time-equivalent staff)[50]	3.18	3.33	3.33	2.78	2.59	**3.01**
Proposed expenditure requirement (real 2020/21 price base)[51]	806,491	858,345	865,065	769,730	718,145.00	**802,821**

We set out in the draft report that we do not agree with WaterNSW's implied position that a relatively fixed resource base (where resource levels decline at a much lower rate than output levels) is efficient for this activity. We stated that meter reading does not require specific qualifications or skills and that WaterNSW also has a relatively large resource pool for field activities that are based out of locations across the state and have the appropriate support (e.g. vehicles) to undertake this task. We therefore recommended that WaterNSW's proposed increases not be implemented.

WaterNSW responded to the draft report that this position was ill informed and did not reflect the reality of meter reading for rural use. WaterNSW noted the following factors which drive costs in this area:

- Time taken to access sites, to travel between sites and the difficulty in scheduling readings
- Complexity of the metering arrangements as the meters vary considerably in make, size and measuring parameter
- Experience of the field officers in understanding water sharing plans and in turn, providing service to customers.

WaterNSW also detailed that Customer Field Officers who undertake the meter reading are highly experienced to mitigate the above factors. WaterNSW also stated that water monitoring staff are around 15% more expensive than the Customer Field Officers that undertake meter reading.

We requested WaterNSW to provide position descriptions for the meter reading roles so that we could better understand the skills and experience required. WaterNSW provided position descriptions for a Customer Field Officer and a Field Services Team Leader. Neither role requires qualification other than a driver's licence. Both role requires mandatory knowledge of water measurement devices and agronomic practices. The Team Leader role also has a mandatory requirement of knowledge of relevant legislation and regulation. There are no other qualification, knowledge or experience requirements that are unique to these roles or which would be in restricted supply. We don't consider that the role requirements are overly constraining given that no formal qualifications are required and that other knowledge requirements could be gained through experience and training. We note WaterNSW's comment regarding the higher cost if water monitoring staff were used to undertake this work. However, we are not suggesting that is efficient that water monitoring staff undertake all meter reading activities, but that they may be considered a resource for meeting peaks in workload around a core team of Customer Field Officers. An arrangement of this type, or outsourcing the variable portion of the workload (while retaining the core, experience team) will very likely provide WaterNSW with a lower cost alternative than a fixed resource base. Therefore, we maintain our recommendation that water take assessment charges be held constant in fixed terms for the future period, being $207.08 per meter per year ($2020/21 price base).

[50] "RFI 40 Water take assessment resource estimate.xlsx" provided by WaterNSW to Cardno for the purpose of this review
[51] "RFI 40 Water take assessment resource estimate.xlsx" provided by WaterNSW to Cardno for the purpose of this review

10.5 Ancillary charges

Ancillary charges are fee-for-service charges that intend to recover costs for the following ancillary charge categories:

- Meter laboratory verification: Involves the testing of a meter to confirm accuracy
- Meter in-situ validation: Involves the validation of a meter that has been relocated or disturbed by non-government agency staff
- Meter restart: Involves technical work to reactivate a suspended water meter.

In addition to the above, WaterNSW has proposed to include a refundable meter accuracy deposit in its ancillary charges. The introduction of a refundable meter accuracy deposit is consistent with IPART's decision on charges for meter accuracy testing under the 2017 Bulk Water Determination[52]. The values of the proposed meter laboratory verification and meter in-situ validation charges represent a small decrease (2-3%) on those approved by IPART in the 2017 Bulk Water Determination, while the meter reset fee is proposed to remain constant as shown in Table 10-8. We accept that WaterNSW's ancillary charges are appropriate given that they are consistent or a small decrease on the charges approved in the 2017 Bulk Water Determination for the same services.

Table 10-8 Comparison of 2016 Determination ancillary charges and ancillary charges proposed by WaterNSW

Ancillary charge category	WaterNSW's 2020 pricing proposal: 2021/22 – 2024/25	2017 Bulk Water Determination	Variance from 2017 Bulk Water Determination to WaterNSW's 2020 pricing proposal	Variance from 2017 Bulk Water Determination to WaterNSW's 2020 pricing proposal (%)
Refundable meter accuracy deposit	1,750.00	1,750.00	*0*	*0%*
Meter in-situ validation	6,376.39[1]	6,564.87	-186.05	-2.84%
Meter laboratory verification	8,672.88[2]	8,880.22	-204.06	-2.30%
Meter reset	256.49 + cost of parts	256.49 + cost of parts	*0*	*0%*

Notes:

1 4,626.39 + 1,750.00 deposit (if meter is found to be within accuracy standards)

2 6,922.88 + 1,750.00 deposit (if meter is found to be within accuracy standards)

The ancillary charges are a significant increase on the existing charges for WAMC customers. IPART notes in the 2017 Bulk Water Determination that the charges are set such that WaterNSW is not significantly under-recovering costs while also not deterring customers from questioning the accuracy of their meters.

In the 2017 Bulk Water Determination, IPART decided to introduce a two-part tariff for meter laboratory verification and meter in-situ validation charges. This comprised a "relatively low deposit", which is refunded to the customer if the meter is found to be inaccurate, and a "cost-reflective charge", which is recovered from the customer if the meter is found to be accurate. The cost-reflective charge reflects the total actual costs of meter testing, as put forward by WaterNSW.

IPART determined that the adoption of a two-part tariff "balance[d] the need to avoid deterring customers from questioning the accuracy of the meter where they have a genuine concern about its accuracy, with the need to ensure WaterNSW is not significantly under-recovering costs for testing meters that are found to be within accuracy standards". Further, IPART accepted the total actual costs of meter testing put forward by WaterNSW. We conclude that this rationale is efficient and therefore accept the adoption of the meter laboratory verification and meter in-situ validation charge categories from the 2017 Bulk Water Determination.

Our recommended ancillary charges are as set out in Table 10-9.

[52] IPART 2017, *Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021 - WaterNSW*, Final Report – Water, ISBN 978-1-76049-090-4

Table 10-9 Recommended ancillary charges

Ancillary charge category	Recommended charge	Notes
Refundable meter accuracy deposit	1,750.00	
Meter in-situ validation	6,376.39	4,626.39 + 1,750.00 deposit (deposit is refunded if meter is found to be within accuracy standards)
Meter laboratory verification	8,672.88	6,922.88 + 1,750.00 deposit (deposit is refunded if meter is found to be within accuracy standards)
Meter reset	256.49 + cost of parts	

10.6 Impact of non-urban metering reforms in New South Wales

The upcoming non-urban metering reforms in New South Wales will likely affect the costs required to be recovered through meter service charges, water take assessment charges, and ancillary charges. WaterNSW has excluded the costs associated with the upcoming non-urban metering reforms from its 2020 pricing proposal. It subsequently provided updated expenditure forecasts to IPART in late 2020 and this proposal is subject to a separate review.

11 Review of output measures

This review of WAMC's expenditure is seeking to establish efficient levels of expenditure required to deliver the WAMC monopoly services. Efficiency is the relationship between inputs (labour and capital) to the outputs provided. To aid in evaluating efficiency, outputs are preferred to be tangible and measurable in terms of volume or quantity. This is to assist in understanding what is genuine efficiency: to achieve the same output with less input or more output with the same input represents an efficiency. Conversely, using less input to deliver less output doesn't necessarily represent an efficiency. Therefore, reduced expenditure by itself does not necessarily represent efficiency.

However, there are challenges in using output measures in assessing efficiency. These include:

- We are rarely interested in the output measures as an end in themselves. These outputs typically enable a regulated business to achieve outcomes such as complying with statutory requirements, meeting customer and stakeholder expectations and servicing increased demand.
- Outputs typically have a level of quality that is difficult to evaluate and the level of quality expected can offer change as a result of a change in regulatory requirements. For example, increased wastewater treatment standards represent an increase in the quality of service provided but the output is typically considered as the volume of effluent treated.

Also, output measures should not be seen as hard targets. It is to be expected that as circumstances change that a business will reprioritise its efforts between its different service areas. However, these changes and resulting variance in outputs should be able to be explained by the business and the actual expenditure and actual output achieved should be clear.

Through review if the existing output measures and discussion with the agencies, a draft, proposed schedule of output measures for the future period has been developed and is detailed in Table 11-1. Within this table, a distinction is made between measure of output (that the WAMC businesses can largely control) and forecasts (which the WAMC businesses have less control over). Forecasts are still desirable to be included as they provide context for the expenditure forecasts made by the agencies to deliver the relevant activity. Agencies are then expected to report against the forecasts each year. For many measures, the quantity of the output or forecast, and the performance measure need to be confirmed. These will be in line with the assumptions the agencies have made in preparing their expenditure forecasts.

A number of measures are performance indicators are still to be confirmed and will be finalised in parallel with the Determination process.

