

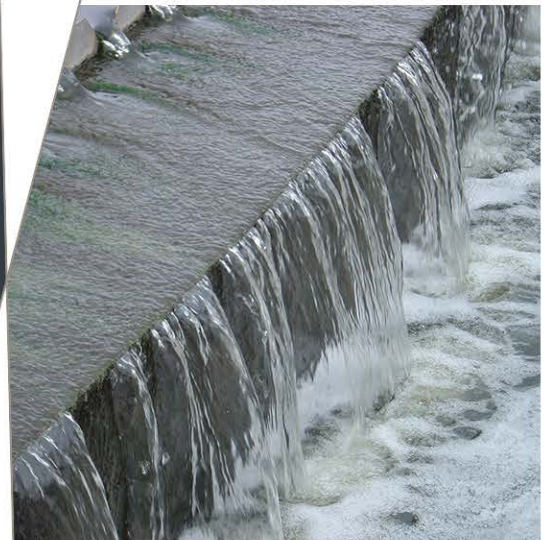
Final Report

Review of WaterNSW's Metering Reform Costs - April 2021

3608-44

Prepared for
IPART

11 June 2021



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1. Introduction

1.1 Background

Due to the ongoing uncertainty around the new metering policy and operational landscape, and the associated costs of metering reform, WaterNSW excluded the costs of the non-urban metering reform from its Pricing Proposal to IPART for NSW Rural Bulk Water Services 1 July 2021 to 30 June 2022.

WaterNSW submitted a separate non-urban metering reform submission to IPART dated 30 November 2020 that provided the detail and breakdown of its estimated metering costs and metering charges under the metering scheme management for the 2021 Determination period. This submission, which was based on the implementation of the NSW Government's reform program as it stood as of 30 November 2020, presented:

- > Metering activities and requirements resulting from the reforms
- > Process overviews, including activities and systems associated with the new requirements
- > Forecast operating and capital expenditure over the 2021 Determination period, including metering costs associated with each stage of the process
- > Pricing approach and preliminary structures and prices.

The impacts, forecasted expenditure and charges have been separately identified for:

- > Scheme management of user meters
- > Government-owned meters.

Cardno reviewed WaterNSW's separate submission to IPART on the additional costs of non-urban metering reform to be included in Rural Valley and WAMC prices. Based on our analysis, we concluded that the planning documents and supporting information developed by WaterNSW did not display the level of rigour that we would expect to see to provide assurance over a program of this level of materiality.

Many of the assumptions included by WaterNSW in its cost models had not been validated nor had the sensitivity of expenditure to the assumptions been tested. The November 2020 expenditure proposals relied on a large number of assumption which lacked supporting evidence and we considered that some of the key assumptions that had been used were overly conservative or inaccurate. We also considered that there was a general lack of understanding and testing of the sensitivity of the results to the assumptions made.

In addition, risk and opportunities for implementation had not been assessed and the resulting mitigation measures incorporated in WaterNSW's planning. With WaterNSW's expenditure forecasts being heavily dependent on a large number of assumptions, these assumptions reflected uncertainty, with this uncertainty translating into risk to the successful implementation of the reform and to customers that will fund the reform.

In finding that WaterNSW has made many assumptions that were lacking validation and lacking in testing their sensitivity, we also found that WaterNSW had not made a corresponding assessment of the risk of this uncertainty to the implementation of the reform. We noted in our March 2021 Draft Report that good practice would be to have a comprehensive register of risks aligned with the work program and financial assumptions that is regularly reviewed and mitigating actions identified. Although WaterNSW stated that it had a register of issues, it did not have a risk register. We noted in our March 2021 report that Risk is not static and good practice would be for WaterNSW to regularly review risks, update mitigation measures and implement these in its work program.

We also observed that at the time WaterNSW was preparing its November submission, customers had not been consulted over the impact of the proposals, with WaterNSW not planning on consulting with customers regarding the metering reform costs until 2021. This lack on consultation meant that customers were not informed of potential pricing impacts to account for in their own business planning and WaterNSW was not informed of how customers may respond to the policy (as customers have options in some areas). We concluded in our Draft Report that this did not meet the requirements of good practice for implementation of reform.

Based on the above observations during our review of WaterNSW's November 2020 pricing proposals, we concluded that WaterNSW's proposal did not meet good practice elements to provide assurance that the expenditure was appropriate, nor did it meet WaterNSW's own assurance framework (Approval to Spend).

Although we acknowledged that WaterNSW had in part been placed in the position it was in when it prepared its November 2020 submission by changes to the policy and its implementation, as well as the timeframes proposed by the Government, because of the relative immaturity of the proposals compared to what we expected as good practice for an initiative of this significance, we were unable to conclude that the expenditure proposed by WaterNSW in its November 2020 submission was prudent and efficient based on the evidence provided to us.

1.2 Purpose of this report and scope

The purpose of this report is to assess whether the expenditure proposals of WaterNSW to fulfil its requirements of implementing the State Government's metering policy are prudent and efficient. Based on our assessment of WaterNSW's proposals we have recommend efficient operating and capital expenditure for WaterNSW to fulfil these requirements. Our assessment and recommendations include in this report have been made based on the latest cost estimates and supporting information provided by WaterNSW.

WaterNSW has proposed separate pricing for scheme management of user meters and Government owned meters. Our recommendations for capital and operating expenditure are also divided into these categories.

This review of WaterNSW's updated April 2021 metering reform costs does not seek to repeat the contents of our March 2021 Draft Report for the review of WaterNSW's November 2020 metering reform costs. Instead we have sought only to review the additional testing and validation that has been completed by WaterNSW since the start of December 2020 for a number of the key assumptions underpinning the cost estimates, including benchmarking where practical, and to address the work that it has completed in the same timeframe to provide the level of rigour that we expected to see to provide assurance over a program of this level of materiality.

Based on this scope we have structured this Final Report as following:

- > Section 2: WaterNSW's updated April 2021 metering cost reform proposals, including the variances from the draft pricing submission submitted to IPART in November 2020.
- > Section 3: An overview of the additional work that WaterNSW has completed since the start of December to provide the rigour and assurance to the development of the expenditure forecasts and to update specific components of the cost model based on further validation and analysis and the resulting changes to the expenditure forecasts.
- > Section 4: Discussion of the key considerations and assumptions underpinning the metering reform expenditure forecasts that cannot be adequately predicted at this point in time.
- > Section 5: Cardno's overall conclusions for its review of WaterNSW's April 2021 meter reform submission to IPART.
- > Section 7: Our recommended efficient operating and capital expenditure to deliver metering reform activities for the FY22 – FY25 four year Determination Period.

2. WaterNSW's April 2021 metering reform cost proposals

For its 30 November 2020 metering reform submission to IPART, WaterNSW developed a bottom-up approach to derive the preliminary cost estimates. The costs and prices included in its submission reflected WaterNSW's forecasts based on the regional rollout data supplied by the NSW Department of Planning, Industry and Environment (DPIE). WaterNSW's submission was designed to meet not only its obligations, but to provide a platform for water users to meet their initial and ongoing compliance.

Based on the observations made and the conclusions reached by in our review of WaterNSW's November 2020 metering reform costs, and with the additional time since its preliminary submission, WaterNSW has continued to test and challenge its preliminary cost estimates.

The work completed by WaterNSW since the end of November 2020 has included the validation of costs and key assumptions and extensive sensitivity analysis across a number of key variables in order to present scenarios showing the impact of 10% and 20% reduction on the base case cost assumptions.

WaterNSW's further development of its November 2020 cost estimates has included:

- > Benchmarking its costs with similar meter rollouts
- > Researching and contacting equipment and service suppliers to obtain market quotes
- > Modelling different roll-out and customer adoption scenarios to settle on a most likely outcome base case
- > Establishing a risk register.

2.1 NSW metering scheme management costs

For the NSW metering scheme management costs included in its 30 November 2020 metering reform submission to IPART, WaterNSW proposed:

- > \$35.79 million in operating expenditure for both project establishment and ongoing management. The main drivers of the operating expenditure were labour costs (e.g. WaterNSW staff undertaking field work to download LIDs) and IT licensing fees (e.g. DAS and DQP portal); and
- > \$2.88 million in capital expenditure for motor vehicles to carry out field work and corporate systems to manage meter data.

As a result of changes to its November 2020 expenditure proposal to address queries and issues raised included in our Draft Report, WaterNSW is now proposing:

- > \$29.69 million in operating expenditure to meet its requirements for the NSW metering scheme management program across the four-year 2021 Determination period. This is an overall reduction of \$6.10 million from the November 2020 proposal.
- > A total of \$2.75 million in capital expenditure across the four-year 2021 Determination period. This is an overall reduction of \$0.13 million from the November 2020 proposal.

WaterNSW's updated operating and capital expenditure proposals for the four year period FY22 to FY25 are outlined in the following sections.

2.1.1. Operating expenditure

Based on NSW Government policy, regulations and legislation, specifically the *NSW Non-Urban Water Metering Policy*, the metering-related provisions of the *Water Management (General) Regulation 2018* and the metering-related provisions of the *Water Management Act 2000*, WaterNSW considers that the following drivers of expenditure for the NSW metering scheme management are mandatory requirements:

- > Downloading LIDs
- > Operating and maintaining the DAS & DQP Portal
- > Managing DQP Certificates
- > Receiving customer self reports
- > Managing the process for dealing with faulty meters.

Following on from this mandatory requirements, WaterNSW considers the following drivers of expenditure are discretionary:

- > General enquiries
- > Education and communication
- > Data validation
- > Customer self-reporting follow up activities.

However, to ensure the integrity and efficiency of implementation processes and support water users / customers in meeting their obligations and minimise the risk of non-compliance, it considers that it is essential for these activities to also be undertaken.

In addition, other key assumptions that WaterNSW has made and which are driving the expenditure forecast include:

- > Working weeks per annum
- > Travel time between sites
- > Time to download data on site
- > Reporting and data processing requirements
- > The need for WaterNSW to undertake follow up activities in circumstances where a customer does not self-report.

Although WaterNSW has identified that it requires a significant number of FTEs to implement the NSW Government's metering reform, we note that it has decided not to include an overhead rate on corporate support costs (such as Human Resources, Finance, Legal, Risk and Compliance and Corporate Transformation) to support the additional field staff. While the use of a form of averaged overhead is consistent with practice in its other pricing determinations, WaterNSW have set a challenge for itself to implement the NSW Government's metering reform, while at the same time reducing its overhead cost.

The general assumptions that WaterNSW has made, and which are driving its operating expenditure forecast, are unchanged since the 30 November 2020 proposal and include:

- > Reporting from water users to WaterNSW and recording requirements
- > The management of customer declarations for non-usage is required
- > 100% of non-telemetry sites to be visited annually to download LIDs
- > The need for WaterNSW to undertake follow up activities in circumstances where a customer does not self-report.

WaterNSW's updated proposed operating expenditure forecast over the four year regulatory period is presented in Table 2-1. The preliminary cost estimates provided in the 30 November 2020 submission and the variances between the November 2020 and April 2021 estimates are also shown.

Table 2-1 NSW proposed metering scheme management operating expenditure forecasts

	FY22	FY23	FY24	FY25	April 2021 Total	November 2020 total	Variance	Variance (%)
	\$ millions							
Downloading LID Data*	\$2.27	\$3.01	\$3.89	\$3.60	\$12.76	\$17.94	-\$5.18	-28.87%
Customer Self Reporting	\$1.04	\$1.60	\$2.08	\$2.12	\$6.84	\$7.45	-\$0.61	-8.19%
Operating & Maintaining DAS & DQP Portal	\$1.25	\$1.53	\$1.51	\$1.53	\$5.82	\$6.60	-\$0.78	-11.82%
Managing DQP Certificates	\$0.30	\$0.24	\$0.19	\$0.02	\$0.75	\$0.80	-\$0.05	-6.25%
General Enquiries & Education	\$0.53	\$0.61	\$0.72	\$0.64	\$2.51	\$1.91	\$0.60	31.41%
Other Activity (processing inactive works & faulty meters)	\$0.14	\$0.23	\$0.31	\$0.32	\$1.01	\$1.10	-\$0.09	-8.18%
Total	\$5.53	\$7.22	\$8.70	\$8.23	\$29.69	\$35.79	-\$6.10	-17.04%

Expenditure will be split across the WAMC and Rural Valley determinations. Excludes overhead.

2.1.2. Capital expenditure

WaterNSW's updated proposed capital expenditure forecast over the four year regulatory period is presented in Table 2-2. The preliminary cost estimates provided in the 30 November 2020 submission and the variances between the November 2020 and April 2021 estimates are also shown.

