ATKINS

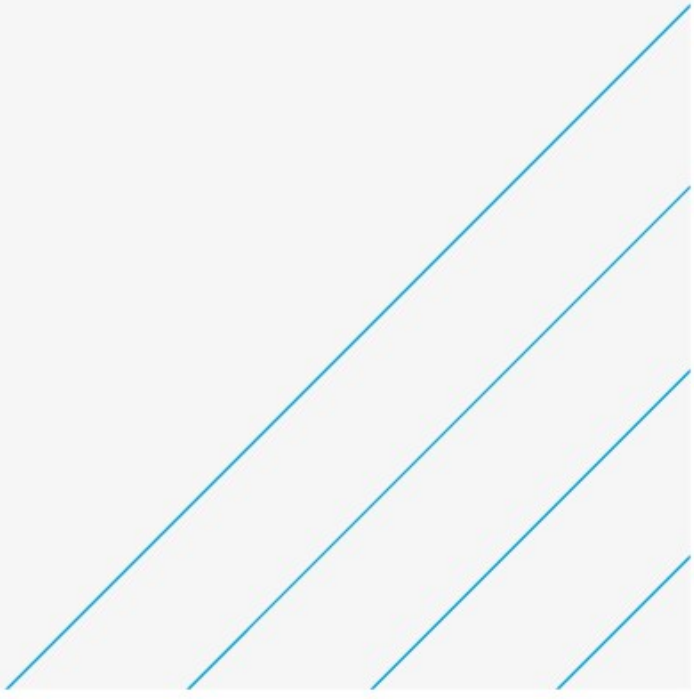
Member of the SNC-Lavalin Group

WaterNSW Greater Sydney Expenditure and Demand Review

Supplementary Report

IPART

08 June 2020



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Rev 3.0	Final Report following WNSW Review	GJ/SJI/JNSJ/SW	SJI	GJ	GJ	08/06/20

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1. Introduction

1.1. Terms of Reference

In June 2019 the Independent Pricing Tribunal of New South Wales (IPART) appointed the Atkins/Cardno consortium to carry out a detailed review of WaterNSW's Greater Sydney operating and capital expenditure and demand. The purpose of this review is to inform the Tribunal's Determination on prices for the upcoming price control period which will apply from 1st July 2020 to 30th June 2024 (2020 determination period).

IPART issued its Draft Determination and Report in March 2020. WaterNSW submitted a response to this Draft Determination in April 2020. We were subsequently asked by IPART to review WaterNSW's response and report our findings to the Tribunal. This report has been prepared in accordance with the Terms of Reference set out in the contract between Atkins/Cardno and IPART dated 5 July 2019.

1.2. WaterNSW submission to IPART

WaterNSW submitted a report to IPART dated 27 April 2020 making representations on a range of issues in the IPART Draft Determination Report. Our Terms of Reference asked us to review those areas of operating and capital expenditure and demand which were challenged by WaterNSW. They are related to:

- Our review methodology and approach;
- Continuing and catch-up efficiency;
- Operating expenditure adjustments;
- Capital expenditure:
  - [redacted] Planning Costs
  - Warragamba Environmental Flows (e-flows)
  - Greater Sydney Resilience Provision
  - Greater Sydney Supply Augmentation
  - Consolidation of Information Management Systems (CIMS)
  - Data Centre
- Asset Lives;
- Allocation of corporate capex across WaterNSW Determinations.

1.3. Review process

We received Water NSW's response submission on 27 April 2020 and that week subsequently held a series of teleconference meetings on specific areas of material importance including for example:

- Efficiency adjustments (catch up & continuing)
- Operating expenditure adjustments;
- Asset lives;
- Change in capitalisation policy;
- Change in corporate capex allocation; and
- Capital expenditure for drought planning, Warragamba Environmental Flows and other schemes.

Atkins/Cardno would like to take the opportunity to thank WaterNSW for making its staff available for the teleconference interviews and for the responses to our requests for further detail received within the short timescales available.

2. Efficiency

2.1. Review process

In arriving at the recommendations in our Draft and Final Reports and this Supplementary Report, we have applied a three-stage approach to reviewing the efficiency and prudence of expenditure, as summarised in Figure 2-1. This methodology is consistent with that applied for other regulatory reviews across Australia.