Table 11-1 Proposed output measure for 2021 determination period

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
W01-01 - Surface water quantity monitoring	The provision of a surface water quantity monitoring system; including design, station calibration, data collection, processing, encoding, quality assurance and archiving from the networks of water monitoring stations; the delivery of near real time height and/or flow data from all telemetered sites to the corporate database; and the maintenance and operation of surface water monitoring stations.	Number of water monitoring sites	437	No.	Forecast			Provide for context		Based on Long-term water stewardship / Ministerial corporation sites.
		Sites in acceptable condition	N/a	N/a	N/a	Percentage of replacement cost of monitoring sites in condition grade two or better	95%	Reporting a condition profile aligns with the management approach for the network	A monitoring network in sufficiently good condition to help ensure that it is performance meets requirements	Condition grading based on WaterNSW Asset Management systems
						Percentage of level data with a quality code better than 40	95%	The quality code reflects WaterNSW's own quality control processes	A monitoring network that is meeting desired quality requirements	Level data is used as a surrogate for overall data performance as it is the key data collected at surface water quantity monitoring site and is used for the generation of flow data
W01-02 - Surface water data	The data management and reporting of surface water quantity, quality and	Number of sites subject to data management	437	No.	Forecast			Provided for context		Based on Long-term water stewardship /

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
management and reporting	biological information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.									Ministerial corporation sites.
						Percentage of sites where data is available within three hours	90%	This reflects the current level of service within the network	Timely provision of data enables faster and improved decision making	
W01-03 - Surface water quality monitoring	The provision of a surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	Number of sites visited per year to collect water quality samples	125	No.	Forecast			Provide for context		
		Number of tests undertaken per year	26,750	No.	Forecast			Provide for context		This quantity is calculated from 125 sites, sampled a minimum of 10 times per year, with 6 field measured analytes plus 17 laboratory measured analytes at coastal sites, or 15 laboratory measured analytes at non-coastal sites.
						Percentage compliance against monitoring program requirements	98%	It is more meaningful to measure against implementation of the monitoring program rather than test results as the monitoring program is within WaterNSW's control	Assurance that the quality of water is known	
W01-04 - Surface water algal monitoring	The provision of a surface water algal monitoring program; including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees.	Number of tests undertaken per year	10,080	No.	Forecast			Provide for context		This quantity is calculated from 70 sites, sampled a minimum of 12 times per year, with 12 analytes reported for each sample. Number of algal tests scalable in response to events
						Percentage of samples collected and analysed according to current standards and within agreed timeframe	95%	This indicator measures the effectiveness of algal monitoring	Confidence that the algal monitoring program is providing reliable results	
W01-05 Surface water ecological	The provision of a surface water ecological condition monitoring system to assess the health of water sources;	Update of River Styles database undertaken to support WSP development. Measure by number of plans	50%	%	Output	Update of River Styles completed in time for WSP evaluation	100%	This activity creates spatially enabled products that gradually increase in coverage	Regularly updated river condition information that is available online. Information that is available at the same	DPIE to provide schedule for calculation of output measure percentage

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
condition monitoring	including design and application based on the River Condition Index for rivers, flood plains and wetlands.							from one year to the next. Updates and additions to the products are also incremental. It is reasonable to expect that models are maintained annually. The number of scenario tests is not a reliable performance measure and has been dropped.	spatial scale as stakeholder interests (i.e. the same scale as water sharing plan management units and landholder properties). Accountability for and stakeholder confidence in evidence-based decision making for optimal resource allocation and sharing	and timing of performance indicator
		Update of RCI undertaken to support WSP development. Measure by number of plans	50%	%	Output	Update of RCI completed in time for WSP evaluation	100%			
		Update of WaQI undertaken to support WSP development. Measure by number of plans	50%	%	Output	Update of WaQI completed in time for WSP evaluation	100%			
		Coverage of river and groundwater HEVAE extended to coastal WSP areas. HEVAE data updated for inland WSP areas	24	No.	Output	River and groundwater HEVAE extended to cover coastal WSP areas in time for plan evaluation	100%			HEVAE coverage will be extended into 11 coastal WSP areas. HEVAE data will be reviewed and updated in 13 inland WSP areas
		WaQI coverage extended to coastal WSP areas	11	No.	Output	WaQI extended to cover coastal WSP areas in time for plan evaluation	100%			WaQI developed for coastal WSP areas,
		WaQI incorporated into the RCI	Completion	-	Output	N/a				No performance indicator, completion only
		River Styles, WaQI, RCI and HEVAE available on DPIE website	Completion	-	Output					
		Technical reports for HEVAE and WaQI peer reviewed and published on DPIE website.	2	No.	Output	Technical reports for HEVAE and WaQI updates peer reviewed and published on DPIE website within 3 months of completion	100%			Minimum of two reports. Final number depends on the degree of novelty and innovation required when creating the coastal products.
W02-01 - Groundwater quantity monitoring	The provision of a groundwater level, pressure and flow monitoring system; including design, site calibration, data collection, entry, audit, quality assurance, archiving, and information provision; and the maintenance and operation of groundwater monitoring bores.	Number of water monitoring sites	4,384 (excludes coal seam gas monitoring sites)	No.	Forecast			Provide for context		
		Sites in acceptable condition	N/a	N/a	N/a	Percentage of replacement cost of monitoring sites in condition grade two or better	95%	Reporting a condition profile aligns with the management approach for the network	A monitoring network in sufficiently good condition to help ensure that its performance meets requirements	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
						Percentage of level or pressure data with a quality code better than 40	95%	The quality code reflects WaterNSW's own quality control processes	A monitoring network that is meeting desired quality requirements	Level or pressure data is used as a surrogate for overall data performance as it is the key data collected
W02-02 - Groundwater quality monitoring	The provision of a groundwater quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	Number of sites visited per year to collect water quality samples	163 (excludes coal seam gas monitoring sites)	No.	Forecast			Provide for context		
		Number of samples undertaken per year	360 (excludes coal seam gas monitoring sites)	No.	Forecast			Provide for context		
						Percentage compliance against monitoring program requirements	98%	It is more meaningful to measure against implementation of the monitoring program rather than test results as the monitoring program is within WaterNSW's control	Assurance that the quality of water is known	
W02-03 - Groundwater data management and reporting	The data management and reporting of groundwater quantity and quality information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.	Number of sites subject to data management	4,384 (excludes coal seam gas monitoring sites)					Provided for context		
						Percentage of sites where data is available daily	90%	This reflects the current level of service within the network	Timely provision of data enables faster and improved decision making	
						Percentage of sites measured to the required frequency	90%	This reflects the current level of service within the network	The sites are being measured as required to meet information needs	
W03-01 - Water take data collection	The electronic and manual collection, transmission and initial recording of water take data from licence holders for unregulated and groundwater sources; and the operation and maintenance of government owned meter and telemetry facilities.	Output measures and performance indicators to be confirmed following review of metering strategy. Suggest: Quantum of meters installed in line with metering strategy implementation Condition profile of meter fleet Data collection from telemetered versus un-telemetered sites Self-reads								
W03-02 Water take data	The data management and reporting of water take for unregulated and	Output measures and performance indicators to be							▪	▪

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
management and reporting	groundwater sources including compilation, secure storage, management and publishing of data to authorised parties.	confirmed following review of metering strategy								
W04-01 Surface water modelling	The development, upgrade and application of surface water resource management models for use in water planning and to assess performance in terms of statutory requirements, interstate agreements, regional water supply optimisation and third-party impacts on NSW stakeholders.	Number of documented model performance reviews during the year	5	Per year	Output	Proportion of models reviewed and reported against accuracy and reliability criteria set out in modelling guidelines	100%	The proposed metric reflects that it is reasonable to review all of our major models once in a five year IPART determination period (cover 19% per year). This could be an internal or external peer review, depending on work program.	Accountability for and stakeholder confidence in evidence-based decision making for optimal resource allocation / sharing	DPIE is currently formalising requirements for periodic review of its water management models
		Number of models updated with an additional year of climate and hydrologic data.	15	Per year	Output	N/a	N/a			
W04-02 Groundwater modelling	The development, upgrade and use of groundwater resource management models for water sharing and management applications, and for resource impact and balance assessments.	Number of documented model performance reviews during the year	4	Per year	Output	Proportion of models meeting accuracy and reliability criteria stipulated by the Australian Groundwater Modelling Guidelines	100%	As for surface water	As for surface water	Accuracy and reliability parameters are as stipulated by the Australian Groundwater Modelling Guidelines
		Number of models updated with an additional year of climate and hydrologic data	2	Per year	Output	N/a	N/a			Note that the 22 existing groundwater models are proposed to be consolidated into 8
W04-03 Water resource accounting	The development and update of water resource accounts and information on NSW water sources, for use by external stakeholders, and for internal water planning, management and evaluation processes.	Publication of detailed General Purpose Water Allocation Reports (GPWARs)	9 (covering 11 sources)	Per year	Output	GPWARs published within 12 months of the end of the water year.	100%	GPWARs and the associated data are the cornerstone of water accounting delivery. The environmental water register provides transparency for recovered water use in the basin.	Stakeholder confidence in consistent, repeatable and comparable water accounts.	
		Reports to meet state and federal compliance reporting obligations.	Completion	-	Output	N/a	N/a			Refer schedule of expected reports prepared by DPIE
		N/a				Environmental Water Register available online with a currency of 1 week	Regulated river: 100% Unregulated river: 60% Groundwater: 95%			
W05-01 Systems operation and water availability management	The preparation and implementation of the procedures and systems required to deliver the provisions of water management plans; and operational oversight to ensure plan compliance, the available water	A theme-based WSP implementation program established and published	Completion	-	Output	N/a		DPIE Water needs to demonstrate that WSP are being implemented and are effective in a clear and transparent process.	Sustainable operation and use of water resources Stakeholders kept updated on WSP implementation progress – improved public confidence	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
	determinations and the assessment of compliance with long term extraction limits.							This program addresses recommendations from audits / reviews and key stakeholder feedback on NSW WSP implementation.	and transparency in WSP implementation.	
		Annual implementation effectiveness reviews completed for each theme and communicated to key stakeholders (Water agencies, MDBA, NRC, Industry and public) through Annual reports and DPIE Water website update.	5	No	Output	N/a				
		Manage to LTAAEL in priority WSPs where it is exceeded Report back: Number of times that there is non-compliance with the long-term average annual extraction limit, as defined in each WSP. i.e. 1, X Water Sharing Plan	0	Per year	Output	Compliance with Long Term Average Annual Extraction Limit (LTAAEL) assessed annually for priority water sharing plans in accordance with rules set out in respective WSPs, and AWDs reflect an appropriate reduction in allocations where LTAAEL is exceeded Report back: WSP non-compliance addressed through the required management action, as defined in each WSP i.e. 100%, AWDs reduced to be compliant with the extraction limit	100%	Effective LTAAEL implementation enables DPIE Water to assess if diversions from regulated water sources are within WSP limits and determine growth in use. This particularly applies to valleys where Floodplain Harvesting will be brought into the entitlement framework.	Extraction managed to sustainable levels	This indicator is included to provide insight into the performance in managing to LTAAEL. The outputs (zero exceedances) and 100% compliances are somewhat aspirational. Reporting this information is expected to provide better understanding of performance.
		Snowy license review implemented by 2022.	Completion	-	Output	N/a	N/a			
		AWDs and allocation statements released for each WSP	1	No. per WSP per year	Output	AWDs published on website within 1 week of being made.	100%	AWDs are reflected in publicly available, date-stamped, Water Allocation Statements. Performance is measured by comparing scheduled and actual release dates.	AWDs allow water users and market participants to make informed business decisions and water availability manage risks. Stakeholders are updated on allocations	Minimum one resource assessment and allocation announcement per water sharing plan per year. However likely more, depending of resource conditions/availability. If there are water shortages, and low allocations, then assessments and allocation announcements continue regularly (up to fortnightly in southern systems) through the year until