Table 2-2 NSW proposed metering scheme management capital expenditure forecasts

	FY22	FY23	FY24	FY25	April 20201 Total	November 2020 total	Variance	Variance (%)
	\$ millions							
Vehicle capex	\$1.03	\$0.34	\$0.27	\$0.00	\$1.63	\$2.09	-\$0.46	-22.01%
Corporate systems capex	\$0.20	\$0.20	\$0.20	\$0.20	\$0.79	\$0.79	\$0.00	0.00%
Capital allowance to automate upload time for initial site inspection	\$0.33	\$0.00	\$0.00	\$0.00	\$0.33	\$0.00	\$0.33	100.00%
Total	\$1.56	\$0.54	\$0.47	\$0.20	\$2.75	\$2.88	-\$0.13	-4.51%

2.2 Government-owned meters

WaterNSW will retain ownership of existing government-owned meters, representing around 12% of total meters in NSW. WaterNSW will, therefore, be responsible for the costs associated with ensuring government-owned meters are compliant with the new regulatory framework. WaterNSW has taken a fleet-based approach to procurement and meeting verification requirements, providing opportunities to reduce costs.

For the Government-owned costs included in its 30 November 2020 metering reform submission to IPART, WaterNSW proposed:

- > A total of \$14.6 million in capital expenditure across the four-year 2021 Determination period in order to achieve compliance for the 2,822 government-owned meters. This expenditure will be split across the WAMC and Rural Valley determinations.
- > \$12.44 million in operating expenditure to maintain the government-owned meters in a condition and to a standard that complies with the new requirements for the four year determination period commencing in FY22. There is also ongoing annual expenditure required to manage the metering scheme (this applies to all meters and telemetry, not just government-owned meters).

WaterNSW's April 2021 submission includes an update of the unit cost for on-site telemetry costs (for all compliant meters). This has been revised from the \$345 included in WaterNSW's November 2020 submission to a new unit cost of \$254. As a result of this change, WaterNSW is now proposing:

- > A total of \$14.6 million in capital expenditure across the four-year 2021 Determination period in order to achieve compliance for the 2,822 government-owned meters (unchanged from WaterNSW's November 2020 cost proposal submission)
- > \$11.55 million in operating expenditure to maintain the government-owned meters in a condition and to a standard that complies with the new requirements for the four year determination period commencing in FY22. This is an overall reduction of \$0.89 million over the four year period.

Based on the adjustment of the on-site telemetry costs, the meter service charge cost component has reduced from the \$1,269 per meter per year included in WaterNSW's November 2020 submission to \$1,178 per meter per year in its updated April 2021 submission.

WaterNSW has provided additional justification and evidence in response to the challenges on specific items in the cost build-ups that were included in Cardno's March 2021 Draft Report for the review of its meter reform costs. However, WaterNSW's April 2021 submission did not include evidence to address all of the specific items that were reported in the Cardno March 2021 Draft Report and WaterNSW has provided additional documentation during the preparation of the final version of this report. The additional justification and supporting evidence that WaterNSW has provided is addressed in Section 3.5.

WaterNSW's capital and operating expenditure proposals for the Government-owned meters for the four year period FY22 to FY25 are presented in the following tables. WaterNSW's capital program to bring the government-owned meters into compliance with the metering policy is due to end in FY24, hence why no capital expenditure is forecast in FY25. The majority of WaterNSW's operating expenditure items to maintain compliance with the policy commence once a government-owned meter had been made compliant. As a

result, the operating expenditure typically increases in each year over the Determination period until all meters have been made compliant in FY24. This means that the proposed operating expenditure for FY24 and FY25 are the same. The cost build-up for a number of the operating expenditure items is not based on the cumulative number of meters made compliant but on the total 2,822 meter fleet. We have included the basis for the application of the unit cost for each operating expenditure item in Table 2-4.

Table 2-3 NSW proposed Government-owned meters capital expenditure forecasts

Item	Assumed unit cost	FY21	FY22	FY23	FY24	FY25	Total	% of total
		\$ millions						
Local Intelligence Devices (LIDs)	\$900	\$0.74	\$0.76	\$0.74	\$0.30	\$0.00	\$2.54	17.42%
Validation	\$1,150	\$0.95	\$0.97	\$0.95	\$0.38	\$0.00	\$3.25	22.26%
Excavating meters – 10%	\$5,000	\$0.19	\$0.26	\$0.12	\$0.00	\$0.00	\$0.56	3.87%
Remove above ground meters 10%	\$6,000	\$0.27	\$0.20	\$0.35	\$0.20	\$0.00	\$1.02	6.97%
Non Pattern Approved meter replacement	\$15,650	\$0.19	\$0.00	\$0.33	\$0.00	\$0.00	\$0.52	3.54%
Scheme Administration	\$770,000	\$0.77	\$0.77	\$0.77	\$0.00	\$0.00	\$2.31	15.84%
Accuracy testing (10% of compliant meters)	\$9,000	\$0.74	\$0.76	\$0.74	\$0.30	\$0.00	\$2.54	17.42%
Rectify Damaged Meters (7.8% at \$500 site visit + \$1730 LID)	\$2,230	\$0.14	\$0.29	\$0.43	\$0.49	\$0.49	\$1.85	12.68%
Total		\$3.99	\$4.01	\$4.43	\$1.66	\$0.49	\$14.58	100.00%

Table 2-4 NSW proposed Government-owned meters operating expenditure forecasts

Item	Assumed unit cost	Basis of application	FY22	FY23	FY24	FY25	Total	% of total
			\$ millions					
Overhead costs								
Supervisory charge	\$100	Applied to cumulative compliant meters	\$0.17	\$0.25	\$0.28	\$0.28	\$0.98	8.49%
Contract Administration	\$100	Applied to all 2,822 meters	\$0.28	\$0.28	\$0.28	\$0.28	\$1.13	9.77%
Validation costs								
On site telemetry costs (all compliant meters)	\$254	Applied to cumulative compliant meters	\$0.42	\$0.63	\$0.72	\$0.72	\$2.49	21.56%
DQPP data entry - 0.5 hour per visit	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
Office work	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
Consumables	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
Accuracy Testing	500	Applied to 5% of cumulative compliant meters, 1 visit per year	\$0.04	\$0.06	\$0.07	\$0.07	\$0.25	2.12%
Resealing meters/LIDs - 0.5 hour per visit	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
In field costs								

Item	Assumed unit cost	Basis of application	FY22	FY23	FY24	FY25	Total	% of total
			\$ millions					
Cutting back vegetation- 0.5 hour per visit	\$37.5	Applied to cumulative compliant meters, 1 visit per year	\$0.06	\$0.09	\$0.11	\$0.11	\$0.37	3.18%
Travel 1 hours per site @ \$150	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
Meter service costs								
Faults meter/telemetry - 0.5 hour per visit	\$75	Applied to cumulative compliant meters, 1 visit per year	\$0.13	\$0.19	\$0.21	\$0.21	\$0.74	6.37%
LID Repair costs	\$780	Applied to 8% of all 2,822 meters each year	\$0.18	\$0.18	\$0.18	\$0.18	\$0.70	6.10%
Meter Replacement costs	\$15,650	Applied to 0.5% of all 2,822 meters each year	\$0.22	\$0.22	\$0.22	\$0.22	\$0.88	7.65%
Meter Rectification Costs	\$500	Applied to 6% of all 2,822 meters each year	\$0.08	\$0.08	\$0.08	\$0.08	\$0.34	2.93%
	Total		\$2.21	\$2.92	\$3.21	\$3.21	\$11.55	100.00%

As shown in Table 2-4, although WaterNSW has applied the assumed unit cost to the number of cumulative compliant meter in each year, based on the key assumption that each meter site will be visited once annually, a number of its operating expenditure components have been calculated based on the 2,822 total number of meters in the government-owned meter fleet.

The \$100 contract administration overhead cost have been applied to each of the 2,822 meters in each year of the period. This cost is to cover two dedicated Contract Administration staff, their corporate rate staff charge out cost, monthly field visits for contract audits of contractor work and other support staff such as Field Staff. WaterNSW has clarified that this cost is to manage the delivery of ongoing maintenance and future compliance for the Government-owned meters. While these meters stay under WNSW ownership, these functions will be required to manage the fleet-based maintenance, service and support to keep all 2,822 meters compliant and fully functional to water take measurement, recording and reporting. WaterNSW's cost estimate is based on one hour of supervisory work per compliant meter per year to ensure that all activities occur as required. Although this cost cannot be validated we consider it to be reasonable based on the activities included and have not made any adjustments to it.

LID repair costs, meter replacement costs and meter rectification costs have been applied to assumed percentages of the overall 2,822 government-owned meter fleet in each year across the four year determination period.

3. Review of the major changes to WaterNSW's costs proposal since 30 November 2020

3.1 Overview

As part of the work it has completed since its November 2020 submission, WaterNSW has modelled costs under five different scenarios that illustrate the impact of varying assumptions regarding the number of meters moving to telemetry as a consequence of percentage of customers choosing to opt in.

These five models are:

- > Model 1 – The baseline model, with no additional meters moving to telemetry
- > Model 2 – 25% of meters move to telemetry
- > Model 3 – 50% of meters move to telemetry
- > Model 4 – 75% of meters move to telemetry
- > Model 5 – 100% of meters move to telemetry.

The volume of telemetry works that WaterNSW has included under Models 2 - 5 reflect the aggregate of:

- > The number of telemetry meters required under Model 1
- > The relevant % of non-telemetry meters that remain following application of Model 1.

As a result, the number of meters that WaterNSW has included as moving to telemetry in Models 2 - 5 is in addition to the number of telemetry meters under Model 1, e.g. under Model 4, 75% of the meters assumed to be non-telemetered under Model 1 are classified as 'telemetry' in Model 4.

As the regulations currently stands, with only customer meters >199 mm having to have telemetry, a total of 5,527 meters need to be connected to telemetry, including 1,066 flood plain harvesting meters. This total is made up of 2,794 new or replacement meters needing to be installed with telemetry and 2,733 of the existing meters to remain to include telemetry.

WaterNSW's April 2021 operating expenditure estimates have been based on its Model 1 scenario which assumes that there is no additional uptake in meters moving to telemetry as a consequence of customers choosing to opt in. As a result, WaterNSW has assumed that 5,527 telemetered works will be installed by FY25 in accordance with the requirements for only meters >199 mm to have telemetry installed..

3.2 WaterNSW's additional program assurance activities

3.2.1. Sensitivity analysis

In our March 2021 Draft Report we identified that, in line with standard business case requirements, WaterNSW should test the sensitivity of its expenditure forecasts to changes in the key assumptions that it has included in its costs models.

As part of the work that WaterNSW has completed since its Draft Submission, it has undertaken extensive sensitivity analysis to assess alternative assumptions relative to the base case and how these might impact on costs. This work has entailed sensitivity analysis across a number of key variables to present a 10% and 20% reduction on its base case cost assumption submitted to IPART. WaterNSW has not included sensitivities that present an increase on the base case assumptions in its additional program assurance on the basis that any increases identify the potential to unlock and deliver efficiency savings and, therefore, not expose customers to downside risk.

WaterNSW has also undertaken sensitivity analysis on its capital expenditure to assess alternative assumptions and how these might impact on costs. Each of the models it has developed presents a 10% and 20% reduction on the base case assumption for a range of key variables. WaterNSW has identified drivers that it considers to be mandatory for the business to meet its regulatory and legislative requirements, as well as a number of key drivers that while discretionary are essential for WaterNSW to undertake. Other key assumptions that drive the expenditure forecasts have also been identified and analysed.

WaterNSW has identified that the most material driver of expenditure (particularly for the initial site inspection and downloading LIDs expenditure categories) is the number of telemetry meter devices. Based on this, it

has modelled a number of different scenarios over the four year Determination Period based on the additional uptake of meters with telemetry through customers opting in, even though only customers with meters >199 mm are required to have telemetry.

WaterNSW's baseline model assumes that no customers opt in to telemetry, with the other models including for 25%, 50% and 75% of customers opting in for telemetry. WaterNSW's considers that Model 5, which assumes 100% of meters move to telemetry, is not a viable scenario in the absence of Government policy or a supporting subsidy scheme. The overall impact on the meter scheme management operating expenditure is as follows:

- > Model 1 – 0%: \$29.69 million
- > Model 2 – 25%: \$27.83 million
- > Model 3 – 50%: \$25.94 million
- > Model 4 – 75%: \$24.04 million.

Similarly, WaterNSW's scenario modelling for meters moving to telemetry also shows the sensitivity of the capital expenditure to customers opting in:

- > Model 1 – 0%: \$2.75 million
- > Model 2 – 25%: \$2.34 million
- > Model 3 – 50%: \$1.93 million
- > Model 4 – 75%: \$1.53 million.