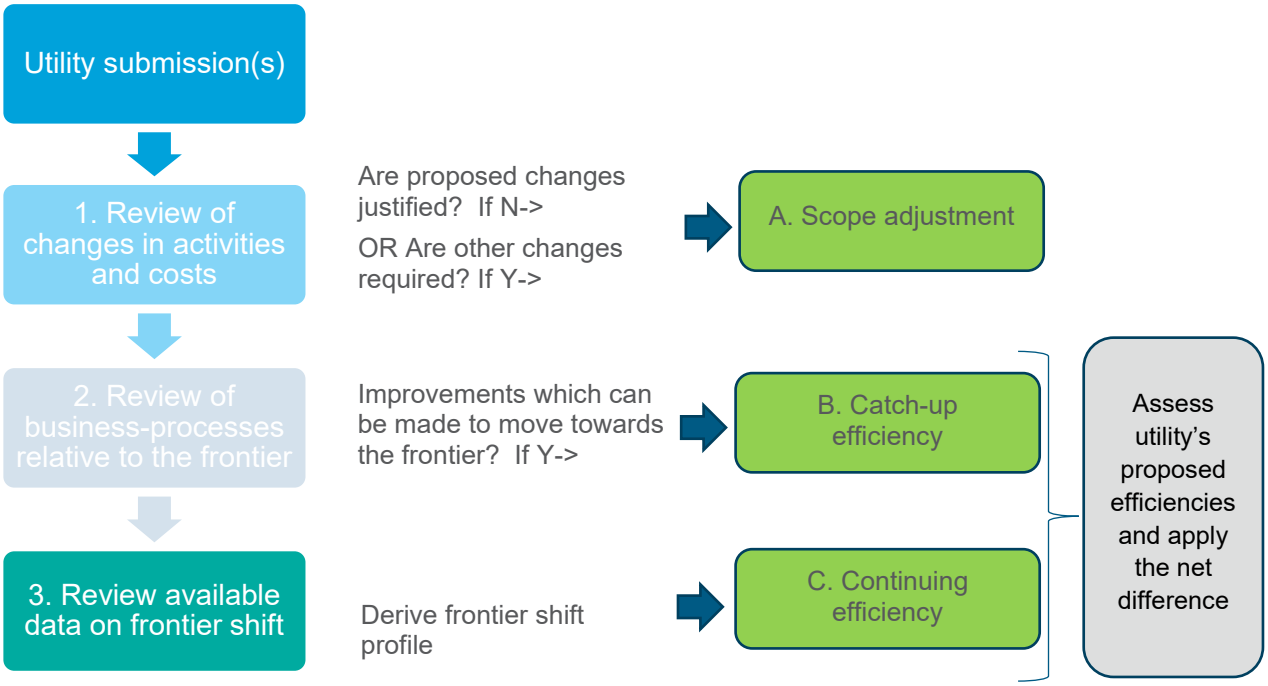

Figure 2-1 Approach to assessing efficiency

1. Review of changes in activities and costs

This step involves identifying inefficiencies within proposed changes to a utility's specific programs and does not apply to base expenditure to avoid double counting with Step 2. These adjustments are clearly distinct from the types of efficiencies identified in Step 2 in that they correct for an imprudent or inefficient proposed change to a utility's activities (and associated costs) rather than the business processes employed by the utility to deliver the utility's services. If the utility's proposed changes in activities (and associated costs) are not efficient, a **scope adjustment** is made.

2. Review of business-processes relative to the frontier

This step identifies the effectiveness of business processes (e.g. decision-making and procurement processes) relative to a benchmark frontier company. Where we identify improvements that can be made relative to the benchmark, a **catch-up adjustment** is made. This encourages the utility to move to the efficiency frontier.

We then recommend a level of catch-up we consider the utility will be able to make in the 2020 determination period.

3. Review available data on frontier shift

We consider a number of data points such as the efficiency gains of well-performing utilities and broader productivity trends (e.g. multi-factor or total factor productivity). This recognises that in competitive markets firms must innovate to achieve continuing efficiency gains over time.

We compare the total efficiency challenge we derive from steps (2) and (3) with the efficiencies applied by the utility in its own submission. We then apply the net difference as an adjustment to the utility's submission.