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
										full allocations are reached. We can report actual Outputs each year (above the minimum) for each WSP.
W05-02 Blue-green algae management	The provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans.	Algal risk management plans for each region are implemented	100%	%	Output	Percentage of reports meeting weekly timeframe to regional algal coordinating committees and state algal coordinator of alert levels based on algal data	100%	Measures provide for risk based planning for blue-green algae management and effective implementation of these plans	Effect management of risk associated with blue-green algae	
						Actions implemented in accordance with algal risk management plan and guidelines	100%			
W05-03 Environmental water management	The development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes.	Pre-requisite policy measures - adaptive process in place to recognise return flows from environmental water.	Completion	-	Output	eWater managers, WaterNSW and SCBEWC agree the process for recognising return flows.	Agreement	Clarified water sharing processes for environmental water managers, extractive water users and NRAR. Enhanced protections for environmental water. Enhanced regulatory and policy structure to facilitate improved environmental water management. Greater transparency and certainty in decision-making in environmental water management.	Environmental watering activities are better able to achieve their intended environmental outcomes. Greater community confidence in how environmental water portfolios are managed. Healthy ecosystem function and environmental assets. In developing a more comprehensive set of ecological objectives, the strategies for increased flows developed by the governments focused on repairing flow related processes	
						Annual report on PPMs implementation published on DPIE website.	100%			
		Northern Basin – Interim Unregulated Flow Management Plan for the North-west implemented as demonstrated by: Review report published and Procedures Manual for the Interim Unregulated Flow Management Plan for the North-west adopted by WaterNSW and in place.	Completion	-	Output	N/a	N/a			
		Northern Basin – Active management implemented as demonstrated by: 2. Active management Procedures Manuals implemented and reviewed. 3. Active management policy published.	Completion	-	Output	Annual progress report published on the environmental water hub on the DPIE website.	100%			

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
		4. Annual reporting templates and data provision process implemented with EES and WaterNSW.								
		Snowy Licence – Evaluate using the Mowamba River to provide environmental water to the Snowy River	Completion	-	Output	N/a	N/a			
		Snowy licence – Investigate more flexible delivery to achieve better environmental outcomes and deliver an average annual flow consistent with the intent of SWIOID	Completion	-	Output	N/a	N/a			
W05-04 Water plan performance assessment and evaluation	The assessment, audit and evaluation of the water management plans' appropriateness, efficiency and effectiveness in achieving economic, social and environmental objectives.	WSP risk assessments prepared.	25	No.	Output	WSPs with risk assessments available prior to remake date	100%		Prepare information for external (NRC and MDBA) reporting. Provide evidence that supports decision making during WSP remake and development Support an adaptive management framework for WSPs to meet the requirements of the Water Management Act 2000 (and Water Act 2007 (Commonwealth) when WRPs commence)	Risk assessments are scheduled by region, to align with WSP completion schedules (6 months before WSP remake dates).
		WSPs included in the scope of monitoring programs.	Monitoring data for all inland (Basin) WSPs, at least six coastal WSPs (approximately 50% of coastal WSP remakes during the period)	-	Output	WSPs with monitoring outcomes available prior to evaluation and remake date	100%			Monitoring outputs are scheduled according to overarching MER plans to align with WSP evaluation and reporting schedules.
W06-01 Water plan development (coastal)	The development, review, amendment, and extension or replacement of water management plans, and the consultation activities associated with developing these plans for coastal water sources.	NRC review report submitted for plans due to expire within the 2021 IPART period to Minister and Minister endorses Department recommendation for coastal WSPs to be replaced or extended. Anticipated coastal WSPs approved for replacement or extension : Bega, Murrah, Richmond, Towamba, Tweed, GMR Unreg, GMR GW	7	No.	Output	Review report submitted on time	100%	The NRC review is a statutory requirement under the Act and must be completed prior to a plan expiring to inform whether the plan is extended for a further ten years or replaced. A number of plans are due to expire during the IPART determination period.	If the output measure is achieved this will demonstrate that the statutory review requirements have been met and a plan remains in place for the water source(s) beyond its expiry.	Expected July 2021
		WSP rules are reviewed and updates proposed where required as part of plan replacement Anticipated WSPs that have work progressed to review and update	13	No.	Output	WSP rules reviewed and updates proposed in line with expected timing	100%	The Department undertakes work to inform any proposed changes to plan rules as part of the plan replacement.	If the output measure is achieved this will demonstrate that the Department has progressed this work to inform the draft plan that is placed on public exhibition.	Expected August 2020 to October 2021

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
		rules where required to inform draft plan for public exhibition: CC, Coffs, Hunter, LNC, Bega, Murrah, Richmond, Towamba, Tweed, GMR Unreg, GMR GW, 2 additional plans brought forward from those due to expire in 2026.								
		Public exhibition of draft replacement coastal WSPs is completed. Anticipated coastal WSPs that have public exhibition completed: CC, Coffs, Hunter, LNC, Bega, Murrah, Richmond, Towamba, Tweed, GMR Unreg, GMR GW.	11	No.	Output	Public exhibition completed in line with expected timing	100%	Public exhibition is a statutory requirement as part of replacing a plan and provides for important stakeholder input to the planning process. It marks a key milestone in the planning process.	If the output measure is achieved this will demonstrate that the statutory exhibition requirements have been met and that the planning is progressing for replacement of the plan in the required statutory timeframes (within 2 years).	Expected November 2020 to August 2022
		Replacement coastal WSP submitted for approval to commence Anticipated 11 coastal WSPs submitted to the Minister for approval to commence: CC, Coffs, Hunter, LNC, Bega, Murrah, Richmond, Towamba, Tweed, GMR Unreg, GMR GW.	11	No.	Output	Replacement WSPs submitted for approval in line with expected timing	100%	As part of the approval process for replacement of a plan the plan must receive concurrence from the Minister for the Environment as well as approval from the Minister for Water. It marks a key milestone in the planning process.	If the output measure is achieved this will demonstrate that the planning is progressing for replacement of the plan in the required statutory timeframes (within 2 years).	Expected May 2021 to April 2023
		Commencement of coastal WSPs Anticipated coastal WSPs approved by the Minister to commence and have been submitted to the NSW legislation website for upload: CC, Coffs, Hunter, LNC, Bega, Murrah, Richmond, Towamba, Tweed, GMR Unreg, GMR GW.	11	No.	Output	Commencement of WSPs occur in line with expected timing	100%	Once approved through the Ministers the plan will formally commence meaning that the statutory requirements have been met and water sharing arrangements are continued under the Act for the plan area. The plans inform licence and approval conditions as well as trade and application provisions.	If the output measure is achieved this will demonstrate that the planning process has government support and statutory timeframes for plan replacement have been met.	Expected June 2021 to June 2023
		Amendment to coastal WSPs commenced as required.	As required	No.	Output	N/a	N/a	Plans may need to be amended during their ten-year term. This process can take some dependent on the type of amendment. Approvals for amendments mirrors plan replacements. Amendments can be identified within plans or arise on an ad hoc basis.	If the output measure is achieved this will demonstrate that the Department has progressed plan amendments in line with plan provisions or as required to address issues arising. This ensures that the plans remain current and implementable.	Note that there is currently only one amendment in progress
W06-02 Water plan development (inland)	The development, review, amendment, and extension or replacement of water management plans; the development of additional planning instruments to comply with the Commonwealth Water Act;	NRC review report submitted for plans due to expire within the 2021 IPART period to Minister and Minister endorses Department recommendation for inland WSPs to be replaced or extended.	13	No.	Output	Review report submitted on time	100%	The NRC review is a statutory requirement under the Act and must be completed prior to a plan expiring to inform whether the plan is extended for a further ten years or replaced.	If the output measure is achieved this will demonstrate that the statutory review requirements have been met and a plan remains in place for the water source(s) beyond its expiry.	Expected September 2021 to September 20222