The purpose of sensitivity testing is to both inform the assessment of the base case and to inform ongoing implementation. Parameters which are found to have a relatively greater impact on the analysis should be placed under greater scrutiny in the assessment of the base case and risk mitigation measures put in place through implementation to reduce the risk of them impacting the desired objectives being met. WaterNSW has refined its base case in the April 2021 forecast and provided four additional scenarios which show the impact of changed levels of customers opting in to telemetry. We consider that the base case reflects a credible position. We believe that WaterNSW has improved its assumptions and the balance of risk sharing between the business and customers.

3.2.2. Risk management

In our March 2021 Draft Report, we concluded that a robust implementation program should have good practice risk management. This good practice should involve the development of a comprehensive risk register, with regular reviews conducted and identification of how the risks could be mitigated. These activities help ensure that business processes are delivering efficient outcomes and that desired benefits will be realised.

In response to our concerns regarding robust risk management, WaterNSW has developed a comprehensive risk register that assesses the risks and opportunities associated with the implementation program and aligns these risks to its work program and financial assumptions. The development of this risk register has been completed in accordance with WaterNSW's Risk Management Framework and is aligned to AS/NZS ISO 31000:2009 Risk Management.

At the March 2021 Draft Report stage, there was concern as to whether WaterNSW would be able to deliver its proposed implementation program. Through the development of the risk register WaterNSW states that it is confident that other than being impacted by external events outside its control, it will be able to achieve and deliver the Metering Reform Program to the standard and requirements set out in the metering framework within the four year Determination Period and that the expected benefits will be realised.

We have reviewed WaterNSW's Metering Risk Register and consider that WaterNSW has undertaken significant work on its risk register which have allowed it to identify and minimise the key risks relating to:

- > Meeting the objectives of its operating licence in relation to non-urban metering obligations
- > Delivering the reform objective by making non-urban meters compliant in accordance with standards and requirements, thereby improving compliance, enabling the monitoring of water use, and supporting water use management.

We have also confirmed that these risk management activities and the outputs from the register have directly fed into the sensitivity analysis and scenario modelling that WaterNSW has completed for the development of the expenditure forecasts

3.2.3. Customer engagement

In our March 2021 Draft Report we concluded that customers had not been consulted over the impact of WaterNSW's proposal by the time that WaterNSW submitted its proposal to IPART at the end of November 2020. WaterNSW was not planning on consulting with customers regarding the metering reform costs until 2021. We considered that this lack of consultation meant that customers were not informed of the potential pricing impacts to account for in business planning and WaterNSW was subsequently not informed of how customers may respond to the policy (as customers have options in some areas). We noted that this did not meet the requirements of good practice for implementation of reform.

In its responses to our comments, WaterNSW has noted that it was subject to circumstances outside of its control due to recent changes to the metering requirements post the price submission due date.

However, it has sought to undertake further customer engagement and since its November 2020 submission, WaterNSW has undertaken further engagement on its metering submission proposals.

This has included:

- > Meetings with its Customer Advisory Groups in December 2020 specifically on the metering reforms and the activities (and resulting costs) expected of WaterNSW in meeting the new reforms.
- > Holding valley-by-valley meetings around the state, on subjects requested specifically for each valley, including further metering engagement. These meetings have included providing updates on the NSW Government's metering reforms including next steps, DQPs, telemetry, recording and reporting, rollout dates, conditions that apply now, rules and standards, path to compliance and government-owned meters.

In total, WaterNSW has completed 28 valley specific meetings with its Customer Advisory Groups since December 2020. Additional feedback was also provided to WaterNSW at the IPART public hearing held on 30 March 2021.

WaterNSW has used the customer engagement and feedback it has received to date to develop an engagement approach for customers with Government-owned meters. Although customers with privately-owned meters are responsible for ensuring compliance with the new metering requirements, WaterNSW has included time and resources in its cost forecasts for customer service activities.

We consider that the stakeholder engagement that WaterNSW has carried out since November 2020 has informed customers of the potential pricing impacts resulting from WaterNSW's proposals to implement the State Government's metering policy. While we consider that WaterNSW's engagement with customers has informed cost and risk trade-offs in its revised submission we did not identify any specific assumptions or approaches to implementing the policy that it changed as a result of customer feedback.

3.2.4. Additional assumption analysis and justification

Our March 2021 Draft Report raised a number of key issues related to the validation of cost components and the basis for key assumptions included in WaterNSW's cost model. In its April 2021 submission, WaterNSW has provided additional clarification and justification in response to the comments in our Draft Report.

However, we note that although WaterNSW has provided responses, for some of the Government-owned meter issues additional supporting evidence is still required to confirm the basis for some assumed unit costs and numbers included in the cost calculations. We have outlined where we need additional information for these outstanding issues in Section 3.5.

3.3 WaterNSW's changes to the NSW metering scheme management cost estimate assumptions

The changes that WaterNSW has made to its costs estimates for the NSW metering scheme management cost estimates since November 2020 are presented in the following table, together with our comment on the appropriateness of each change.

Table 3-1 Changes to WaterNSW's November 2020 draft metering reform cost estimates

WaterNSW change	Comment
<p>Working weeks in a year</p> <p>WaterNSW has adjusted the total available working weeks per annum include in its cost model as a base assumption applied to all FTEs from 40.04 included in its November 2020 submission to 40.66 in its April 2021 submission.</p> <p>This change has been based on based on feedback regarding staff utilisation.</p> <p>The revised calculation for this assumption is:</p> <ul style="list-style-type: none"> 52 weeks per annum 5 weeks annual Leave (regional employees) 2 weeks public holidays 2.2 weeks non annual leave (e.g. sick leave). <p>This equates to 42.8 weeks.</p> <p>However, 95% utilisation ('at work' allows for mandatory training, team/management meetings, staff development and performance reviews, safety training and safety assessments, vehicle maintenance and other training (e.g. training on process changes arising from the WAVE program)) has been applied by WaterNSW to derive the 40.66 total working weeks per annum.</p> <p>These costs are fully-loaded, including salary, on-costs, vehicle and other costs. WaterNSW bears the risk that actual utilisation differs from forecast utilisation of 95%.</p> <p>The outcome of this change is to reduce the operating expenditure included in the November 2020 submission by approximately \$0.4 million.</p>	<p>WaterNSW has revised its key assumption for the number of working weeks in a year from the 40.04 hours included in its November 2020 submission to 40.66 in its April submission.</p> <p>We note that this key assumption has been universally applied throughout WaterNSW's cost models to all FTEs, including field staff and office-based staff that the costs models have shown as being required to implement and maintain the meter reform policy for the FY22 - FY25 period.</p> <p>WaterNSW's April 2021 Model 1 cost model forecasts that by FY25, it will need 23.88 Field Officers and Team Leaders to carry out the site work and 30 FTEs to carry out the communications and service centre activities. As a result, the split between field staff and non-field staff is 44% field and 56% non-field.</p> <p>As some of WaterNSW's justification for number of working weeks in a year used in the model is based on field-specific activities, we consider that some of this rationale would not apply to the non-field staff involved in meter reform work. Non-field staff receive one week less annual leave each year compared with field staff. We recommend that an adjustment be made to adjust the working weeks per year for non-field staff time at work to 42 weeks per year. Based on the comparative ratios of field staff to non-field staff, the weighted average working weeks in a year is 41.41.</p>
<p>Annual salary escalator</p> <p>WaterNSW has removed the 2.5% annual staff salary escalation factor from its expenditure model.</p> <p>The outcome of this change is to reduce the operating expenditure included in the November 2020 submission by approximately \$1.9 million.</p>	<p>We consider that this change is appropriate.</p>
<p>'Other' salary costs for field staff</p> <p>WaterNSW has the 'Other' salary costs included for each Field Officer and Team Leader from \$25,000 per annum to \$15,000 per annum. This has been based on WaterNSW's current forecast costs for a customer field officer.</p> <p>WaterNSW has reported that the outcome of this change is to reduce the operating expenditure that was included in the November 2020 submission by approximately \$1.0 million.</p>	<p>As WaterNSW's adjustment to this cost component has been based on its current forecasts for its field staff, we consider that this adjustment is appropriate.</p> <p>However, we note that although WaterNSW April 2021 submission states that "The 'other' salary costs for each Field Officer and Team Leader has been adjusted from \$25,000 per annum to \$15,000 per annum", WaterNSW's Model 1 cost model has only made the adjustment for the Field Officers and the 'Other' salary costs for Team Leaders remains at \$25,000.</p> <p>Adjusting for this to allow for \$15,000 'Other' salary for Team Leaders results in an additional cost reduction of \$0.05 million over the four year period.</p>
<p>Time allowed to upload LID data</p> <p>The upload time for initial site inspection over the reform rollout has been decreased. Instead of being a constant 0.4 hours across the four year period, WaterNSW has adjusted the upload time to decrease on a sliding scale across the period. While WaterNSW has set the upload time to be 0.4 hours in FY22, it decreases to 0.2 hours in FY23 and to zero in FY24.</p> <p>WaterNSW has included a provision for a customer field officer to manually upload data once a site has been visited and the data downloaded from the LID. There are</p>	<p>WaterNSW agrees that the uploading process to allow field staff to upload the manually downloaded LID data into WaterNSW's Data Acquisition Service (DAS) should be automated and has submitted a capital allowance for this to be developed.</p> <p>However WaterNSW considers that with other priorities and the introduction of WaterNSW's WAVE program, this system may not be operational by 1 December 2021 and, therefore, provision for a manual workaround would be required.</p> <p>We do not understand why this functionality is not already within the scope of an efficient WAVE program given its alignment with other field data collection and</p>

WaterNSW change	Comment
<p>3 types of data that need to be uploaded – meter master data, seal data and usage data from the LID.</p> <p>The outcome of this change is to reduce the operating expenditure included in the November 2020 submission by approximately \$2.16 million.</p>	<p>management activities. Therefore we do not think it is appropriate to include this capital allowance in efficient expenditure. We accept that implementing an upload solution may take time so do not propose an adjustment to WaterNSW's proposed profile of upload time allowance (0.4 hours year 1, 0.2 hours year 2 and 0 hours thereafter) but we consider that this is a potential source for efficiency in operating expenditure. Although we have not made an adjustment to WaterNSW's proposed costs for the time allowed to upload LID data, we consider that there is an opportunity for catch-up efficiency to be realised.</p>
<p>Removal of double-counted items</p> <p>WaterNSW has removed the total corporate systems capex (required for field work) which had been double counted in WaterNSW's 'capital expenditure forecast' table and then incorrectly included again in 'Downloading LID data'.</p> <p>The outcome of this change is to reduce the capital expenditure included in the November 2020 submission by \$0.792 million.</p>	<p>During our review of the cost model used by WaterNSW to develop its November 2020 submission, we identified that the 'Total Corporate Systems Capex (required for field work)' had been double counted in WaterNSW's summary table, having been incorrectly included the 'Downloading LID Data' cost forecasts and then included again (correctly) in the capital expenditure forecast.</p> <p>This doubling counting totalled \$990,000 split evenly \$198,000 against each year across a five year period between FY21 and FY22. Therefore, this totalled \$792,000 across the four year determination period forecast.</p> <p>We confirmed that WaterNSW has correctly removed this double counted item from its April 2021 pricing submission.</p>

In our March 2021 Draft Report we also queried WaterNSW regarding the four FTE roles totalling \$2.84 million over the four years for operating and maintaining the DAS and DQP Portal. WaterNSW responded that it has assumed internal roles for the required tasks but that the required commitments were largely unknown. Since this time WaterNSW has provided information as to the work activities for the roles associated with operating and maintaining the DAS and DQP Portal. WaterNSW has also noted that it has not included an increase in the service centre for calls for water users or DQPs requesting first level technical support and expects to absorb the costs associated with these within its current operations.

We consider that the identified FTEs are appropriate to operate and manage the DAS and DQP Portal. We note that during our review of WaterNSW's updated costs in its Model 1 base case, that one FTE salary for Customer Systems staff had been double counted as a result of being included in the DAS and DQP Portal cost build-up but also being included in the calculation for the total Service Centre and Systems operating costs. We have made an adjustment to remove this double counting, which results in a reduction of \$0.19 million in each year, a total of \$0.74 million over the four year period, in Table 7-4.

In addition, we observed that WaterNSW has included a number of items in the build-up of the operating costs for operating and maintaining DAS and DQP Portal that have been stated as being GST inclusive. These items are:

- > DAS Licensing Fee (per annum)
- > Telemetry fixed infrastructure costs
- > Telemetry data charges
- > SIM purchase & postage

As all costs should be presented exclusive of GST, we have made an adjustment to remove these amounts in our recommended efficient expenditure set out in Table 7-4.

3.4 Impact of WaterNSW's changes to November 2020 metering scheme management proposal

3.4.1. Operating expenditure

The impact of the operating expenditure adjustments included in WaterNSW's April 2021 submission from the draft November 2020 submission are presented in Table 3-2. These are presented as separate items

and savings made in isolation, e.g. each component was adjusted individually to assess the impact on the total forecast expenditure.