2.1.1. Does our approach double-count efficiency savings?

WaterNSW has expressed concerns about the risk of double-counting between these categories of reduction:

> *"We have concerns about the use of continuing efficiencies of 0.8% p.a. in addition to scope reductions. We believe that the combination creates a potential risk of double counting of costs."*

We understand the concern. However, we consider that the difference between the categories is clear and consistent. The scope and timing adjustments we have made fall firmly in the first category, relating to additional or new activities. This leads to 'pre-efficiency' expenditure. We have identified a number of areas of improvement WaterNSW can make to catch up with an already efficient utility. We have phased these improvements in over time. This falls into the second category. Finally, we have applied a continuous efficiency to take account of the ongoing improvements that even efficient utilities should be able to make over time, as better, more productive, ways of working emerge.

2.1.2. Is the efficient frontier still applicable?

WaterNSW's response raises the question about whether "the efficient frontier used by the reviewer is still applicable given the downturn currently being experienced in the economy".

We have asked ourselves the same question and recommended deferral of the continuing efficiency challenges, along with our response to comments specific to operating and capital expenditure efficiencies below.

2.2. Operating Expenditure

IPART requires us to assess the efficiency of operating expenditure for the period from 1st July 2016 to 30th June 2020, to the extent necessary to assess the efficiency of the proposed operating expenditure, and; the efficiency of proposed operating expenditure for the period from 1st July 2020 to 30th June 2025.

In our Final Report, we explained that our adjustments to WaterNSW submission to derive a prudent and efficient level of operating expenditure comprises three steps consistent with those set out above:

1. adjustments for expenditure which is not considered prudent or the scope of work is greater than necessary to meet licence requirements;
2. a 'catch-up' adjustment to reflect the need for a utility to reach the efficiency of a frontier company, and;
3. a 'continuing efficiency' (known as Frontier Shift) to reflect the scope for further efficiencies in the future period from new technology and innovation.

In the following sections we explain how and why we have adjusted the WaterNSW expenditure proposals.

2.2.1. Scope adjustments

We have made adjustments to forecast expenditures where we consider these are not justified or prudent. These areas of expenditure are generally where we have examined the reason for significant increases above the 2016 expenditure. We have not made any scope adjustments to base operating activities as efficiency adjustments are applied to this area of expenditure.

Table 2-1 – Operating expenditure scope adjustments

SCOPE ADJUSTMENTS	2016 period expenditure	2020 period	Atkins proposals	
($m 2019/20) year ending June		July proposal	Draft Report	Final Report
CM Source protection	17.16	20.09	-0.9	0
CM Land management	65.10	68.09	-2.60	-1.50

CM Water quality science	5.38	10.00	-2.00	-2.00
Monitoring	43.53	56.37	-4.20	-3.60
Additional Monitoring for SWC	0.00	7.17	-7.17	-4.00
Metro Plan and drought studies	3.94	5.37	-7.17	-1.80
Totals	**135.11**	**167.10**	**-24.04**	**-12.90**

WaterNSW made representations on the scope adjustments presented in our draft report. We reviewed these representations and accepted some of these. We subsequently reduced the value of these scope adjustments from $24.0m to $12.9m in the Final report. Of the six areas of expenditure shown in Table 3.1 below, one was agreed at final report, four were adjusted following representations and a further area was unchanged.

Water NSW has made representations on the IPART draft determination including comments on the final report scope adjustments. We comment on these in Section 4.

Performance in the 2016 Determination

In our Final Report, we found that actual expenditure in the 2016 Determination Period was $45.8m below the determination at the 2019/20 price base. Actual expenditure for the years 2017 to 2019 and forecast for 2020 was derived from the updated SIR submission dated October 2019. The 2016 determination allowance was inflated to the 2019/20 price using indices provided by IPART.

We found that this $45.8m variance was attributable to

(i) capitalisation of overheads ($25.9m);
(ii) a change in apportionment of costs across business units ($6.8m) and
(iii) a reduction in activity levels ($13.1m), particularly in year 2018.

We found that there was little documentation, such as efficiency reduction initiatives, to show that WaterNSW was actively driving efficiency programs through the business.

WaterNSW's, in its response to the Draft Determination report, stated that it was expected to achieve operating cost savings of $46.5m in the period. Year 2020 in the SIR was a forecast and more recent information may explain the $0.7m variance with the analysis in our Final Report. Our analysis is based on the SIR submission, but note this small change in the operating cost savings, which we do not consider significant on the scale of proposed operating expenditure.