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
	and the consultation activities associated with developing these plans for inland water sources.	Anticipated inland WSPs approved for replacement or extension: Castlereagh, IS, LMD, Murray, NW NSW, NSW BR, BD, Belubula, Gwydir, Lachlan, Macq Bogan, Murrumbidgee, Namoi/Peel.						A number of plans are due to expire during the IPART determination period.		
		WSP rules are reviewed and updates proposed where required as part of plan replacement. Associated updates to WRPs are also identified. Anticipated inland WSPs (and associated WRPs) to have work progressed to review and update rules where required to inform draft replacement plan for public exhibition: Castlereagh, IS, LMD, Murray, NW NSW, NSW BR, BD, Belubula, Gwydir, Lachlan, Macq Bogan, Murrumbidgee, Namoi/Peel.	13	No.	Output	WSP rules reviewed and updates proposed in line with expected timing	100%	The Department undertakes work to inform any proposed changes to plan rules as part of the plan replacement. In inland areas there may be flow on to the relevant WRP as well.	If the output measure is achieved this will demonstrate that the Department has progressed this work to inform the draft plan(s) that are placed on public exhibition.	Expected September 2021 to September 20222
		Public exhibition of draft replacement inland WSPs (and any associated WRP updates) is completed Anticipated inland replacement WSPs (and associated WRPs) to have public exhibition completed (Castlereagh, IS, LMD, Murray, NW NSW, NSW BR, BD, Belubula, Gwydir, Lachlan, Macq Bogan, Murrumbidgee, Namoi/Peel)	13	No.	Output	Public exhibition completed in line with expected timing	100%	Public exhibition is a statutory requirement as part of replacing a plan and provides for important stakeholder input to the planning process. It marks a key milestone in the planning process.	If the output measure is achieved this will demonstrate that the statutory exhibition requirements have been met and that the planning is progressing for replacement of the plan in the required statutory timeframes (within 2 years).	Expected May 2022 to May 2023
		Replacement inland WSP submitted for approval to commence and amended WRP submitted for accreditation to Commonwealth Anticipated up to 13 inland WSPs to be submitted to the Minister for approval to commence: Castlereagh, IS, LMD, Murray, NW NSW, NSW BR, BD, Belubula, Gwydir, Lachlan, Macq Bogan, Murrumbidgee, Namoi/Peel. Relevant WRPs are submitted to the MDBA for accreditation assessment of amendments.	13	No.	Output	Replacement WSPs submitted for approval in line with expected timing	100%	As part of the approval process for replacement of a plan the plan must receive concurrence from the Minister for the Environment as well as approval from the Minister for Water. It marks a key milestone in the planning process. Any changes to inland WSPs may result in amendments being required to the associated WRP. This amendment then requires Commonwealth accreditation.	If the output measure is achieved this will demonstrate that the planning is progressing for replacement of the plan in the required statutory timeframes (within 2 years) and that Commonwealth accreditation requirements are being progressed	Expected March 2023 to January 2024
		Replacement inland WSP has commenced.	13	No.	Output	Replacement WSPs are commenced in	100%	Once approved through the Ministers the plan	If the output measure is achieved this will demonstrate	Expected April 2023 to February 2024

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
		Anticipated inland WSPs to be approved by the Minister to commence and have been submitted to the NSW legislation website for upload: Castlereagh, IS, LMD, Murray, NW NSW, NSW BR, BD, Belubula, Gwydir, Lachlan, Macq Bogan, Murrumbidgee, Namoi/Peel. Relevant WRPs are accredited by the Commonwealth Minister for Water				line with expected timing		will formally commence meaning that the statutory requirements have been met and water sharing arrangements are continued under the Act for the plan area. The plans inform licence and approval conditions as well as trade and application provisions.	that the planning process has government support and statutory timeframes for plan replacement have been met.	
		Amendment to inland WSPs/WRPs commenced as required (separate to those undertaken as part of plan replacement processes during the IPART period)	As required	No.	Output	N/a	N/a	Plans may need to be amended during their ten-year term. This process can take some time dependent on the type of amendment. Approvals for amendments mirrors plan replacements. Amendments can be identified within plans or arise on an ad hoc basis.	If the output measure is achieved this will demonstrate that the Department has progressed plan amendments in line with plan provisions or as required to address issues arising. This ensures that the plans remain current and implementable.	Currently three inland plan amendments in progress (NSW MDB FR, Namoi alluvium , Gwydir alluvium)
		Water Resource Plans accredited in line with Basin Plan 2012 and Commonwealth Water Act requirements.	20	No.	Output	WPSs accredited in line with expected timing	100%	NSW is required to meet Basin Plan requirements in relation to water resource planning. 20 WRPs have been submitted by NSW for accreditation assessment. As part of the planning process it is usual that these plans may need to be withdrawn and resubmitted in order to address accreditation assessment feedback.	If the output measure is achieved this will demonstrate that the Commonwealth has formally provided accreditation feedback on the NSW WRPs, and that ultimately NSW has met accreditation requirements.	Expected December 2021. However, timing is pending agreement with Commonwealth for resubmission of plans (TBD) and estimated MDBA timeframe for assessment
		NSW WSPs commenced prior to accreditation of NSW WRPs Anticipated regulated river inland WSPs replaced/amended ahead of associated WRP accreditation: Belubula, Peel, Namoi, Gwydir, Macquarie, Castlereagh, Murray, Murrumbidgee, MLD, Lachlan.	9	No.	Output	N/a	N/a	It is a statutory requirement that state legislation must be commenced prior to the accreditation of the WRPs. This requires the WSPs which form part of the WRP to be commenced. NSW is yet to commence the regulated river WSPs that were submitted as part of the WRPs.	If the output measure is achieved this will demonstrate that the Department has resolved any likely accreditation issues relevant to the WSPs and that there is NSW government support for the plans to commence.	Expected July 2021
W06-03 Floodplain management plan development	The development, review, amendment, and extension or replacement of Floodplain Management Plans, in collaboration with the Office	S43 review report submitted for southern FMPs due to expire within the 2021 IPART period to Minister and Minister endorses Department recommendation for	10	No.	Output	N/a	N/a	The S43 review is a statutory requirement under the Act and must be completed within the fifth year after the plan was made to inform	If the output measure is achieved this will demonstrate that the statutory review requirements have been met and the plan provisions remain adequate and appropriate for	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
	of Environment and Heritage.	FMPs to be replaced or extended with 3/4 WMA200 compliant FMPs						amendment or replacement of the plan. A number of plans are due to expire during the IPART determination period.	ensuring effective implementation of the water management principles.	
		S43 review reports submitted in line with statutory 5-year timeframe for 3 northern FMPs.	3	No.	Output	N/a	N/a			Note that the Minister has noted an intent to progress amendments to three northern FMPs as required (Gwydir, Barwon Darling, Upper Namoi)
		FMP rules are reviewed and updates proposed where required as part of plan replacement/amendment Work with staff under W06-02 for associated updates to WRPs to be identified. This is anticipated to include technical investigations of floodway network, flood behaviour and environmental, cultural, socio-economic and existing floodplain assets. Anticipated that up to 7 FMPs (and associated WRPs) to have work progressed to review and update rules where required to inform draft replacement plan/plan amendments for public exhibition (10 historic southern valley FMPs anticipated to be replaced by 3/4 FMPs. Gwydir, Barwon Darling and Upper Namoi anticipated to require amendment)	10	No.	Output	N/a	N/a	The Department undertakes work to inform any proposed changes to plan rules as part of the plan replacement. In inland areas there may be flow on to the relevant WRP as well which will be picked up under W06-02.	If the output measure is achieved this will demonstrate that the Department has progressed this work to inform the draft plan(s)/plan amendments that are placed on public exhibition.	
		Public exhibition of draft replacement FMPs and amended FMPs (and any associated WRP updates) is completed Anticipated that up to 4 FMP replacements/ and amendments (*and associated WRPs*) have public exhibition completed (10 historic southern valley FMPs anticipated to be replaced by 3/4 FMPs. Gwydir, Barwon Darling and Upper Namoi anticipated to require amendment)	7	No.	Output	N/a	N/a	Public exhibition is a statutory requirement as part of replacing a plan and provides for important stakeholder input to the planning process. It marks a key milestone in the planning process.	If the output measure is achieved this will demonstrate that the statutory exhibition requirements have been met and that the planning is progressing.	
		Replacement FMP/amended FMPs submitted for approval to commence	4	No.	Output	N/a	N/a	As part of the approval process for replacement of a plan the plan must receive concurrence from the Minister for the	If the output measure is achieved this will demonstrate that the planning is progressing.	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
		(Note amended WRP submitted for accreditation to Commonwealth under W06-02)						Environment as well as approval from the Minister for Water. It marks a key milestone in the planning process. Any changes to inland WSPs may result in amendments being required to the associated WRP. This amendment then requires Commonwealth accreditation. This component of the work will be picked up in W06-02.		
		Replacement/amended FMP is commenced *(Note amended WRP is accredited under W06-02)* Anticipated that up to 4 FMP replacements and 3 FMP amendments WSPs are approved by the Minister to commence and have been submitted to the NSW legislation website for upload *(Note relevant WRPs are accredited by the Commonwealth Minister for Water under W06-02)*	7	No.	Output	N/a	N/a	Once approved through the Ministers the plan will formally commence meaning that the statutory requirements have been met and water sharing arrangements are continued under the Act for the plan area. The plans inform licence and approval conditions as well as trade and application provisions.	If the output measure is achieved this will demonstrate that the planning process has government support and statutory timeframes for plan replacement have been met.	
W06-04 Drainage plan development	The development, review, amendment, and extension or replacement of Drainage Management Plans, to address water quality problems associated with drainage systems.	None included at this time								
W06-05 Regional planning and management strategies	The development, evaluation and review of regional water strategies, metropolitan water plans and other planning instruments, including the associated stakeholder engagement	Regional water strategies completed and in place	10	No.	Output	N/a	N/a	Whilst at least 4 of the 12 strategies will be a draft of the final strategy for pub ex and approval by Government, the latter process takes several months and is not totally within the control of the Department. It is therefore proposed to remove this milestone, and pick up on the commitment by the Minister to the Premier to have 9 of the 12 Strategies completed by the end of 2021	Water strategies that: Deliver and manage water for local communities Enable economic prosperity Recognise and protect Aboriginal water rights, interests and access to water Protect and enhance the environment Affordability Identify least cost policy and infrastructure options	Expected schedule: ▪ Draft strategies x 5 2021 ▪ Final strategies (submitted to cabinet process for approval) ▪ 3x 2021 ▪ 8 x 2022
		Regional Water Strategy Action Plans developed	10	No.	Output	Action Plan published within 3 months of each Regional Water	100%			