However, because a number of the adjustments that have been made by WaterNSW impact on each other (e.g. the change in working weeks changes the number of FTEs required, which impacts on the number of 'Other' salary provisions that need to be accounted for, the 'Other' salary costs are impacted by the removal of the 2.5% escalation), the individual changes do not equal the overall changes in WaterNSW's operating expenditure. The overall reductions from WaterNSW's November 2020 expenditure forecasts are shown in Table 3-3.

Table 3-2 Breakdown of changes in operating expenditure from changes to model assumptions included in WaterNSW's April 2021 submission

	FY22	FY23	FY24	FY25	Total
Change in working weeks from 40.04 to 40.66	-\$0.07	-\$0.10	-\$0.14	-\$0.14	-\$0.46
Removal of the 2.5% annual staff salary escalation factor	-\$0.12	-\$0.33	-\$0.66	-\$0.85	-\$1.97
Adjustment of 'Other' salary costs from \$25,000 per annum for each field-based FTE to \$15,000	-\$0.16	-\$0.23	-\$0.35	-\$0.34	-\$1.08
Decrease in time allowed to upload data across the four year period	\$0.00	-\$0.30	-\$0.91	-\$0.95	-\$2.16
Removal of double-counted capital expenditure	-\$0.198	-\$0.198	-\$0.198	-\$0.198	-\$0.792
Total	-\$0.55	-\$1.16	-\$2.26	-\$2.48	-\$6.46

Table 3-3 Overall operating cost changes between WaterNSW's November 2020 and April 2021 submissions

	FY22	FY23	FY24	FY25	Total
WaterNSW's November 2020 operating expenditure forecasts	\$6.01	\$8.33	\$10.85	\$10.60	\$35.79
WaterNSW's April 2020 operating expenditure forecasts	\$5.52	\$7.23	\$8.70	\$8.24	\$29.69
Difference	-\$0.48	-\$1.10	-\$2.16	-\$2.36	-\$6.10

3.4.2. Capital expenditure

The impact of the capital expenditure adjustments included in WaterNSW's April 2021 submission from the draft November 2020 submission are presented in the following table.

Table 3-4 Breakdown of changes in capital expenditure from changes to model assumptions included in WaterNSW's April 2021 submission

	FY22	FY23	FY24	FY25	Total
Vehicle capex for field staff	-\$0.02	-\$0.15	-\$0.30	\$0.00	-\$0.46
Capital allowance to automate upload time for initial site inspection	\$0.33	\$0.00	\$0.00	\$0.00	\$0.33
Total	\$0.31	-\$0.15	-\$0.30	\$0.00	-\$0.13

The unit rate that WaterNSW has assumed for vehicle capex and which is based on a fleet services quotation is unchanged since its November 2020 submission. The reduction in vehicle capex has been caused by the changes to the assumptions in the cost modelling resulting in less field FTEs being calculated than had been in the November 2020 cost estimate.

We note that although there is a reduction in vehicle capital expenditure, the corporate systems estimate has remained as was proposed by WaterNSW in November 2020 and it has also added in an additional component of \$0.328 million as a capital allowance to automate the upload time for the initial site inspections. This \$0.328 million was not included in WaterNSW's draft submission. As noted above, we consider that this is duplication with WAVE expenditure and should be removed from efficient capital expenditure.

3.5 WaterNSW's additional evidence and justification for the Government-owned meters operating and capital expenditure forecasts

As noted in Section 2.2, the only change that WaterNSW has made to its operating and capital expenditure forecasts for bringing the Government-owned meter fleet into compliance with the meter reform requirements and maintaining compliance over the four year Determination Period since its November 2020 submission is to update the unit cost for on-site telemetry costs for all compliant meters.

The change from the \$345 included in WaterNSW's November 2020 submission to a new unit cost of \$245 has resulted in WaterNSW now proposing:

- > A total of \$14.6 million in capital expenditure across the four-year 2021 Determination period in order to achieve compliance for the 2,822 government-owned meters (unchanged from WaterNSW's November 2020 cost proposal submission)
- > \$11.55 million in operating expenditure to maintain the government-owned meters in a condition and to a standard that complies with the new requirements for the four year determination period commencing in FY22. This is an overall reduction of \$0.89 million over the four year period.

In our March 2020 Draft Report we challenged WaterNSW on specific items included in the cost build-up of the proposed expenditure for the Government-owned meter fleet. WaterNSW has provided responses to these challenges in its April 2021 submission to provide a further justification and firming of costs associated with bringing the government-owned meters up to regulatory compliance beyond that contained in its Metering Reform Response. Additional responses have also been provided by WaterNSW during the preparation of the final version of this report. These are outlined in Table 3-5 together with our response.

WaterNSW has noted in its April 2021 submission that provision for the end of life for the Government-owned meter fleet will be addressed in the next determination period.

Table 3-5 Additional evidence and justification for WaterNSW's November 2020 Government-owned meter draft cost estimates

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
Capital expenditure	
<p>LID vendor</p> <p>WaterNSW has incorporated lower costs for LIDs based on a new vendor. A unit cost of \$900 per LID has been included in its capital expenditure cost build-up. WaterNSW noted that the current LID costs vary between \$1,200 and \$2,500 depending on the functionality required.</p> <p>As the new vendor is untested, we commented in our Draft Report that there is a risk to WaterNSW if the vendor cannot deliver on the project quantities or meet its procurement requirements.</p>	<p>WaterNSW response</p> <p>In its April 2021 submission, WaterNSW has said that a variety of quotes have been obtained to provide competitive pricing with the deliverability of the vendor also considered. Since starting the program in January 2021 it has negotiated decreased pricing for LIDs of between \$700 and \$1,800. In most cases WaterNSW considers that the \$1,800 model is the best choice for the customer.</p> <p>Cardno comment</p> <p>Based on its response, we consider that WaterNSW may have misinterpreted our Draft Report comment. Our concern was that if there were vendor issues related to the \$900 LID unit cost, that WaterNSW would have to pay in the \$1,200 to \$2,500 range for each LID needing to be installed.</p> <p>Using its \$900 LID unit rate, WaterNSW has included a total of \$1.80 million for LIDs in its capital expenditure proposal for the four year period.</p> <p>We queried the accuracy of WaterNSW's assumed \$900 unit cost given the negotiation of costs with a vendor meaning that the minimum cost LID model costs \$700 but that WaterNSW considers that the \$1,800 model is the best choice for the customer in most cases.</p> <p>WaterNSW responded that while the options are increasing for LIDs and costs for LIDs are declining, there is no guarantee that these LIDs will be available due to stock shortages or that these suppliers will meet WaterNSW procurement requirements.</p> <p>WaterNSW considers that the \$900 unit price assumption is not an overestimate as there is no guarantee WaterNSW will be able to purchase LIDs at this price.</p> <p>Although the lower cost LIDs allow for a daily transfer of data, the more expensive LID models (e.g. the models costing \$1,800)</p>

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
	<p>allows for the hourly transfer of data. Therefore, the more expensive LID models offer water users access to more frequent water take data. . We note that WaterNSW needs to establish the willingness of customers to pay for any increased level of service that a more expensive model would provide. Without this information, the \$900 model reflects a prudent and efficient estimate of future costs.</p> <p>However, as WaterNSW views the metering scheme management program to be primarily a compliance program, its preferred option has been to offer, where practical, the lowest cost LID to water users. Given the doubling in price between the \$900 LID model cost included in WaterNSW's cost model and the higher end \$1,800 model, potentially this could result in a doubling of the overall LID cost if all water users decided on the more expensive LID option.</p> <p>As the cost for LIDs has been estimated at \$2.54 million between FY21 and FY25, and this represents more than 17% of the total capital expenditure that WaterNSW is forecasting for the government-owned meters, its estimates are sensitive to this unit price.</p> <p>We consider that the \$900 unit rate for LIDs is reasonable but note that WaterNSW is bearing the risk and associated costs if it considers that the \$1,800 model is the best choice for the customer in most cases.</p>
<p>Validation</p> <p>Capital expenditure for the validation for the 2,822 government-owned meters has been costed by WaterNSW at a unit cost \$1,150. It has previously noted that this has been based on market experience and previous work with its metering contractor.</p> <p>In our March 2021 Draft Report we noted that although tasks for the validation process were provided, there was no accompanying granular build-up of the costs in order for the assumptions and their overall impact on costs to be fully assessed.</p> <p>We also noted that travel times from the two site visits for validation field activities could not be confirmed and it was unclear as to whether WaterNSW would engage with local DQPs for site visits or use internal DQPs.</p>	<p>WaterNSW response</p> <p>WaterNSW has responded that its estimated costings are based on work with its existing contractor and market experience. First cohort validation is currently underway and this experience-based learning is being utilised to write procedures on how to effectively and efficiently install going forward.</p> <p>WaterNSW has used travel models for efficient costing from the previous installation program and on-going maintenance and these will continue to be used going forward. WaterNSW is developing the most efficient route by taking into account all sites instead of focusing on sites needing compliance by specific dates.</p> <p>WaterNSW has noted that it will increasingly engage regionally based DQPs over the course of the rollout as it progresses in each region in order to achieve efficiency of costs and personnel.</p> <p>Cardno comment</p> <p>Based on its assumed unit rate of \$1,150 to validate each Government-owned meter, WaterNSW has included a total of \$2.30 million validation in its capital expenditure forecast for the four year period.</p> <p>WaterNSW provided the breakdown of the costs associated with the validation activities during the finalisation of this report. The validation for each site involves:</p> <ul style="list-style-type: none"> ▪ Checking the standing site data ▪ Site visit to confirm standing data/complete any data gaps ▪ Using standing & site visit data, relevant LID is chosen & an order raised with vendor ▪ Vendor configures and ships LID to DQP ▪ DQP bench tests LID on receipt ▪ DQP registers the LID in the DQP Portal and tests DAS workspace ▪ DQP visits site again to decommission old telemetry and installs new LID ▪ Live LID data tested through to DAS ▪ Workspace made live in DAS and the LID set to live and commissioned

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
	<ul style="list-style-type: none"> ▪ Meter is checked installed to AS4747 standards ▪ Meter checked for correct operation ▪ All Tamper Proof seals replaced with new regulation IAL seals ▪ Final Validation and Compliance checks completed, and Validation Certificate is created in the DQP Portal as the DQP closes out the job <p>WaterNSW engaged its metering contractor to conduct a pilot study to determine the logistic and costs of validating its fleet based on making the meter compliant, installing the LID and updating the paperwork via the DQP portal. The development of the costs includes a range of costs depending on whether in-house or contract staff are used. The outputs from this study show an estimated cost of \$1,135 (inc GST), in line with the unit rate that WaterNSW has assumed although this excludes any additional contingency.</p> <p>Based on the evidence provided, we consider that WaterNSW's assumed unit rate for validation of the government-owned meters of \$1,150 per meter is reasonable.</p> <p>However, we note that although this has been proposed by WaterNSW, it considers that the \$1,150 assumed unit rate is conservative as it assumes that with correct planning and customer consultation, difficult sites can be kept to a minimum. In addition, the unit cost assumes an equal 50:50 split between in-house and contractor resources. Given the volume of work, and the current in house resources at WaterNSW's metering contractor required to manage the maintenance contract, a significant amount of this work is expected to be outsourced, which has a higher cost. Therefore, WaterNSW is taking on the risk of any higher costs that are experienced when the work is undertaken in the field.</p>
<p>Excavation of buried meters</p> <p>As part of the work to make the Government-owned meters compliant, a portion of buried meters will need to be excavated in order to verify actual installations with records.</p> <p>WaterNSW's \$5,000 excavation unit cost is based on recent costs from moving buried meters last year which ranged from \$3,500 to \$9,000.</p> <p>We noted in our March 2020 Draft Report that the method of averaging unit cost to a \$5,000 rate for all instances was a potential risk to WaterNSW. This was because site specific circumstances (e.g. depths of meters) and the small sample size used for estimation may not be fully representative of all the buried meters that WaterNSW is looking to excavate.</p> <p>In addition, we commented that WaterNSW's assumed unit cost could also be understated due to its changed excavating intentions from 100% buried meters to 10% and missed efficiencies that could have been gained from using dedicated teams completing the work.</p> <p>We also challenged WaterNSW as to the basis and evidence to support that 10% is an appropriate number of buried meters to excavate in order to verify the installations for compliance purposes.</p>	<p>WaterNSW response</p> <p>WaterNSW has agreed that costs related to excavation are site specific, and has endeavoured to acquire accurate quotes for these activities. Its average cost of \$5,000 for each excavation has been based on the hire of a digger, spotter, and DQP time with quotes coming from WaterNSW's previous installation subcontractor with review of a sample of "as is" drawings and documentation.</p> <p>As most pipes are buried as high up as possible to save on costs to the land holder who would have installed the pipe, WaterNSW considers that lower end of the range is more appropriate for using as a unit rate.</p> <p>As WaterNSW is excavating the meters to provide itself with the confidence that the Government-owned meters are compliant and buried correctly, it considers that a 10% sample is appropriate.</p> <p>Cardno comment</p> <p>WaterNSW has identified that a total of 1,129 buried Government-owned meters need to be made compliant. Based on the \$5,000 unit cost and the 10% sample, WaterNSW has allowed for a total of \$0.38 million in its four year capital expenditure forecast.</p> <p>As evidence for the \$5,000 unit cost, WaterNSW provided a 2020 quote from its metering contractor to dig up all buried meters as part of the handback to water users. This quote works out to an average of \$3,412 per excavated meter. As the quote includes qualifications and assumptions and mentions potential variations, WaterNSW has applied a 15% contingency to the quoted total, resulting in an adjusted cost estimate of \$3,924. In addition, as the quote was for all meters and WaterNSW is only estimating that it will need to excavate 10% of the meters, it was selected a unit cost of \$5,000 to account based on the efficiencies in scale for the</p>