The response to the Draft Determination included further explanation of the impact of the change in capitalisation. This resulted in a change to our view on capitalisation which we explain in Section 4.1.7, WaterNSW accepted that there was double counting of $8.4m. We do not accept that this represents the full impact of the change in capitalisation rules on operating expenditure in the 2016 period and recommend that $16.1m is reversed.

We have reviewed the variance analysis based on the adjustment to capitalisation. This suggests that $22.9m of the $45.8m variance can be explained by:

(i) change in capitalisation policy, from 2019, which comprises $16.1m of this variance;
(ii) change in cost apportionment in costs across the business from 2017 of $6.8m;

This leaves a net unexplained variance of $22.9m. WaterNSW did not disaggregate the 2016 allowed expenditure to activities so we were not able to carry out a variance analysis by activity, such as catchment management, dam safety, maintenance, operations and monitoring. What was evident from inspection and analysis was a reduction in activity across several operating areas in 2018, and partly into 2019, followed by increases in year 2020. This suggested, and confirmed by discussion with managers, that there was a dip in activity in the early part of the 2016 period. An example is catchment management activity where there was a significant dip in activity but increasing to 2017 level by year 2020.

With the lack of disaggregated activity cost data for variance analysis, we are not able to confirm that the variance in expenditure is due to efficiencies. From our interviews with managers and review of available data we

concluded that the predominant part of the 'unexplained' $22.9m variance was due to a reduction in activity levels early in the determination period.

For future price reviews we consider it would be useful for WaterNSW to disaggregate the allowed expenditure by activity so a more robust variance analysis can be carried out to capture and demonstrate reasons for variance.

Impact of changes to capitalisation policy

This is dealt with in Section 4.1.7.

Superannuation liability

WaterNSW commented in its response to the draft Determination that continuing superannuation contributions should be excluded from the continuing efficiency calculation as they are fixed costs. We have applied efficiency adjustments to all expenditures, consistent with our approach to other efficiency reviews.

A further comment on increasing liabilities of $1.2m p.a. due to COVID-19 was made by WaterNSW. It is for IPART to consider whether it is appropriate to include this in prices.

2.2.2. Catch-up efficiency

Catch-up efficiency is required of WaterNSW to achieve the performance of a Frontier Company over time. We sought to benchmark its performance against other utilities with similar functions, but the diverse nature of each bulk supply business does not allow us to benchmark with confidence. We also compared WaterNSW's corporate and support functions with other utilities and specifically the IT function. We reported on the scope for catch-up efficiencies in Section 5.6.3 of our Final Report[1]

Our view of the opportunity for catch-up efficiency was based on a review of activities and comparing relative costs with other utilities. For example, we found there were opportunities in:

- the corporate and support functions, where we compare the proportion of this functional expenditure with total expenditure, after reallocating customer service costs to enable comparative analysis;
- the IT function where we reported, also in Section 5.6.3, where expenditure is above the mean of six other water utilities;
- specific business activities such as some areas of catchment management, water operations and security where a reduction in scope was not applied;
- the structure of the business and the technology put in place during the 2016 determination period to drive efficiencies through the business.

It is for WaterNSW to identify and implement catch-up efficiencies based on our high-level comparative view.

WaterNSW commented that:

> *"The 'catch-up' efficiencies for operating expenditures are arbitrary, misplaced and the benchmark analysis to be flawed and applied inconsistently when looking to other IPART decisions. Even accepting IPART's findings and the results of the benchmarking analysis there are still issues concerning the double counting when applying IPART's catch-up efficiencies. Of most concern is the precedent this sets and the impact this approach will have on the business with respect to regulatory certainty in future IPART determinations."*

In response, our methodology of applying catch-up efficiencies has been unchanged from earlier determinations from 2012 and earlier. This follows a logic of identifying where a utility has scope to catch up with a frontier company. We explain the areas where we consider there is scope to catch up although it is up to each business to detail these opportunities.

We explain in Section 3.1 how our scope reductions apply to significant increases in expenditure and Table 2-1 identifies these. The opportunities for catchup efficiency were not included in the scope reductions.