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
						Strategy being finalised				
						Action Plan reported against annually	100%			
		Regional water strategies updated on a rolling annual cycle and associated Action Plan updated. Output equates to review on four year cycle and one-third within 2021 period.	4	No.	Output	N/a	N/a			▪ 1 x Review commenced 2021/2022 ▪ 3 x Review commenced 2022/2023 ▪ 4 x Review commenced 2023/2024 ▪ 4 x review commenced 2024/2025
		Forward program for implementation and MER and public reporting published by June 2021	Completion	-	Output	N/a	N/a			
		Completion of Greater Sydney Water Strategy in 2021, including: ▪ a water efficiency and conservation framework ▪ a performance and monitoring framework.	Completion	-	Output	N/a	N/a			
W06-06 Development of water planning and regulatory framework	The development of the operational and regulatory requirements and rules for water access.	Provide a register of regulatory and policy instruments progressed during the year	5	No.	Output	N/a	N/a	Measure of delivery of work that is undertaken in a highly dynamic policy environment	An effective and efficient water planning and management framework	▪ Register to include sufficient information to understand the policy alignment, status, priority and level of effort associated with each activity
		Policies and regulations supporting the water planning and regulatory framework are developed and reviewed using a risk-based approach.	N/a	N/a	N/a	A risk-based framework is used 100% of the time for informing the priorities for development of water policy and regulatory instruments	100%	Effective and efficient water planning and regulation requires the ongoing review and improvement of policy and regulatory settings. Policy and regulation must be adaptive and responsive to existing and emerging risks, including environmental, social, economic, cultural, or compliance and governance-based risks. A risk-based approach to policy and regulatory development helps to achieve a responsive, efficient and effective water planning and		

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
								management framework.		
		Timely public access to key policies and regulatory instruments.	N/a	N/a	N/a	Key policies and regulatory instruments are published on the Department's website within 4 weeks of their approval.	90%	To realise effective regulation, water users and the community need good and timely access to the policies, plans and regulations that are in force and as they are developed.		
W06-07 Cross border and national commitments	The development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments.	DPIE water publishes on its website an annual statement on interjurisdictional participation and performance against interstate agreements.	Completion	-	Output	N/a	N/a	Improved transparency for stakeholders	National and interstate agreements successfully negotiated and implemented	
		Additional IPART performance indicator annual statement published	Completion	-	Output	N/a	N/a			
W07-01 Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses	Length of river remediated	12	km	Output	High priority areas of erosion identified and remediated	90%	Bank stability is maintained and not adversely impacted by power production activities undertaken by Snowy-Hydro Ltd.	Maintain channel capacity to enable adequate delivery of water to downstream users Riparian and in-stream environment values are improved.	
						Channel capacity at Tumut	>=9,200 ML/day			
		Rolling three-year average of salt diverted from the Murray River system	>50,000	t/year	Output	Maintain net credit (EC) balance for NSW on the BSM2030 Salinity Register	>20 EC	Optimal SIS operations ensures salinity impacts on the River system are mitigated	Improved water quality in the River system. No adverse impacts to the receiving environment. Social and economic benefits are maintained Assists in meeting NSW obligations to Schedule B of the Murray-Darling Basin Agreement	
W08-01 - Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.					System availability	95%	An output measure is less meaningful as there is little incremental cost in adding new users. Performance measures are more useful as they provide insight into the quality of the service.	System is efficient and effective at supporting water management activities	WaterNSW has existing licence obligations regarding maintaining an access register . The target for system availability is suggested only, WaterNSW does not have historic data on which to inform the measure.
						Security and privacy of user data measured through audit	No major non-conformances			
W08-02 Consents management	The transcribing of water sharing provisions into licence conditions and the	WSP rules are enforceable because the plan mandatory	N/a	N/a	N/a	Rule changes are reviewed to identify whether condition	100%	When rules required to be implemented through mandatory	WSP rules are enforceable because the plan mandatory	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
and licence conversion	conversion of licences to the Water Management Act.	conditions are reflected on the licence				changes are necessary within 3 months of the event requiring.		conditions are created, amended or revoked, this is given effect by reviewing and updating the conditions imposed in the licence or approval. The rules may be specified in the Water Management Act 2000, regulations or management plans (water sharing plan or floodplain management plan). These rules may be added, amended or removed from these instruments.	conditions are reflected on the licence	
						Necessary changes to conditions are notified to the licence/approval holder within 6 months of the event requiring notification	100%			
W08-03 Compliance management	The on-ground and remote monitoring activities (including investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions.	Publish on NRAR website compliance activity by water sharing plan on a monthly basis including observed levels of compliance and non-compliance.	100% coverage of WSPs per month	%	Output	N/a	N/a	Output measures are selected as they are within NRAR's control and link to statutory objectives relating to maintaining public confidence, accountability and transparency.	Output measures will demonstrate the compliance efforts of NRAR and where these are undertaken and will promote confidence in water compliance frameworks.	
		Publish annual progress reports	5	No.	Output	N/a	N/a			
		Community benchmarking survey (Two yearly)	2	No.	Output	N/a	N/a	Awareness, trust and confidence of customers and the public are important foundations for a compliance culture. NRAR has completed the first survey of this type in 2019/20.	Increased understanding of customer knowledge and perspectives to inform compliance activities	
		Water licence holders audited and/or inspected each year	1,722	No. per year	Output	N/a	N/a	The output is calculated as 4.5% of the number of licence holders reported in NRAR's 2019/20 progress report; 38.270. The 4.5% audit rate is selected as it is consistent with other jurisdictions and reflects a stronger program than has historically been undertaken in NSW. This indicator relates to NRAR's statutory objectives for effectiveness and maintaining public	This performance indicator will provide strong visibility and presence in the regulated community thus maintaining confidence in the enforcement of water laws consistent with NRAR's statutory objectives, and enable NRAR to obtain a reasonable understanding of general compliance rates which is important information that supports water user social licence.	

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
								confidence. This measure is within NRAR's control		
						Incoming public reports assessed and prioritised within 5 days working days of receipt.	90%	This provides a driver for NRAR effectiveness. This measure relates to NRAR's statutory objectives for effectiveness. This measure is within NRAR's control.	This performance indicator will contribute to the timely and effective resolution of these reports which will in turn contribute to maintaining confidence in water compliance and contribute to water users social licence to operate.	
						High priority cases assigned to an investigator within 15 working days of receipt.	90%	This performance indicator will drive NRAR processes to operate effectively and in a timely manner. This measure relates to NRAR's statutory objectives for effectiveness. This measure is within NRAR's control.	This performance indicator will contribute to the timely and effective resolution of cases and will contribute to maintaining confidence in water compliance.	
						Public informants will be contacted (by letter or a telephone call) within 15 working days of lodging an alleged breach with NRAR.	90%	This performance indicator drives NRAR to operate transparently and with accountability. This measure relates to NRAR's statutory objectives for transparency, accountability and maintaining public confidence. This measure is within NRAR's control.	This performance indicator will ensure transparency and accountability to public informants (and the wider public) reports and will contribute to maintaining confidence in water compliance.	
W09-01 Water consents transactions	Transactions undertaken on a fee for service basis; including dealings, assessments, changes to conditions and new applications for water licences and approvals.	Water access licence applications	WaterNSW: WaterNSW Water access licences: 210 per year WaterNSW Water access licence dealings: 862 per year NRAR Water access licences: 16 per year:	No.	Forecast	Water Access Licence –applications determined within 45 days	80%	Performance indicators are selected as they are within DPIE and NRAR's control and seek to ensure that applications for licences and approvals are undertaken in a timely manner.	Legal water access, trade and take through accurate and timely processing of licences and approvals	
		Works and Use Approvals – applications	WaterNSW: 2,097 per year NRAR: 131 per year	No.	Forecast	Works and Use Approvals – applications determined within 65 days	80%			

Activity	Activity description	Proposed output measures	Quantity for 5 year period 2021-2026	Units	Type	Proposed performance indicators	Target	Rationale for measures and indicators	Outcome that the outputs will help deliver	Comments
		Approval extensions:	WaterNSW: 13,079 (21/22 to 2024/25) NRAR: 269 per year	No.	Forecast	Approvals Extensions –applications determined within 25 days	80%			
W10-01 - Customer management	All customer liaison activities; including responding to calls to licensing and compliance information lines; and producing communication and education materials such as website content and participation in customer forums.	Number of customer enquiries received	NRAR: 6,981 calls per year and 14,259 emails per year	No.	Forecast	Enquiries responded to within 24 hours	90%	Measuring the number of customer enquiries received provides insight into the magnitude of the resources needed to respond to customer enquiries. The performance indicator for enquiry response time seeks to ensure that customers are being provided information in a timely manner. The performance indicator for complaints resolution time seeks to ensure that complaints are being resolved in a timely manner.	The desired outcome is that WAMC services are transparently provided and that customers are informed which helps maintain accountability of WAMC.	▪ Note that WaterNSW has customer obligations under its operating licence. DPIE/NRAR do not have these same obligations.
		Number of complaints received per year (WaterNSW)	389	No.	Forecast	Complaints resolved within 28 days	90%			Forecast as 1% of total number of water licences
						Performance against ‘Skyline’ composite measure	Improvement of 2.5% p.a. on 2021 level	The measure is based on customer perception from the annual research program survey and built up from four sub-measures: the suitability of services provided, satisfaction with services provided, value for money and quality of relationships. Results should be shared via the principal customer communication channels (e.g. WNSW website, annual report)	Services are delivered in a way that meets customer expectations	
W10 – 03 Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.	Expected number of accounts billed in each year	38,915	per year	Forecast	Percentage of accounts billed in the year	95%	Measuring the number of accounts billed provides insight into the magnitude of the billing requirement. The performance indicator test that accounts are billed as planned.	The desired outcome as that customers pay for the services received and WAMC receives the revenue is requires. The desired outcome is also that billing is straightforward for customers.	It is expected that all licences are considered for billing during the year. The accounts actually billed in the year will be less than the total due to reasons such as accounts being suspended

12 Asset lives

Under Task 3 of the Terms of Reference for this review, we are required to review the appropriateness of the asset lives applied by DPIE, NRAR and WaterNSW in delivering WAMC services and recommend adjustments where appropriate.