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
	<p>excavation program that were originally provided in its metering contractor's quote.</p> <p>We note that this increase for loss of program efficiencies is equal to a 27% increase on the assumed cost including the 15 contingency.</p> <p>We also note that the quote from WaterNSW's metering contractor is based on a range of unit costs depending on meter size for three ranges; 50 – 200mm, 250 – 450mm and 500-1000mm, with the cost for excavating increasing with size. There are a different number of meters in each of the three ranges of meters. Based on the breakdown of the quoted cost, taking into account the different unit costs to remove a meter in each range and the number of meters in each range, the weighted average for excavation is \$3,102 per excavate meter.</p> <p>We consider, based on other sampling that has been included in its meter reform cost forecasts that the chosen 10% sample rate is appropriate.</p> <p>We acknowledge a degree of uncertainty associated with the assumed unit rate for excavating buried meters, with WaterNSW including a contingency as well as a diseconomy of scale factor in the derivation of the unit rate. We consider that this is conservative but have not made a specific adjustment to this item in our recommended efficient expenditure based on the information available. Instead we consider that this is an area that may contribute to WaterNSW achieving catch-up efficiency in the future period.</p>
<p>Removal of above ground meters</p> <p>In its capital expenditure forecast for the Government-owned meters, WaterNSW has allowed for a 10% of above ground meters to be removed.</p> <p>In our March 2021 Draft Report, we noted that the basis for the 10% removal was not known and that we would have expected that there would be a confirmed number of meters needing to be removed due to environmental or safety reasons rather than having to estimate a proportion.</p>	<p>WaterNSW response</p> <p>WaterNSW has responded that with regard to the removal of above ground meters, the issue is the same for any customer who wishes to leave the fleet. WaterNSW's default position is to leave the meter in-situ where it just acts as pipe, but if the customer doesn't need a meter and wants to leave the fleet they may request meter removal and rectification of the pipework on site. The safety and environmental issues are relevant where a customer requests meter removal where leaving it on site may cause an issue.</p> <p>Cardno comment</p> <p>WaterNSW has identified that there are 1,693 above ground meters that need to be made compliant. Based on its assumed 10% to be removed and a unit cost of \$6,000 per meter removal, WaterNSW has allowed a total of \$0.75 million in its capital expenditure forecast for the four year period.</p> <p>Based on WaterNSW's response the selection of a 10% above ground meter removal assumption appears to be a 'best guess' of what might be a reasonable number rather than being based on any known requests provided by customers at this point. As the basis for the removal of the meter is customer-driven, it appears unlikely that there would be any better and more robust information to include in its cost estimation. As with some of WaterNSW's other assumptions included in the build-up of the Government-owned meter costs, the accuracy of the chosen assumptions will only be able to be properly assessed in hindsight. As for the buried meters to be excavated, there is a degree of uncertainty but we have not made a specific adjustment to this item in our recommended efficient expenditure based on the information available. Instead we consider that this is an area that may contribute to WaterNSW achieving catch-up efficiency in the future period</p>
<p>Non-pattern approved meter replacement</p> <p>WaterNSW identified 33 non-pattern approved meters in the government-owned meter fleet that need to be replaced for not meeting alternative</p>	<p>WaterNSW response</p> <p>WaterNSW has noted that its Government-owned meters were installed under different requirements and standards over time.</p>

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
<p>pathway approach. Of this total, 12 have been included to be replaced in FY21, with the remaining 21 in FY23. WaterNSW has included a cost of \$15,650 per meter replaced based on previous work by its metering contractor and analysis of current market costs for meter replacements.</p> <p>In our March 2021 Draft Report we commented that the 33 non-pattern approved meters to be replaced had not been confirmed, but that this total was likely to be reliable as we would expect WaterNSW to have accurately identified these meters, as opposed to needing to make an assumption.</p>	<p>New regulations are size-based where installations were a percentage of meters on the water source.</p> <p>WaterNSW is currently checking all water sharing plans, water taking conditions on licences, historical reason for a meter and the new regulation thresholds for each meter site. The intention is to provide the water taker the choice to opt out of the fleet if there is no requirement or benefit in keeping the meter, or keeping the meter in our fleet.</p> <p>WaterNSW will review all non-pattern approved sites to assess if it's more cost effective to go down the meter replacement, or pathway to compliance or ask the customer to provide their own solution.</p> <p>Cardno comment</p> <p>WaterNSW has included \$0.33 million in FY23 for the replacement of the 21 remaining non-pattern approved meters. The first tranche of 12 meters are due to be replaced in FY21, prior to the four year Determination Period. WaterNSW has provided a list of the non-pattern approved meters that have been identified as needing to be replaced in the Southern catchment and the Hawkesbury Nepean area. However, WaterNSW's assessment of the Hawkesbury Nepean did not visit all meter sites, with 276 sites still to be visited. In addition, recent flooding in the Hawkesbury Nepean catchment is known to have impacted on some meter sites and the full extent of damage is not yet known. Therefore, WaterNSW anticipates that more meters will need to be replaced than first anticipated in its cost estimate build-up.</p> <p>Based on the evidence provide by WaterNSW, we consider that the estimated costs for non-pattern approved meter replacement are reasonable</p>
<p>Government-owned meters: scheme administration</p> <p>WaterNSW's capital expenditure build-up has included an allowance of three contract FTEs to administer the government-owned meters compliance program.</p> <p>In our March 2021 Draft Report we commented that there was no detailed cost-build up on the estimated annual scheme administration to support the proposed expenditure. We noted that the annual estimate of \$770,000 estimate was equivalent to approximately \$257,000 per person.</p>	<p>WaterNSW response</p> <p>In its April 2021 submission, WaterNSW has responded to clarify that the scheme administration costs are not solely for salary costs but cover salary and on-costs plus additional allowances for travel, vehicles, mobile phones, PPE, legal costs, postage and other minor costs.</p> <p>In addition, WaterNSW noted that the estimate is for three project staff growing to five as workload increases in 2022. This also allows for other discrete administration tasks for desk-top data exercises, where short term contracted staff would be brought in (such as the requirement for data verification and a separate maintenance history report for each site that has already occurred). A provision for legal costs is also included.</p> <p>Cardno comment</p> <p>WaterNSW provided additional information on the cost build-up for the scheme administration during the preparation of this draft report.</p> <p>With the change in policy, where WaterNSW is to maintain the ownership of the meters, WaterNSW has reviewed its approach which has resulted in an extension to its original plan, aligning more with the compliance dates. The original forecast, which was developed in 2019, before the program was pushed back 12 months, was for three people to run the project. However, with the complexity and customer engagement required, it is now anticipating that the project will require five people. While WaterNSW only budgeted for three FTEs, it considers that the additional costs can be covered within the existing budget.</p> <p>The breakdown for the FY21 to FY23 period of the program is:</p> <ul style="list-style-type: none"> ▪ People \$1.49 million

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
	<ul style="list-style-type: none"> ▪ Vehicles \$0.11 million ▪ Travel \$0.10 million ▪ Legal \$0.37 million ▪ Other \$0.04 million ▪ Sub Total \$2.11 million ▪ Contingency \$0.21 million ▪ Total \$2.31 million <p>We note that WaterNSW has included a 10% contingency but we question this for a program management activity to manage the government-owned meter capital program and one that is largely based on salary costs. As a result, we have made an adjustment in Table 7-7 to remove this contingency from WaterNSW's proposed capital expenditure.</p>
<p>Government-owned meters: accuracy testing</p> <p>WaterNSW's capital expenditure build-up has proposed accuracy testing a 10% sample size each year of the meters made compliant.</p> <p>WaterNSW's stated that the assumed costs were in line with the meter testing costs laid out on its website. We noted that this information specified meter test costs, with different costs available for in-situ and laboratory testing, with the in-situ meter testing being some \$2,300 less than the laboratory testing. As such we challenged the adoption of an assumption of \$9,000 per test, similar to the laboratory test cost, and queried why the testing could not be completed in-situ. WaterNSW's website advertised in-situ testing at approximately \$6,400 per test</p> <p>We also noted that WaterNSW's forecasts appeared to include non-pattern approved meters to be replaced in the number of meters to be tested, likely causing over estimation.</p>	<p>WaterNSW response</p> <p>WaterNSW has responded that all accuracy testing is to be conducted in situ rather than in the more costly lab-based tests. Wet Testing is quoted at \$9,000 a site (six providers requested).</p> <p>WaterNSW has costed the accuracy testing for the government-owned-meters based on as a worst case scenario, that all tested meters would require lab verification. As it is only testing a small subset due to the fleet based approach, WaterNSW considers (and it was agreed by DPIE) that it should undertake the most robust and complete testing possible to give customers and regulators confidence in the fleet based approach.</p> <p>WaterNSW has noted that it is testing the sample set of between 3% and 10% of meters as per the National Measurement Institution suggested sample rate. Following on from the justification for the more expensive laboratory verification, WaterNSW also considers that the 10% sample size is prudent to provide assurance that the fleet are accurate. If the 10% sample shows that WaterNSW needs to test more meters, this risk is borne by WaterNSW.</p> <p>It has also responded that it has excluded the non-Pattern Approval meters from its cost calculation and that the 10% is not on the fleet number but on the 'families of meters', meaning 10% of Siemens, 10% of ABB, 10% of EuroMags, etc. The Families of meters are taken from the NMI Pattern Approved Meters list then taking 10% of that family of meters that WaterNSW has in its fleet.</p> <p>We note that WaterNSW has not included a contingency for this activity. The estimated costs are consistent with costs it has received from external contractors.</p> <p>Cardno comment</p> <p>We consider that the 10% sample size is reasonable for the FY22 to FY25 regulatory period but would expect this to reduce to a lower percentage in future periods as WaterNSW gains more insights into the government-owned meter fleet.</p> <p>However, we consider that the adoption of laboratory testing for all accuracy testing is not an efficient approach and DPIE has made an imposition on WaterNSW that does not reflect efficient costs to pass on to customers. We consider that a more efficient cost approach at this time would be to conduct 50% of the accuracy testing through laboratory testing and the remaining 50% through the cheaper in situ testing. On this basis we have made an adjustment to WaterNSW's capital expenditure forecasts in Table 7-7 that assumes the average cost of laboratory testing and in situ testing of \$7,750 per test.</p>
<p>Government-owned meters: accuracy testing ongoing</p> <p>WaterNSW has included an allowance in its operating expenditure proposal for ongoing</p>	<p>WaterNSW response</p> <p>While WaterNSW has confirmed that meter testing is not mandated under policy or regulation, it believes testing is appropriate to enable a fleet-based approach and to avoid</p>

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
<p>testing of meters. The ongoing testing allowance is based on a \$500 average cost per test for 5% of compliant meters. This totals \$0.25 million over the four year Determination Period.</p> <p>In our March 2021 Draft Report we commented that there does not appear to be any requirement under the NSW policy to test for accuracy annually although there are requirements for ongoing validation metering equipment, including validations to be undertaken by a DQP every five years.</p>	<p>extracting the 1,548 meters to prove they are compliant. As such, it considers that the fleet-based approach ensures the fleet is maintained and still accurate.</p> <p>WaterNSW has noted that in the absence of the fleet based approach and testing, as proposed, WaterNSW would not be able to ensure compliance without excavating 1,548 sites each time a validation is required at a cost of ~\$7.7 million.</p> <p>Cardno comment</p> <p>While we consider that this assumption may be somewhat conservative, we also recognise that this measure is important for achieving the Government policy objectives around accurate and reliable metering. While we do not propose any adjustment to this assumption we consider that this is an areas where WaterNSW will be able to achieve catch-up efficiency in the future period.</p>
<p>Government-owned meters: rectification of damaged meters</p> <p>WaterNSW has identified that a significant number of the transferred meters from the Hawkesbury Nepean region need rectification to ensure they can be validated as part compliance to reforms. This has an estimated cost of \$2,330 per site. The cost model has 7.8% of the total meters requiring rectification per year. On this basis, WaterNSW has allowed a capital expenditure allowance of \$1.71 million for the four year Determination Period.</p> <p>In our March 2021 Draft Report we commented that the basis for unit cost and number of meters requiring rectification (7.8%) is not known.</p>	<p>WaterNSW response</p> <p>In its response, WaterNSW has noted that a site assessment program was run in 2019 to look at the 826 meters in the Hawkesbury-Nepean region.</p> <p>These meters were transferred to WaterNSW from DPIE Water as part of the deed of transfer in 2016. At that point no maintenance had been undertaken on these meters since they were installed several years earlier and no metre service charge had been applied. In 2018 WaterNSW attempted to charge the meter service charge to these customers and received over 140 complaints and several questions from the Minister's office. As a result of this, it was agreed, that until a condition assessment of these meters was undertaken, and the meters were operational again, the meter service charge would not apply.</p> <p>A total of 550 of the 826 were reviewed, with only 99 meters deemed to be operational. Most of the 550 meter sites were identified as needing some form of rectification works to bring the sites up to a standard ready for validation and have new LIDs installed. Of the 550 meters inspected, it was identified that 20 would need replacing as they were missing or non-operational and 220 would need some type of rectification to get them operational again.</p> <p>The remaining 276 were not inspected as they have pumps less than the threshold, and the requirement for these sites to be metered was unclear at the time. However, it is WaterNSW's understanding that these sites will still need to be metered as part of the new regulations. WaterNSW has not made any provisions for these sites and so bears the risk for any rectification work that may be required.</p> <p>In addition, WaterNSW expects the number of meters either needing replacing or rectification will increase as a result of the recent floods in NSW, which again is a risk that it bears.</p> <p>Cardno comment</p> <p>Using the 7.8% assumption, WaterNSW has calculated that a total of 829 meters will need to be rectified for damage over the FY21 to FY25 period.</p> <p>Based on the information provided by WaterNSW, we consider that the cost build-up to rectify known damaged meters is reasonable. We note that it is possible that WaterNSW will potentially need to undertake additional rectification of meters that have been damaged in the recent NSW floods, although the quantum of this work is not yet known.</p>
Operating expenditure	
Consumables	WaterNSW response

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
<p>WaterNSW has included an annual allowance for \$75 of consumables per compliant meter. This amount is based on service visits from previous five years.</p> <p>In our March 2021 Draft Report we noted that the majority of consumables are unlikely to be expensive items with the exception of antennas and batteries. As a result, we considered that the unit price for this cost component could be overstated.</p>	<p>WaterNSW has based the \$75 cost per compliant meter on the previous five years of costings from its subcontractor and has considered an average of all consumables included in the daily rate when invoiced across the fleet.</p> <p>Although in their responses for our Draft Report specified potential inclusions for 'Consumables' the response in the April 2021 submission has increased the number of potential 'Consumable' examples and noted that the unit costing includes stock of all possible required consumables by the subcontractor (e.g. batteries, seals, concrete, solar panels, flanges, ant sand, pipe supports) as well as the maintenance of vehicle stores and tools. In addition, it has noted that all or most sites require tamper seals, battery and antenna replacements, and some sites additionally require more expensive items to complete service visits.</p> <p>Cardno comment</p> <p>The consumables that WaterNSW has included in its cost model total \$0.735 million over the four year Determination Period, representing almost 6% of WaterNSW's total operating cost for the government-owned meters. As such, although it is a reasonable small unit cost, it has an impact on the overall forecast expenditure as it is being assumed for each visit to a compliant meter.</p> <p>Although WaterNSW has said the basis is historical costings, this detail, along with any analysis of the breakdown of costs to show the typical cost or how much an expensive service visit might be, has not been provided for confirmation.</p> <p>WaterNSW provided the analysis that it completed to derive the \$75 unit cost. This includes six years of data for the number of times specific parts and components were replaced due to faults and corrective maintenance. Based on the total number of visits, this information has been used to derive the number of times each repair or replacement was carried out per meter. WaterNSW has used low and high cost assumptions for each replacement component to calculate a low cost average cost for consumable items of \$68.25 per visit and an average high cost of \$190.10 per visit. We note that in addition to replacement parts, WaterNSW also included costs for "cable, ties & joints, etc", "ant spray, bug spray, etc" and "Windex for cleaning solar panels" at a low cost of \$6 per visit and a high cost of \$9 per annual visit. As such, we consider that the costs for these items is likely to have been overstated. In each year, these items compromise more than 26% of the total estimate for consumable items. However, we recognise that the differences in costs for some items, e.g. batteries, aerials, will vary between meter models and sites.</p> <p>WaterNSW has noted that the cost model may change over time as all sites have new LIDs installed and the failure/replacement model for the new technology is developed. This suggests that there is potential for lower consumable costs to be realised into the future although at this point in time this can't be confirmed or quantified at this time.</p> <p>Based on the evidence provided to us by WaterNSW, we consider that the \$75 assumed unit rate for consumables is conservative. Based on our analysis we consider that a unit rate of \$65 per visit is appropriate and on this basis, we have recommended an adjustment in Table 7-6.</p>
<p>Resealing meters/LIDs</p> <p>WaterNSW has assumed in its cost model that the resealing of the Meters/LIDs on each annual visit to a compliant meter will take 0.5 hours each time at a rate of \$150 per hour.</p>	<p>WaterNSW response</p> <p>WaterNSW has noted that the LID has to be tested on each visit, including checking of the alarm and capability of DAS data transfer.</p> <p>This data is based on time and rates provided by the existing contractor.</p>

Cardno challenge/query	WaterNSW April 2021 response and Cardno comment
<p>In our March 2021 Draft Report we queried the basis for this unit time estimate and whether the resealing work would take as long as this.</p>	<p>Cardno comment</p> <p>Based on WaterNSW's cost forecast assumption, the resealing of meters/LIDs will total \$0.735 million over the four year period, representing almost 6% of the total forecast operating costs for the government-owned meter fleet. Although the time estimate is relatively small for completing the activity, even being able to complete the task in 20 minutes as opposed to 30 minutes reduces the four year operating cost total by over \$0.24 million.</p> <p>WaterNSW basis for resealing meters/LIDs is time and rates provided by its existing contractor. This information has been provided for confirmation and shows the following tasks and time assumptions for this activity:</p> <ul style="list-style-type: none"> ▪ Risk assessment of site (5-10 minutes) ▪ Drilling through components to ensure holes are aligned (10-30 minutes) ▪ Recording the seal details (5-10 minutes) ▪ Clear photography of every seal (5 -10 minutes) ▪ Uploading seal details to the DQP Portal and Validation Certificate (10-15 minutes) <p>Based on this information, we consider that the 30 minutes assumed to reseal the meters/LIDs is reasonable.</p>

4. Key considerations and assumptions

In both our March 2021 Draft Report and this April 2021 Final Report, we have sought to challenge WaterNSW's key assumptions and rates that it has used in to derive expenditure forecasts for the NSW metering scheme management and the Government-owned meters to provide assurance that they are robust and efficient.

However, there are a number of key areas where there is no better information available at this point in time to either conclude that WaterNSW's assumptions are robust or to make an accurate and reliable adjustment to the specific cost component.

In its response to the draft version of this report, WaterNSW has commented, that like any business, it has used the best available information to estimate the cost impacts arising from the metering reforms. The compliance dates that have been used for the number of meters to be installed and made compliant in each year of the regional rollout are based on the NSW Government's metering policy, which was subject to extensive consultation with customers, stakeholders, industry, and Government, and followed several Government reviews on compliance issues under NSW water management framework.

In addition, WaterNSW has noted that as per page 59 of its submission, the MDBA Compact requires metered coverage to be implemented by June 2025, which is within the term of the WAMC determination. This is not a WaterNSW assumption; the assumption has been formalised by the MDB jurisdictions under the MDBA Compliance Compact.

Therefore, the forecast compliance dates that WaterNSW is working to are based on regulatory changes to the water management framework, which have been approved by NSW Government. As a result, WaterNSW considers that it would be unprecedented, and outside of its mandate, to develop alternative forecasts which assume that water users will not comply with their regulatory requirements under the policy, given the reforms are in response to an important public policy issue in which all stakeholders and levels of Government agree that the status quo is not sustainable and there is a need to prevent water theft through the rollout of metered usage by 2025.

These key issues that are impacting on WaterNSW's metering reform expenditure forecasts are outlined in the following sections.

4.1 Deliverability

The ability for WaterNSW to achieve and deliver the Metering Reform Program were identified as an issue during the preparation of our March 2021 Draft Report.

Essentially all of WaterNSW's expenditure forecasts for the metering reform requirements depend on the number of meters that can be made compliant in each year of the works program and cumulatively across the four year determination period. The number of meters made compliant determines the number of meters needing to be maintained as compliant. If a meter is not made compliant, the majority of the assumed activities and tasks that WaterNSW has identified as being required will apply, meaning that the majority of the associated costs will apply. However, WaterNSW proposes to charge a Metering Scheme Charge of \$77 from 1 July 2020 on all customers regardless of whether a customer's meter is compliant or not. We have reviewed the elements of costs included within the Metering Scheme Charge. The largest component is for processing of customer self-reported data. This cost is variable and dependent on successful roll out. However, there are other costs that are relatively more fixed and independent of the rollout of metering, e.g. education and communication. If roll out is delayed, there is potential that some of these costs may need to increase.

In terms of the customer meters, 14,709 new or replacement meters are forecast to be installed over a five year period between FY21 and FY25. For the government-owned meters, 2,822 meters are to be made compliant by the end of FY24.

For the privately-owned customer meters, the onus is on the water user to make their equipment compliant by the relevant due date for the region they are located in. For these water users, WaterNSW's role is to facilitate the compliance and provide support to customers, with the number of meters required to be made compliant not within its control. However, progress to date has been well behind schedule for the meters that needed to be installed/validated in FY21 to meet the Stage 1 rollout deadline of 1 December 2020 for all surface water pumps 500 mm or larger. The program ramps up substantially for the Stage 2 Northern Region works that have a 1 December 2021 rollout date, with a total of 7,601 surface water and groundwater

meters either needing to be installed, replaced, validated by a DQP as meeting the requirements to remain in place or to be made inactive by the water user.

As noted previously, other than being impacted by external events outside its control, WaterNSW has stated that it is confident that it will be able to achieve and deliver the Metering Reform Program to the standard and requirements set out in the metering framework within the 2021 Determination Period. However, privately-owned customers bringing their metering equipment into compliance by the required date and also ensuring that they allow for sufficient time for the work to take place to avoid the potential impacts of a last minute rush to meet the deadline is an external event outside WaterNSW's direct control.

At this point in time it is not possible to robustly predict that all privately-owned meters in Stage 2 requiring to be compliant by 1 December 2021 will have achieved compliance by this date or even whether those in Stage 1 requiring to have been compliant by 1 December 2020 will be compliant. As such, progress against the regional rollout program and WaterNSW's program for the Government-owned meters will need to be regularly monitored and reported to assess the impacts on WaterNSW's expenditure forecasts.

In response to our comments, WaterNSW has noted that this does not reflect the intent of its proposal as it is proposing to levy the Meter Service Charge (MSC) and the telemetry/non-telemetry charge once the Government-owned meter/water user meter is upgraded and/or made complaint. Therefore, it is proposed the costs are recovered and or the service is undertaken on a fee for service basis. Under this charging structure, water users who receive the service pay for the service. WaterNSW considers that are several benefits to this approach, including:

- > There is no risk that WaterNSW will under or over recover its incremental meter service costs due to variations between the actual and forecast number of meter installations, as costs are only recovered from meters that are actually installed
- > Metering costs are recovered transparently, from the water user that is subject to metering
- > This approach is consistent with the 'impactor pays' principle.

As a result, this means that WaterNSW will only recover the user revenue which offsets the incremental costs of meter compliance triggered by volumes/compliance activity that actually occurs and does not propose to recover user revenue for costs that do not occur (e.g. due to volumes that do not eventuate because water users have not installed their meters required under the policy or the Government-owned meters have not been made complaint).

However, we consider that there is a significant risk on milestones being met, particularly regarding the regional rollout program for the customer-owned meters. We understand that NRAR has recently (April 2021) found in a survey of 1,100 irrigation licence holders that more than 700 had not taken any action to install accurate, tamper-proof or approved meters. WaterNSW's position is that it must meet the policy requirements. Therefore, there is a risk to WaterNSW where implementation does not meet its forecasts and it is carrying fixed costs which are recovered through partly variable charges. We note that there are some similarities between these circumstances and the sales volume risk between a water business and its customers.