All capital expenditure for the forward period is proposed by WaterNSW.

Our assessment on the appropriateness of the asset lives proposed for is set out in Table 12-1.

Table 12-1 Asset lives proposed by WaterNSW

Regulatory asset base	Asset type	Asset life proposed by WaterNSW (years)	Comment	Recommended asst life (years)
Water monitoring	Infrastructure	20	No comment	20
	Laboratory and specialised equipment (including water monitoring instruments)	7	No comment	7
Corporate	Information technology systems	7	Based on the scope of expenditure in the forward period with long life corporate systems and shorter life devices, 7 years is appropriate	7
	Vehicles	5	This is consistent with that for the WaterNSW Greater Sydney review	5
	Buildings	60	The proposed asset life of 60 years is greater than that of 40 years recommended for the WaterNSW Greater Sydney review. The longer asset life is appropriate where WaterNSW has appropriate asset management planning in place to achieve this asset life.	60
	Office equipment	10	Ok – in line with a typical lease	10
	Plant and machinery	25	The proposed asset life of 25 years is greater than that of 12 years recommended for the WaterNSW Greater Sydney review. The longer asset life is appropriate where WaterNSW has appropriate asset management planning in place to achieve this asset life.	25
Legacy	Up to 7 years as at the beginning of 2021/22. WaterNSW proposes to not update the legacy regulatory asset base with additional capital expenditure and depreciate this asset base to zero over a 7-year period.		No comment	

APPENDIX A

TERMS OF REFERENCE

Project A – Expenditure review of WAMC's services

IPART is currently reviewing the prices that the WAMC can charge for its monopoly water planning and management services in NSW from 1 July 2021. WAMC services are delivered by three agencies: the Department of Planning, Industry and Environment – Water (DPIE), WaterNSW and the Natural Resources Access Regulator (NRAR).

We note that WaterNSW's activities in delivering water management services on behalf of WAMC (Project A) are distinct from its activities in delivering its own rural bulk water services (Project B), and that both sets of activities are subject to separate IPART price determinations (WAMC and WaterNSW, respectively).

On 30 June 2020, we received a pricing proposal from DPIE and NRAR and a separate pricing proposal from WaterNSW. DPIE, WaterNSW and NRAR have also provided a joint factsheet, which provides a high level overview of their pricing proposals.

Our price review will involve reviewing the two pricing proposals and setting maximum prices for the three categories of WAMC's monopoly services: water management charges, consent transaction charges and meter reading, meter service and ancillary charges. Accordingly, the consultancy will involve reviewing these two pricing proposals to complete the Project A.

Information on IPART's price review, including a copy of DPIE and WaterNSW's pricing proposals for WAMC's services is available at:

https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Rural-Water/Review-of-Water-Management-prices-from-2021

Key context for this WAMC review is provided at Appendix A.

For the expenditure review, IPART requires the consultants to provide the following six tasks:

- **Task 1** - a strategic review of WAMC's expenditure.
- **Task 2** - a review of WAMC's monopoly services and the applicable user share of costs
- **Task 3** - a detailed review of WAMC's historical and forecast operating and capital expenditures, to recommend the efficient level of expenditures
- **Task 4** - a review of WAMC's performance against past output measures and to propose new output measures for the next determination period if appropriate.
- **Task 5** – a review of WAMC's consent transaction charges
- **Task 6** – a review WAMC's metering program and its meter reading, meter service and ancillary charges.

Task 1: Strategic review of WAMC's expenditure for its monopoly services

The consultant must undertake a strategic review of WAMC's actual and proposed expenditure for its monopoly water planning and management services.

The strategic review should ensure that its methodology is not dependent solely on trend analysis of reported historical expenditure. The consultant should take note of any changes in WAMC's functions in light of the strategic review and bulk water reforms (e.g., transfer of functions from DPIE to WaterNSW and the NRAR).

The consultant must review WAMC's monopoly services as a whole to reach conclusions on the reasonableness of expenditure levels and performance and to nominate levels of efficient expenditure.

At a minimum, the consultant's strategic review must consider:

(a) the alignment between water management legislative or other priorities applicable to WAMC and its expenditures (including WAMC's relationship with the MDBA and BRC)

(b) changes in WAMC's operations resulting from the NSW bulk water reforms including the effect on WAMC's functions, its activities and associated costs **(see Task 2)**

(c) changes in the 2016 determination period and expected changes in the 2021 determination period that materially impact WAMC's monopoly services and expenditures

(d) the robustness of WAMC's prioritisation, decision-making and monitoring processes

(e) the configuration, resources and management systems of WAMC and the extent to which these could be optimised, having regard to effectiveness and efficiency

(f) the scope for WAMC to fulfil its water management responsibilities and deliver its monopoly services in a more efficient and cost effective way (e.g., through procurement improvements, service level agreements, reconfiguration of its operations, and adjustment to the scope and timing of proposed activities)

(g) consideration of alternative options to achieve water management objectives and service delivery

(h) any available benchmarks of water or natural resource managers, the operations, performance and expenditures of comparable water management and natural resource agencies and the consultant's experience in the water and/or natural resource management sector

(i) the consultant's findings in relation to the detailed analysis of a sample of WAMC's activity codes and capital projects **(see Task 3).**

(j) the findings in relation to detailed analysis of WAMC's activities related to MDBA/BRC **(see PROJECT D)**

(k) any particular concerns or issues relating to WAMC's strategic processes for determining and prioritising future operating and infrastructure expenditure and decisions.

Task 2: Review of WAMC's monopoly services and the applicable user shares

The consultant must undertake a review of the definition of monopoly services and the applicable water user share of costs (put forward in the pricing proposals) to enable IPART to determine the efficient costs of providing these services and the relevant share of costs to be recovered from water users through prices based on the 'impactor pays' principle.

For this task, the consultant is required to:

(a) review the definitions of the monopoly services and service levels for the 2016 and 2021 determination periods including:

  (i) reconciling and mapping the activity codes between the old (2016 Determination) and new/revised activity codes to each agency (i.e., DPIE, NRAR and WaterNSW).

  (ii) considering whether any new proposed activities constitute monopoly services and map these new activities accordingly

(b) review the proposed user share of costs, by activity code, for the 2021 determination including the mapping between the old and new/revised activity codes and user shares

(c) review the proposed cost allocation model and cost drivers by activity code for the 2021 determination including the mapping between the old and new/revised activity codes and cost drivers

In undertaking this task, the consultant must have regard to:

(a) WAMC's legislative requirements and responsibilities, and any other drivers or determinants of its monopoly services

(b) the transfer of functions from DPIE to WaterNSW and NRAR and its effect on WAMC's operations and activities

(c) IPART's rural water cost share review in 2019 as a starting point for reviewing the user share of costs and advise whether there is a case to amend the cost share ratio on the basis of the impactor pays principle (e.g., due to changes in level of activity or additional compliance and enforcement functions)

(d) the extent to which the proposed services are mandatory (e.g., a clear legislative requirement where there is only one option available to comply with this requirement in the timeframe proposed) versus discretionary

(e) the range of options available to achieve water management outcomes or legislative requirements, and the most efficient means of achieving these outcomes or complying with requirements

(f) the services or activities of other, comparable water and natural resource managers (e.g., in other states of Australia).

Task 3: Detailed review of operating and capital expenditure

The consultant must undertake a detailed review of WAMC's operating and capital expenditure and recommend efficient expenditure levels based on the principles in Box 1.

In undertaking its review of operating and capital expenditure, the consultant should allocate time and resources between reviewing operating expenditure and capital expenditure in proportion to each component's contribution to WAMC's total expenditure for the monopoly services.

The majority of WAMC's expenditure is currently operating expenditure. If this trend continues over the upcoming determination period, this consultancy should primarily focus on reviewing WAMC's forecast operating expenditure for the 2021 determination period.

Detailed review of operating expenditure

The consultant must review actual operating expenditure incurred over the 2016 determination period and forecast operating expenditure for the 2021 determination period. In undertaking this task the consultant must:

(a) review and comment on the variations between actual operating expenditure and what was allowed in the 2016 determination, including the extent to which these variations are justified or not. The consultant must also provide advice on any implications for monopoly service delivery, customers and the environment arising from any variation between actual operating expenditure over the 2016 Determination and what was proposed in the 2016 Determination.

(b) identify and comment on the nature and size of operational savings realised (eg, whether they are permanent or temporary in nature), if applicable.

(c) provide recommendations as to the efficiency of WAMC's forecast level of operating expenditure for the 2021 determination period and provide annual estimates of the level of operating expenditure that is required to efficiently carry out its regulated monopoly services.

(d) comment on the methodology and major assumptions used by WAMC to develop its forecast operating expenditure

(e) comment on the scope for WAMC to reconfigure or change its proposed operating expenditure program to fulfil its water management responsibilities and deliver its monopoly services in a more efficient and cost effective way

(f) consider and discuss the implications of its findings from Task 1 above, including WAMC's water management legislative drivers/responsibilities and the relationship between WAMC's actual and forecast expenditure and its monopoly services.

(g) consider and identify any consequential impacts on capital expenditure (ie increased or reduced costs) based on the assessment of operating expenditure.

(h) identify the potential for and recommend efficiency savings to be achieved within the operating expenditure budget, and provide evidence and reasoning to support the recommended savings. Where appropriate, have regard to productivity benchmarking analysis when identifying potential efficiency savings.

(i) review WAMC's approach to allocating any indirect costs (ie, the allocation of common or shared costs and the ring-fencing of WAMC's non-water management activities):

  (i) between its monopoly services and its other activities; and

  (ii) across its monopoly services.

(j) The consultant must assess whether there has been any inappropriate allocation of common operating costs (eg, double counting).