4.2 Telemetry vs non-telemetry

As noted in Section 3.2.1, WaterNSW has completed sensitivity testing to inform the assessment of the base case and ongoing implementation. Parameters which are found to have a relatively greater impact on the analysis should be placed under greater scrutiny in the assessment of the base case and risk mitigation measures put in place through implementation to reduce the risk of them impacting the desired objectives being met. WaterNSW has refined its base case in the April 2021 forecast and provided four additional scenarios which show the impact of changed levels of customers opting in to telemetry.

WaterNSW's April 2021 operating expenditure estimates have been based on its Model 1 base case scenario, which assumes that there is no additional uptake in meters moving to telemetry as a consequence of customers choosing to opt in. As a result, WaterNSW has assumed that 5,527 telemetered works will be installed by FY25 in accordance with the requirements for only meters >199 mm to have telemetry installed. This assumption is unchanged since WaterNSW's November 2020 expenditure forecast, with no assumption made for water users with meters less than 200mm who might voluntarily install telemetry. As such, there remains potential for WaterNSW's forecast costs for downloading LIDs not connected to telemetry to be overstated.

As shown in Section 3.2.1, WaterNSW's telemetry/non-telemetry scenario modelling has shown that its operating costs are sensitive to the number of water users installing telemetry. If a 25% telemetry opt-in was achieved (WaterNSW's Model 2), it would result in operating cost savings of more than 6% compared to its

chosen base case that assumes no additional opt-in to move meters to telemetry. This would also result in capital cost savings of almost 14% from WaterNSW's Model 1 base case. Similarly, WaterNSW's Model 3 scenario, which assumes a 50% telemetry opt-in, would result in operating and capital expenditure reductions from WaterNSW's Model 1 base case of almost 13% and 30% respectively. As such, there is potential for WaterNSW's proposed operating and capital expenditure forecasts to be significantly reduced if any Government supporting subsidy is introduced to encourage an increase in the number of meters moving to telemetry.

We note that although WaterNSW has developed models to assess the impacts of different telemetry opt in rates, the lowest rate considered is that an additional 25% of metered customers chose to install telemetry, even though they are not required to under the conditions of the policy. In WaterNSW's Model 2, this adjustment to 25% opt in results in an additional 4,481 meters moving to telemetry. We consider that there may have been some benefit in assessing the impact of lower telemetry take up than has been considered, e.g. 1%, 2%, 5%, 10%, as they may be more realistic targets in the absence of any Government supporting subsidy scheme to encourage telemetry opt-in.

However, in response to this, WaterNSW's has noted that its assumptions are based on the regulatory requirements set out in the NSW Non-Urban Water Metering Policy. It considers that at present, there is no evidence to suggest there will be any voluntary uptake of telemetry as per the different telemetry uptake scenarios it has modelled, and the most likely outcome that is that water users will choose to meet their regulatory requirements and nothing more.

In our Draft Report we noted that WaterNSW considers that the uptake of telemetry is a discussion to be had with DPIE as it can influence the uptake of telemetry. We understand that discussions between the two agencies are currently ongoing. As a result, we consider that the uptake should be monitored throughout the scheduled meter regional rollout over the next four years to allow the accuracy of this core assumption in WaterNSW's operating expenditure forecasts to be assessed.

4.3 Travel times

For its operating cost build-up for the NSW metering scheme management, WaterNSW has adopted a unit rate of one hour for the travel time for each initial site inspection and the annual download of LIDs not connected to telemetry. WaterNSW considers one hour to be a reasonable averaged assumption based on a review of available site location data and its extensive experience and knowledge on the travel time requirements in the rural valleys,

WaterNSW has derived the one hour assumption for the average journey time between each meter site. However, some sites are stated to take up to 4-5 hours to access.

We note that WaterNSW's metering contractor allows 80 minutes travel time between each site but have also stated that this allowance may be conservative.

WaterNSW has commented that the travel time is significantly impacted by the location of staff, the location of pump sites, the ease of getting to the pump site from the highway, any gates to open and close. In addition, travel speeds are significantly lower on farm and the time allowed also includes for the initial site safety inspection. WaterNSW has also noted that this assumption represents the journey from meter to meter recognising that some meters can be difficult to access (e.g. weather and rough terrain).

WaterNSW provided some examples of travel times as evidence during the preparation of our March 2021 Draft Report, this information, which included Google Maps screenshots, as well as anecdotal evidence from field staff as to travel times between sites in certain areas. However, as a proportion of the total number of meter sites that will need to be visited, this sample was limited and there was no evidence that the examples were representative of all the meter sites.

From a bottom-up view the one hour travel time assumption for each meter site visit appears not unreasonable but the impact when this is scaled up is not known. Although one hour for one site seems reasonable, this also means that it has been assumed that the travel time for ten sites will take ten hours and the travel time for 100 sites will take 100 hours.

As part of the sensitivity analysis and scenario modelling that WaterNSW has completed since its Draft Submission, it has revised its cost model to allow the travel time for the initial inspections and downloading of LIDs not connected to telemetry to be set as either the one hour base case or alternatives of 0.9 hours (54 minutes) or 0.8 hours (48 minutes). We note that reducing the assumed average travel time by 6 minutes, from one hour to 54 minutes results in an operating expenditure forecast decrease of \$0.74 million over the four year Determination period. Similarly, if an average travel time of 48 minutes was included in

WaterNSW's cost model, a reduction in the operating expenditure forecast of \$1.46 million would be achieved.

We consider that more work will need to be completed by WaterNSW to develop meter site rounds so that the most efficient routes can be planned for the field officers for each area. Developing efficient meter visit rounds for each area in each region in the State will be needed to confirm the robustness of the one hour travel time assumption that WaterNSW has included in its operating cost build-up for the NSW meter scheme management. WaterNSW has increased staff utilisation and assumed a 95% staff utilisation in its metering submission which support the efficiency for its meter runs included to date in its one hour assumption.

Based on our review of WaterNSW's travel time assumptions, we cannot confirm at this time that the associated travel costs are efficient. We have not made any scope adjustments to these costs in our recommendations. Instead we consider that this is an area that may contribute to WaterNSW achieving catch-up efficiency in the future period.

4.4 Duplication of work / potential synergies with other meter site visits

One area that we did not explore during our review of WaterNSW's operating cost forecasts was the potential for synergies with other visits to meter sites during the year that could be used as an opportunity to carry out the downloading of the LID for meters not connected to telemetry in order to remove the need for a second visit at a later date to download the LID.

As such, we do not know if WaterNSW has put plans in place or is working towards doing this to optimise the time requirements and the number of visits to each meter site. However, we would expect that if there is potential for this approach to be viable that WaterNSW would be looking to maximise it in order to make its site visits as efficient as possible and to reduce the need for additional travel time.

The metering activities have considerable similarities with the surface water and groundwater monitoring activities in that they involve field staff undertaking activities across the State to collect information and manage this information. There are similarities in resource requirements (i.e. staff capability, vehicles, accommodation etc.) and the requirements for planning and executing work across wide geographical areas and to meet timing requirements. There may also be potential for WaterNSW to optimise resourcing for these activities by finding synergies with its existing staff and other resources.

We note that WaterNSW has commented on this issue in its response to the WAMC draft determination under the section on the water take assessment charge. WaterNSW considers that even if it is possible to implement the recommendations, there would need to be engagement with the relevant unions on the development of the new position descriptions and to facilitate a corporate restructure across the organisation, including staff training as per the requirements of the role. As a result, it expects that this process would take significant time and effort to implement and would potentially result in an overall increase in labour costs to fund the multi skilled position requirement. Therefore, WaterNSW's view is that any volume reductions would be potentially offset by an increase in labour costs given the requirement to meet the better off overall test under workplace relations law, and any increase in activity in the position description would then be expected to lead to an increase in labour costs.

We note WaterNSW's comments on potential limitations. We have not made any adjustments in this area but note this might be an area where WaterNSW may achieve efficiency in the future period.

5. User share for metering reform costs

Implementation of metering reform is leading to a change in the scope and nature of activities undertaken by the WAMC business. This calls into question the appropriate user share for these activities. The nature of the activities are broadly similar to the existing water take activities which have the following activity codes and user shares:

- > W03-01 Water take data collection – 100% user share
- > W03-02 Water take data management and reporting – 100% user share.

Further, metering reform supports compliance activities and the same impactor logic applies. The user shares for compliance activities are as follows:

- > W08-01 Regulation systems management – 100% user share
- > W08-02 Consents management and licence conversion – 100% user share
- > W08-03 Compliance management 100% user share.

Based on the preceding discussion, we consider that a 100% user share is appropriate for the expenditure incurred implementing metering reform.

We note that in our Final Report that we supported WaterNSW's division of the water take monitoring activity group into two separate areas as logical and that it should be considered as the basis for revised activity codes for the future period, including for during and following implementation of metering reform. The new activities could be named as follows:

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

6. Conclusions

We make the following conclusions regarding WaterNSW's Metering Reform Costs submitted in April 2021:

1. The proposal is substantially more developed than the earlier submission with greater consideration of risk and testing of assumptions. We consider that the level of justification is appropriate for expenditure of this magnitude and complexity. The challenge for WaterNSW and the other relevant agencies is to monitor and manage risk throughout implementation so that neither Government agencies nor customers are unduly impacted by events that could be reasonably expected and managed.
2. WaterNSW has adopted a less conservative risk position for the Metering Scheme costs which have seen substantial reduction in its proposed operating expenditure. However, we consider that adjustments to the scope of activity proposed by WaterNSW and adjustments to unit costs used in its cost build up are justified to arrive at an efficient forecast of future expenditure requirements. We detail these specific adjustments in Section 7. In addition to these adjustments, we consider that WaterNSW will be able to achieve continuing and catch-up efficiency in the future period and we also discuss these further in Section 7.
3. WaterNSW has identified that its proposed costs are sensitive to the uptake of telemetry. It has modelled the impact of a number of scenarios for customer opt-in to telemetry but maintained its base case as the most appropriate position. WaterNSW is consulting with DPIE in policy settings that may impact the uptake of telemetry. We agree that based on the current operating context that maintaining the base case for customer take-up of telemetry is appropriate.
4. There has been a small change in the proposed operating costs for the Government-owned meter costs resulting from a change in the on site telemetry costs. WaterNSW has provided more information on the basis for a number of its key cost model assumptions and we have made a number of adjustments based on our assessment of this information.
5. WaterNSW has undertaken some consultation with customers regarding its proposal and it has incorporated this feedback into its April 2021 submission. This is a notable improvement compared with its prior submission.

7. Recommended efficient expenditure

7.1 Methodology for determining efficient expenditure

7.1.1. Overall methodology

Our methodology for determining efficient expenditure for implementation of metering reform is consistent with that applied by us in our review of WAMC expenditure and 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. A more full description of the methodology is provided in our WAMC expenditure review report. In summary, there are three steps in the methodology:

- > Adjustments - Review of activities and costs to identify any imprudent or inefficient activities and associated costs. Where imprudent or inefficient activities or costs are identified, an adjustment is made.
- > Catch-up efficiency - 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, assessment of the processes used and proposed by WaterNSW to undertake metering activities. We discuss catch-up efficiency further in the following section.
- > Continuing efficiency - 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.

7.1.2. Scope for catch-up efficiency in operating expenditure

In our review of WaterNSW's costs for delivering WAMC services, we applied a compounding catch-up efficiency of 1.1% per annum based on our assessment of the maturity of WaterNSW's processes for delivering these services and based on comparison with the level of catch-up efficiency achieved by other regulated businesses. We did not apply a catch-up efficiency to WaterNSW's activities for delivering surface water and groundwater monitoring because WaterNSW has demonstrably achieved efficiencies in the current period that has moved it to at or near the frontier.

While we have noted in Section 0 that we consider that WaterNSW's revised submission on metering reform costs is substantially more robust than its initial submission, we consider that the program and metering processes are still relatively immature given that WaterNSW is only at the beginning of commencing these activities. This is evidenced for example by a number of assumptions which are yet to be validated, e.g. the one hour travel time between sites. There may also be potential for WaterNSW to optimise resourcing for these activities by finding synergies with its existing staff and other resources.

Based on these observations regarding the relative immaturity in WaterNSW's processes for this activity we consider that a relatively higher level of catch-up efficiency will be able to be achieved by WaterNSW in the future period. The metering activities have considerable similarities with the surface water and groundwater monitoring activities in that they involve field staff undertaking activities across the State to collect information and manage this information. There are similarities in resource requirements (i.e. staff capability, vehicles, accommodation etc.) and the requirements for planning and executing work across wide geographical areas and to meet timing requirements.

Therefore, we consider that a useful measure of the level of catch-up efficiency that WaterNSW will be able to achieve in the future period is the level of efficiency that has actually been achieved by WaterNSW in the current period for surface water and groundwater monitoring. This level of efficiency is 3.9% per annum (calculated as the movement between the average level of operating expenditure in the current period and the average level of operating expenditure in the future period over a five year period). As this efficiency will also have been contributed to by continuing efficiency, this needs to be subtracted from the total efficiency to arrive at the level of catch-up efficiency achieved. On this basis, the level of catch-up efficiency achieved in surface water and groundwater monitoring activities in the current period is 3.2% per annum and this target has been applied to arrive at our estimated level of efficient operating expenditure.

In response to this report, WaterNSW stated that it did not consider that the level of catch-up efficiency applied was appropriate because the efficiencies realised by the water monitoring team were achieved under different circumstance following the consolidation of piecemeal assets and functions. We understand this position but also consider that the circumstances are similar in that they reflect the commencement of an activity under WaterNSW's direction and the first opportunity to refine and improve processes.

7.1.3. Scope for catch-up efficiency in capital expenditure

The recent review of WaterNSW's expenditure for its Rural Valley business assessed the level of catch-up efficiency that the business may achieve in the future period and this estimate was adopted for capital expenditure for WaterNSW's WAMC activities. WaterNSW was assessed to be able to achieve catch-up efficiencies for capital expenditure in the following areas:

- > 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.

Based on the assessed level of catch-up efficiency expected to be able to be gained by WaterNSW in these areas, the cumulative efficiencies for capital expenditure set out in Table 7-1 were proposed.

Table 7-1 Recommended capital expenditure catch-up efficiency levels for WaterNSW's wider WAMC expenditure

Cumulative efficiency challenge (%)	2021/22	2022/23	2023/24	2024/25
Capital program development	0.11%	0.22%	0.33%	0.44%
Value engineering	0.50%	1.00%	1.50%	2.00%
Cost estimating	0.50%	1.00%	1.50%	2.00%
Procurement	1.00%	2.00%	3.00%	4.00%
Catch-up efficiency (cumulative in year)	2.11%	4.22%	6.83%	7.44%

The capital expenditure for the metering reform is different in nature to that for the wider Rural Valleys in WAMC capital expenditure activities. The overall program is relatively small in magnitude and only covers a limited range of activities being for motor vehicles, information systems and works to bring government-owned meters into compliance with the required standard. As such, we consider that there is less scope for WaterNSW to achieve catch-up efficiency for metering capital expenditure compared with that anticipated for WaterNSW's wider programs.

We therefore propose catch-up efficiency to apply for metering capital expenditure on the following basis:

- > No catch-up for capital program development given the relatively small and disparate scope items.
- > Reduced scope for cost estimating catch-up efficiencies due to costs for some scope items, such as vehicles, being currently well known.
- > Reduced scope for procurement catch-up efficiencies due to the lower volume of work associated with these activities.

The recommended level of catch-up efficiency to be applied to capital expenditure is set out in Table 7-2.

Table 7-2 Recommended capital expenditure catch-up efficiency levels for WaterNSW's metering capital expenditure

Cumulative efficiency challenge (%)	2021/22	2022/23	2023/24	2024/25
Capital program development	0.00%	0.00%	0.00%	0.00%
Value engineering	0.50%	1.00%	1.50%	2.00%
Cost estimating	0.25%	0.50%	0.75%	1.00%
Procurement	0.50%	1.00%	1.50%	1.50%
Catch-up efficiency (cumulative in year)	1.25%	2.50%	3.75%	4.50%

7.1.4. 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. 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 applied is also consistent with that applied to WaterNSW's expenditure for WAMC and Rural Valley activities.

The continuing efficiency adjustment applied to both capital and operating expenditure is 0.7% per year. The cumulative impact of this level of continuing efficiency is shown in Table 6-6.

Table 7-3 Recommended continuing efficiency

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

7.2 Recommended metering scheme management expenditure

7.2.1. Operating expenditure

Based on our review of WaterNSW's revised submission, we have derived our recommendation of efficient operating expenditure on the following basis:

Adjustments

We have made the following adjustments to the proposed metering scheme management costs:

- > An annual adjustment based on the revision of the working weeks included in WaterNSW's cost model from 40.66 to 41.41. The basis for this is that the 40.66 universally throughout WaterNSW's cost models to both the field staff and the non-field staff, e.g. communications and service centre personnel. However, office-based staff would not get the fifth week of annual leave (although this is dependent on their location under the terms of the EBA, with staff who work west of the Western and Central Division of the State described as such in the Second Schedule to the *Crown Lands Consolidation Act 1913 (NSW)* before its repeal accrue additional annual leave of five working days a year), and would not be subjected to the same field safety training requirements, safety assessments, downtime due to vehicle maintenance, etc. As a result, we have assumed that non-field staff work a 42 week working year. The 41.41 working week that has been used in WaterNSW's cost model is the weighted average of the 40.66 working weeks for field staff and the 42 working weeks for the non-field staff. The average four year ratio of field staff to non-field staff is 44% to 56% and this split has been used to weight the average working weeks assumption we have included in the model.
- > An annual adjustment based on an observation in WaterNSW's cost model that the 'Other' salary costs for Team Leaders had not been revised to from \$25,000 to \$15,000 as set out in the changes that WaterNSW had made to its expenditure forecasts in its April 2021 submission.
- > An annual adjustment of \$0.19 million to remove the double counting of 1 FTE salary costs for Customer Systems activities. These costs have been correctly included in the Operating and maintaining DAS and DQP Portal costs but were accidentally duplicated in the overall Customer Serve and Systems total.
- > An annual adjustment to remove the GST component for a number of items included in the cost build-up for operating and maintaining the DAS and DQP Portal. Items that WaterNSW had include in its cost model as GST inclusive were the DAS licensing fee, telemetry fixed infrastructure costs, telemetry data charges and SIM purchase & postage. The adjustment for these items totals \$0.27 million over the four year period.

Catch-up efficiency

The catch-up efficiency applied to operating expenditure for metering scheme management costs is 3.2% per annum.

Continuing efficiency

The continuing efficiency applied to operating expenditure for metering scheme management costs is 0.7% per annum.

Our recommended efficient operating expenditure for metering scheme management for the future period is set out in Table 7-4.

Table 7-4 Recommended efficient operating expenditure for metering scheme management

	2021/22	2022/23	2023/24	2024/25	Total
Proposed operating expenditure	5,523	7,233	8,697	8,238	29,690
Adjustments	-317	-371	-401	-393	-1,481
Proposed expenditure net of adjustments	5,206	6,861	8,296	7,846	28,210

	2021/22	2022/23	2023/24	2024/25	Total
Catch-up efficiency (%)	-3.2%	-6.3%	-9.3%	-12.2%	
Catch-up efficiency (\$)	-167	-432	-771	-957	-2,327
Proposed expenditure net of adjustments and catch-up efficiency	5,039	6,429	7,525	6,889	25,883
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	
Continuing efficiency (\$)	-35	-90	-157	-191	-473
Recommended efficient operating expenditure	5,004	6,340	7,368	6,698	25,410

7.2.2. Capital expenditure

Based on review of WaterNSW's revised submission, we have derived our recommendation of efficient capital expenditure on the following basis:

Adjustments

We have made the following adjustments to proposed metering scheme management costs:

- > Removal of the \$0.328 million that WaterNSW has included in FY22 as a capital allowance to automate upload time for initial site inspection. The reason for this adjustment is because we consider that this expenditure duplicates the WAVE program expenditure. "WaterNSW considers that the current WAVE program does not include for this scope. We note that one of the benefits of WAVE is "Improved customer service from meeting customer expectations that now include web-based transactions, real time visibility of transaction status and water information" and consider that this functionality falls within this scope. We understand that the WAVE program and functionality is under development and there is opportunity for WaterNSW to incorporate this in an integrated and effective way in the wider scope.

Catch-up efficiency

The catch-up efficiency applied to capital expenditure for metering scheme management costs rises from 1.3% in the first year of the future period to 4.5% in the fourth year.

Continuing efficiency

The continuing efficiency applied to capital expenditure for metering scheme management costs is 0.7% per annum.

Our recommended efficient capital expenditure for metering scheme management for the future period is set out in Table 7-5.

Table 7-5 Recommended efficient capital expenditure for metering scheme management

	2021/22	2022/23	2023/24	2024/25	Total
Proposed capital expenditure	1,552	534	466	198	2,750
Adjustments	-328	0	0	0	-328
Proposed expenditure net of adjustments	1,224	534	466	198	2,422
Catch-up efficiency (%)	-1.3%	-2.5%	-3.8%	-4.5%	
Catch-up efficiency (\$)	-15	-13	-17	-9	-55
Proposed expenditure net of adjustments and catch-up efficiency	1,208	521	449	189	2,367
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	
Continuing efficiency (\$)	-8	-7	-9	-5	-30
Recommended efficient capital expenditure	1,200	514	440	184	2,337

7.3 Government owned meter costs

7.3.1. Operating expenditure

Based on our review of WaterNSW's revised submission, we have derived our recommendation of efficient operating expenditure on the following basis:

Adjustments

We have made the following adjustments to the Government owned meter operating costs:

- > An annual adjustment for the reduction of the Consumables for each site visit from \$75 per visit to \$65 per visit based our assessment of the cost build-up for this item

Catch-up efficiency

The catch-up efficiency applied to operating expenditure for the Government owned meters is 3.2% per annum. WaterNSW questioned the applicability of this catch-up efficiency given that it includes a meter service charge component to which we had not previously applied a catch-up efficiency. We do not think that this is a relevant consideration because that review was based on existing activities and an existing contract. We expect that WaterNSW will be able to achieve catch-up efficiencies in delivering the wider and changed activities in meter reform.

Continuing efficiency

The continuing efficiency applied to operating expenditure for Government owned meters is 0.7% per annum.

Our recommended efficient operating expenditure for Government owned meters for the future period is set out in Table 7-6.

Table 7-6 Recommended efficient operating expenditure for Government owned meters

	2021/22	2022/23	2023/24	2024/25	Total
Proposed operating expenditure	2,209	2,923	3,209	3,209	11,550
Adjustments	-17	-25	-28	-28	-98
Proposed expenditure net of adjustments	2,192	2,898	3,181	3,181	11,452
Catch-up efficiency (%)	-3.2%	-6.3%	-9.3%	-12.2%	
Catch-up efficiency (\$)	-70	-183	-296	-388	-936
Proposed expenditure net of adjustments and catch-up efficiency	2,122	2,716	2,885	2,793	10,516
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	0
Continuing efficiency (\$)	-15	-38	-60	-77	-190
Recommended efficient operating expenditure	2,107	2,678	2,825	2,715	10,326

7.3.2. Capital expenditure in the current period

WaterNSW has forecasts \$3.985 million capital expenditure in the current period. To the extent that this expenditure reflects as incurred expenditure for capital expenditure on government meters, we accept this expenditure as prudent and efficient. That is, we do not expect WaterNSW to have allocated a 10% contingency to actual costs as we have adjusted for in the future period.

7.3.3. Capital expenditure in the future period

Based on review of WaterNSW's revised submission, we have derived our recommendation of efficient capital expenditure on the following basis:

Adjustments

We have made the following adjustments to the proposed Government-owned meter capital costs:

- > An annual adjustment in FY22 and FY23 to remove the 10% contingency that WaterNSW has added on to its annual Scheme Administration costs
- > An annual adjustment based on a change from the \$9,000 accuracy testing cost assumed by WaterNSW in its proposal to \$7,750. This reduction in the unit rate is based on our assessment that the adoption of laboratory testing for all accuracy testing is not an efficient approach and a more efficient cost approach at this time would be to conduct 50% of the accuracy testing through laboratory testing and the remaining 50% through the cheaper in situ testing. \$7,750 is the average of the costs for laboratory and in situ testing.

Catch-up efficiency

The catch-up efficiency applied to capital expenditure for Government owned meters costs rises from 1.3% in the first year of the future period to 4.5% in the fourth year.

Continuing efficiency

The continuing efficiency applied to capital expenditure for Government owned meter costs is 0.7% per annum.

Our recommended efficient capital expenditure for Government owned meters for the future period is set out in Table 7-7.

Table 7-7 Recommended efficient capital expenditure for Government owned meters

	2021/22	2022/23	2023/24	2024/25	Total
Proposed capital expenditure	4,009	4,433	1,662	491	10,595
Adjustments	-183	-180	-41	0	-404
Proposed expenditure net of adjustments	3,826	4,253	1,621	491	10,191
Catch-up efficiency (%)	-1.3%	-2.5%	-3.8%	-4.5%	
Catch-up efficiency (\$)	-48	-106	-61	-22	-237
Proposed expenditure net of adjustments and catch-up efficiency	3,778	4,147	1,560	469	9,954
Continuing efficiency (%)	-0.7%	-1.4%	-2.1%	-2.8%	
Continuing efficiency (\$)	-26	-58	-33	-13	-130
Recommended efficient capital expenditure	3,752	4,089	1,528	456	9,824