As listed in **Task 1**, one of the factors that must inform the consultant's strategic review is its detailed analysis of a sample of WAMC's activity codes. This sample must be agreed with IPART. We have provided an overview of the WAMC activity codes in **Appendix A** of this document.

The output from this analysis of a sample of activity codes must include a one page summary for each activity code reviewed, which is incorporated within the consultant's report as an appendix and includes:

(a) a description of the activity, its planned budget and planned outputs

(b) a mapping of this activity(-ies) to new activity code(s) for the 2021 Review, if applicable

(c) the activity's actual budget and outputs, and reasons for variations between actual and forecast expenditures

(d) the consultant's assessment of WAMC's evaluation or justification for the activity (eg, the robustness of its business case, cost benefit analysis or cost effectiveness analysis), including its consideration of alternative options and the implications of not proceeding with the activity over the 2016 and 2021 determination periods

(e) the consultant's assessment of the activity's outcomes and contribution to delivery of WAMC's water management services or objectives

(f) the consultant's assessment of the efficiency of the activity's actual and forecast expenditure

Detailed review of capital expenditure

The consultant must review the efficiency of actual capital expenditure for the 2016 determination period and the forecast capital expenditure for the 2021 determination period. In undertaking this task the consultant must:

(a) Report and comment on WAMC's actual capital expenditure for each year of the 2016 determination period, including the variations in actual capital expenditure from what was allowed in the 2016 determination period. In doing so:

  (i) Identify, describe and cost WAMC's capital works programs and projects from the 2016 determination period for the monopoly services

  (ii) Separately identify any contributed capital works (values and description)

  (iii) Consider any available information or analysis on stakeholder willingness to pay for discretionary items of capital expenditure

(b) Provide recommendations as to the efficiency of WAMC's level of capital expenditure for the 2016 determination period and provide annual estimates of the level of capital expenditure that is required to efficiently deliver its monopoly services

(c) Report and comment on WAMC's forecast capital expenditure for each year of the 2021 determination period. In doing so:

  (i) Identify, describe and cost WAMC's capital works programs and projects for the 2021 determination period for the monopoly services

  (ii) Separately identify any contributed capital works (values and description)

  (iii) Consider any available information or analysis on stakeholder willingness to pay for discretionary items of capital expenditure

(d) Provide recommendations as to the efficiency of WAMC's forecast level of capital expenditure for the 2021 determination period and provide annual estimates of the level of capital expenditure that is required to efficiently deliver its monopoly services.

(e) Identify any consequential impacts on operating expenditure (ie, increased or reduced costs) based on the assessment of capital expenditure.

(f) Identify the potential for and recommend efficiency savings to be achieved within the capital expenditure budget, and provide evidence and reasoning to support the recommended savings. In particular, comment on the scope for WAMC to reconfigure or change its proposed capital expenditure program to fulfil its water management responsibilities and deliver its monopoly services in a more efficient and cost effective way. Where appropriate, have regard to productivity benchmarking analysis when identifying potential efficiency savings.

(g) Comment on WAMC's process for determining and prioritising forecast capital expenditures for its monopoly service provision, including an assessment of WAMC's asset management/capital planning system.

(h) Review the appropriateness of WAMC's asset lives and recommend adjustments where appropriate.

(i) review WAMC's approach to allocating any indirect costs (ie, the allocation of common or shared costs and the ring-fencing of WAMC's non-water management activities):

  (i) between its monopoly services and its other activities; and

  (ii) across its monopoly services.

The consultant must assess whether there has been any inappropriate allocation of common capital costs (eg, double counting).

As listed in Task 1, one of the factors that must inform the consultant's strategic review is its detailed analysis of a sample of WAMC's capital projects. This will involve a detailed investigation into the project evaluation, planning and where possible, outcomes. This sample must be agreed with IPART.

The output from this task must incorporate a one page summary for each project reviewed, which is incorporated within the consultant's report as an appendix and includes:

(a) an assessment of WAMC's evaluation or justification for the project (eg, the robustness of its business case, cost benefit analysis or cost effectiveness analysis), including its consideration of alternative options and the implications of not proceeding with the project at that particular time

(b) the planned project budget, program and outputs

(c) the consultant's assessment of the project outcomes and contribution to delivery of WAMC's monopoly services or its water management objectives.

Task 4: Review of output measures and propose new output measures

The purpose of this task is to review and revise WAMC's output measures for ongoing relevance, and to assess WAMC's performance against the output measures. The consultant is required to:

- Review WAMC's (ie, DPIE, WaterNSW and NRAR) performance against its output measures over the 2016 determination period (including annual reporting requirements, schedule of outputs, end of determination period requirements). Where output measures have not been achieved, provide comment on the reasons for this.
- Recommend output measures for WAMC's proposed operating and capital expenditure program for the 2021 determination period.

In undertaking these tasks, the consultant must have regard to:

(a) Tasks 1 to 3 above

(b) IPART's report on WAMC's output measures for 2016-17, 2017-18 and 2018-19 as published on our website

(c) WAMC's priority activities and areas of water management expenditure

(d) any new output measures proposed by DPIE or WaterNSW, or other stakeholders

(e) comparative service providers

(f) the consultant's experience in the water management or other comparative sectors.

In 2017, an independent inquiry (Matthews review) found that WAMC was under-delivering on its compliance and enforcement functions. This led to the formation of the Natural Resource Access Regulator. Therefore, the consultant should advise how the recommended output measures can be used to improve WAMC's service delivery and performance.

Task 5: Review of consent transaction charges

In undertaking this review, the consultant must:

- Review and assess the current and new administration fees and charges proposed by DPIE and WaterNSW. For the new charges, the consultant is required to make recommendations on the adequacy of the rationale for the new charge.
- Make recommendations on the efficient incremental cost of providing the relevant services (as it relates to the issue and administration of water access licences and works approvals); the start-up costs and assessment of any cost-benefit analysis of the new charges.

Task 6: Review of WAMC's metering program and its meter reading, meter service and ancillary service charges

In undertaking this review, the consultant must:

(a) Review WAMC's metering program, including the:

  (i) Review and assessment of the metering program, including parts of the program funded by the Commonwealth

  (ii) Review of service level arrangements with WaterNSW, including meter reading on unregulated rivers and groundwater sources.

  (iii) This will involve:

    - Discussions on metering charges for WaterNSW as determined by the ACCC methodology, and the impact on WAMC.

- Discussions on any developments and reviews of metering and water-take measurement.

(b) Review and assess the selection of metering technology in view of the appropriate metering technical standards and National Water Initiative (NWI) requirements

(c) Review DPIE and WaterNSW's proposed meter reading and meter services and ancillary charges, including

(i) the adequacy of the rationale for imposing the charge and the basis of cost recovery (eg specific meter charges or general entitlement charges)

(ii) any willingness to pay studies and incentives for metering

(iii) the efficient incremental cost of providing the relevant meter related services

(iv) the capital costs, installation and servicing costs of new and existing meters, including whether the costs incurred are commensurate to the quantum of the charge and the number of customers impacted; and

(v) the impact of DPIE and WaterNSW's proposals on licensees, including on small users, based on available information.

A Context for Project A - WAMC expenditure review

The Water Administration Ministerial Corporation (WAMC) is the statutory body under the *Water Management Act 2000* (NSW) responsible for water management in New South Wales.

Under clause 3 of the *Independent Pricing and Regulatory Tribunal (Water Services) Order 2004*, WAMC's declared monopoly services involve:

- the making available of water;
- the making available of WAMC's water supply facilities; or
- the supplying of water, whether by means of WAMC's facilities or otherwise, are government 'monopoly' services for the purposes of the IPART Act.

IPART's 2016 determination set maximum prices for the three categories of WAMC's monopoly services to apply over the 4 year period from 1 July 2016 to 30 June 2020 (2016 WAMC review).[2] The three categories of maximum prices that IPART set for WAMC are:

- **Water management charges**– annual prices which recover the costs of water planning and management and apply to all categories of water access licences. These prices include entitlement and water take prices, and a minimum annual charge for 26 water sources (including regulated rivers, unregulated rivers and groundwater sources) across the state.
- **Consent transaction charges** – fee-for-service charges for regulatory transactions, which recover the costs of one-off services such as amending water access licences, performing water allocation assignments and issuing works approvals.
- **Meter reading, meter service and ancillary charges** – annual charges for maintaining government meters and reading meters or approved meter equivalents (for unregulated river and groundwater users only).

2 IPART, Review of prices for the Water Administration Corporation from 1 July 2016, Final Report, June 2016. See website <https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Rural-Water/Prices-for-WAMCs-water-management-services?qDh=2> for reports, decisions and papers relevant to this review.

A.1 Key developments since our 2016 Determination

At the time of our 2016 WAMC price determination, the NSW Department of Primary Industries - Water (DPI Water) (which changed to Department of Industry (DOI – Water) and now the Department of Planning, Industry and Environment (DPIE)) was responsible for delivering services on behalf of WAMC. Since then, there has been some changes to the roles and responsibilities in relation to WAMC's services. We summarise the key developments and engagements with IPART in the table below.

Date	Key development and stakeholder engagement details
June 2016	IPART released its Final Report and Determination of WAMC's prices
2016 – 17	Following the release of our 2016 determination in June 2016, the majority of WAMC's licensing functions and all of its compliance and enforcement functions were transferred to WaterNSW.
Nov 2017	The Natural Resources Access Regulator (NRAR) was established following Ken Matthews' investigation into water management and compliance conducted in 2017. The NRAR was established to be an independent, transparent and effective regulator with total carriage of the compliance and enforcement of water management legislation in NSW.
30 Apr 2018	NRAR became operational. It assumed responsibility for WAMC compliance functions and WAMC licensing functions, with the latter also being delivered by WaterNSW.
Sept 2018	The then DoI (now DPIE) and WaterNSW proposed that, in place of one WAMC determination, we instead set prices for water management services under two separate determinations in the upcoming price review: ▼ A determination for WAMC's water management services provided by DoI and the NRAR, and ▼ A determination for WAMC's water management services provided by WaterNSW. IPART provided its in-principle support to consult on this issue as part of the upcoming price reviews.
Oct – Dec 2018	DPIE, NRAR and WaterNSW submitted its AIR and output measures in two stages. Overall, IPART concluded that most of the output measures and performance indicators had been met. 2018 was the first year that NRAR reported on its WAMC activities. It met 2 out 4 of its performance indicators, with key gaps related to its audit and monitoring functions. However, it reported that it would commence these functions in a couple of months.
May – Jun 2019	In May 2019, DPIE asked IPART to defer the WAMC price review by 12 months as this would ▼ Align the timing of the next WAMC pricing determination with WaterNSW's next rural bulk water pricing determination, which would benefit rural water customers from having a single (and more clear) consultation process for rural water prices. ▼ Provide DPIE and the NRAR additional time to develop and consult on their pricing proposal, which should result in a more robust pricing proposal. IPART agreed with this proposal after it considered the benefits would likely outweigh costs. In June 2019, IPART published a media release on the deferral of WAMC review.

Date	Key development and stakeholder engagement details
Nov – Mar 2020	DPIE and WaterNSW submitted their respective output measure reports to IPART and IPART published the 2019 Output Measures reports. Most of the output measures had been met. There were some improvements in the audit of water sharing plans (none were conducted in prior years). DPIE reported zero licence audits because it was focused on the protection of environmental flows, which resulted in audit delays. It reported that it was in the process of developing business plans, routine monitoring and an audit program, which it expects to report on in the future.

A.2 WAMC's monopoly services

In the 2016 WAMC review, we accepted DPI Water's proposed government monopoly service activities. These activities and their codes are listed in the table below. Since the water management functions have been distributed across various entities, the consultant will be required to have a clear understanding of the distribution of water management functions and reconcile the proposed activity codes for the 2021 determination against the activity codes for the 2016 determination.

Table A.1 WAMC's monopoly services for the 2016 Determination

Activity code	Description	Activity code	Description
W01	Surface water monitoring	W06	Water management planning
W01-01	Surface water quantity monitoring	W06-01	Water plan development (coastal)
W01-02	Surface water data management and reporting	W06-02	Water plan development (inland)
W01-03	Surface water quality monitoring	W06-03	Floodplain management plan development
W01-04	Surface water algal monitoring	W06-04	Drainage management plan development
W01-05	Surface water ecological condition monitoring	W06-05	Regional planning and management strategies
W02	Groundwater monitoring	W06-06	Development of water planning and regulatory framework
W02-01	Groundwater quantity monitoring	W06-07	Cross border and national commitments
W02-02	Groundwater quality monitoring	W07	Water management works
W02-03	Groundwater data management and reporting	W07-01	Water management works
W03	Water take monitoring	W08	Water regulation management
W03-01	Water take data collection	W08-01	Regulation systems management
W03-02	Water take data management and reporting	W08-02	Consents management and licence conversion
W04	Water modelling and impact assessment	W08-03	Compliance management

Activity code	Description	Activity code	Description
W04-01	Surface water modelling	W08-99	Water consents overhead
W04-02	Groundwater modelling	W09	Water consents transactions
W04-03	Water resource accounting	W9-01	Water consents transactions
W05	Water management implementation		
W05-01	Systems operation and water availability management	W10	Business and customer services
W05-02	Blue-green algae management	W10-01	Customer management
W05-03	Environmental water management	W10-02	Business governance and support
W05-04	Water plan performance assessment and evaluation	W10-03	Billing management

Source: DPI Water submission to IPART Issues Paper, September 2015, pp 271-287.

A.3 WAMC's operating and capital expenditure

To assist the consultants with their proposal, we have included a spreadsheet which summarises the total operating and capital expenditure included in WAMC's pricing proposal. The total expenditure represents the summation of the pricing submissions from DPIE, NRAR and Water NSW.

APPENDIX B

ACTIVITIES DELIVERED BY EACH AGENCY

W-code	Activity	Summary of activity/service	Responsible agency(s)
W01	Surface water monitoring	The collection and provision of quantity, quality, algal and ecological information for monitoring, use, assessment and management of surface water.	
W01-01	Surface water quantity monitoring	The provision of a surface water quantity monitoring system; including design, station calibration, data collection, processing, encoding, quality assurance and archiving from the networks of water monitoring stations; the delivery of near real time height and/or flow data from all telemetered sites to the corporate database; and the maintenance and operation of surface water monitoring stations.	WaterNSW
W01-02	Surface water data management and reporting	The data management and reporting of surface water quantity, quality and biological information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.	WaterNSW
W01-03	Surface water quality monitoring	The provision of a surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	WaterNSW
W01-04	Surface water algal monitoring	The provision of a surface water algal monitoring program; including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees.	WaterNSW
W01-05	Surface water ecological condition monitoring	The provision of a surface water ecological condition monitoring system to assess the health of water sources; including design and application based on the River Condition Index for rivers, flood plains and wetlands.	DPIE
W02	Groundwater monitoring	The collection and provision of water level, pressure, flow and quality information for monitoring, use, assessment and management of groundwater.	
W02-01	Groundwater quantity monitoring	The provision of a groundwater level, pressure and flow monitoring system; including design, site calibration, data collection, entry, audit, quality assurance, archiving, and information provision; and the maintenance and operation of groundwater monitoring bores.	WaterNSW
W02-02	Groundwater quality monitoring	The provision of a groundwater quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.	WaterNSW
W02-03	Groundwater data management and reporting	The data management and reporting of groundwater quantity and quality information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.	WaterNSW
W03	Water take monitoring	The provision of metering services, the collection of water take data and its recording on water allocation accounts for unregulated and groundwater licence holders.	
W03-01	Water take data collection	The electronic and manual collection, transmission and initial recording of water take data from licence holders for unregulated and groundwater sources; and the operation and maintenance of government owned meter and telemetry facilities.	WaterNSW
W03-02	Water take data management and reporting	The data management and reporting of water take for unregulated and groundwater sources including compilation, secure storage, management and publishing of data to authorised parties.	WaterNSW
W04	Water modelling and impact assessment	The development and use of water system models for water sharing and water management applications, resource impact and water balance assessments, and annual general purpose water resource accounts for NSW water sources.	

W-code	Activity	Summary of activity/service	Responsible agency(s)
W04-01	Surface water modelling	The development, upgrade and application of surface water resource management models for use in water planning and to assess performance in terms of statutory requirements, interstate agreements, regional water supply optimisation and third-party impacts on NSW stakeholders.	DPIE
W04-02	Groundwater modelling	The development, upgrade and use of groundwater resource management models for water sharing and management applications, and for resource impact and balance assessments.	DPIE
W04-03	Water resource accounting	The development and update of water resource accounts and information on NSW water sources, for use by external stakeholders, and for internal water planning, management and evaluation processes.	DPIE
W05	Water management implementation	The preparation and implementation of the procedures and systems required to deliver the provisions of Water Sharing Plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.	
W05-01	Systems operation and water availability management	The preparation and implementation of the procedures and systems required to deliver the provisions of water management plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.	DPIE
W05-02	Blue-green algae management	The provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans.	WaterNSW
W05-03	Environmental water management	The development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes.	DPIE
W05-04	Water plan performance assessment and evaluation	The assessment, audit and evaluation of the water management plans' appropriateness, efficiency and effectiveness in achieving economic, social and environmental objectives.	DPIE
W06	Water management planning	The development, review, amendment, and extension or replacement of water management plans, regional planning and management strategies, and development of the water planning and regulatory framework.	
W06-01	Water plan development (coastal)	The development, review, amendment, and extension or replacement of water management plans, and the consultation activities associated with developing these plans for coastal water sources.	DPIE
W06-02	Water plan development (inland)	The development, review, amendment, and extension or replacement of water management plans; the development of additional planning instruments to comply with the Commonwealth Water Act; and the consultation activities associated with developing these plans for inland water sources.	DPIE
W06-03	Floodplain management plan development	The development, review, amendment, and extension or replacement of Floodplain Management Plans, in collaboration with the Office of Environment and Heritage.	DPIE
W06-04	Drainage management plan development	The development, review, amendment, and extension or replacement of Drainage Management Plans, to address water quality problems associated with drainage systems.	DPIE
W06-05	Regional planning and management strategies	The development, evaluation and review of regional water strategies, metropolitan water plans and other planning instruments, including the associated stakeholder engagement.	DPIE

W-code	Activity	Summary of activity/service	Responsible agency(s)
W06-06	Development of water planning and regulatory framework	The development of the operational and regulatory requirements and rules for water access.	DPIE
W06-07	Cross border and national commitments	The development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments.	DPIE
W07	Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.	
W07-01	Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.	DPIE
W08	Water regulation management	The development, operation and management of the administration of licences, approvals, their associated transactions and compliance management and enforcement.	
W08-01	Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.	WaterNSW
W08-02	Consents management and licence conversion	The transcribing of water sharing provisions into licence conditions and the conversion of licences to the *Water Management Act*.	WaterNSW
W08-03	Compliance management	The on-ground and remote monitoring activities (including investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions.	NRAR
W09	Water consent transactions	The technical requirements for, and administration of, water consents transactions.	
W9-01	Water consents transactions	Transactions undertaken on a fee for service basis; including dealings, assessments, changes to conditions and new applications for water licences and approvals.	▪ Mostly WaterNSW ▪ Some NRAR
W10	Business and customer services	The customer, business and revenue collection services supporting the operation of DPI Water.	
W10-01	Customer management	All customer liaison activities; including responding to calls to licensing and compliance information lines; and producing communication and education materials such as website content and participation in customer forums.	▪ Mostly WaterNSW ▪ Some NRAR
W10-02	Business governance and support	The business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART.	All
W10-03	Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.	WaterNSW