[1] WaterNSW Greater Sydney Expenditure and Demand Review, Final Report, Atkins, March 2020

In our draft report, we proposed a level of catch-up efficiency varying from 1% in 2021 and 2022 to 1.5% from 2023 and 2024. We noted representations on the draft report that more time would be needed to achieve these efficiencies and proposed a level efficiency of 0.9% over the five years to 2025. When we compare this efficiency target with earlier and current determinations of water utilities in Table 2-2, the 0.9% per annum target is within the range of efficiencies previously set or currently being proposed.

Table 2-2 – Operating expenditure: Catchup efficiency in previous determinations (annual and NOT cumulative)

Utility % (not cumulative)	Start year	Year 1	Year 2	Year 3	Year 4	Comments
Sydney Water	2012	1.5	2.0	2.0	2.0	
Hunter Water	2016	0.25	0.25	0.25	0.25	
Sydney Water	2016	0.5	0.75	2.0	2.0	
SDP	2018	0.25	0.25	0.25	0.25	Total 0.75% p.a. efficiency applied
CCC	2019	0.0	0.0	0.0	0.0	IPART recognised that it may not have sufficient capacity to implement in 3-year period
Sydney Water	2020	0	0	0	0	Efficiencies included in submission
Hunter Water	2020	0	0	0	0	0.7% included as adjustments
Water NSW	2020	0.9	0.9	0.9	0.9	

We have not recommended applying an additional catch-up efficiency to Sydney Water's operating expenditure as it proposed a significant level of efficiency within its submission to IPART.

We have applied a catch-up efficiency starting from 2020 and through the determination period. It is up to WaterNSW to identify catch-up opportunities from our report and its own internal reviews at an early stage and implement through the period. It is important that customers do not continue to fund inefficient operations. A utility in the private sector would wish to catch up to the frontier as soon as feasible. We have therefore not made any adjustment to catch-up efficiencies as a result of the COVID-19 pandemic.

We propose that the catch-up efficiency adjustment is applied from July 2020. Table 2-3 shows the operating expenditure catch-up efficiency proposals from draft report to current proposals.

Table 2-3 – Opex catch-up efficiency proposals from draft report to current proposals

($m 2019/20) year ending June	2021	2022	2023	2024	Total	Source
WaterNSW Efficiency proposals	1.0	1.0	1.0	0.9	3.9	July 2019 submission
Atkins Draft Report	0.9	1.8	3.0	4.0	9.7	Atkins draft report Dec 19
Atkins Final Report	0.8	1.7	2.6	3.3	8.4	Atkins final report Mar 20
Revised proposals	0.8	1.7	2.6	3.3	8.4	Atkins supplementary report May 2020

Source: as shown

2.2.3. Continuing efficiency

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

In the Final Report, we applied a cumulative continuing efficiency of 0.8% per annum. The basis of this value was explained in Section 5.7.2., based on data from the Productivity Commission. The multi-factor productivity (MFP) data suggested that a sustained average annual Multi-Factor (MFP) improvement of between 0.6% and 0.8% is achievable in Australia. These results include performance from 1975-76 to 2017-18. They reflect economy-wide performance all industry sectors and all firms in each sector—not just frontier firms. In that sense, this range is conservative. This value is supported by the Ofwat analysis[2] carried out as part of the December 2019 Final Determinations for water utilities in England and Wales.

WaterNSW commented on our final report focusing on the methodology and application of the continuing efficiency to expenditure and the value we have applied. Several comments are common to Sydney Water so we have shared our response in Section 2.1 and below:

(a) MFP Analysis – selection of 0.8%:

"The justification for adopting a frontier shift at the upper end of IPART's proposed range (0.6% to 0.8%) is internally inconsistent with the fundamental operating of the frontier company method"

We are proposing a 0.8% efficiency target which is consistent with both data from the Productivity Commission and the level of continuing efficiency recently set by OFWAT in the UK for water companies in England and Wales, where the determinations have been accepted by most utilities.

(b) MFP Analysis – water specific:

"Economy-wide MFP is not a suitable proxy for water utility productivity despite the energy sector depressing industry-wide estimates"

Many productivity initiatives are common across all businesses and sectors. Taking a wide view of all industries provides a balance of high and low productivity industries. In the UK estimates of productivity in the water sector have been higher than other sectors. There is also scope for further innovation in networks and treatment identified by leading companies.

(c) COVID-19: WaterNSW commented that:

"Economy-wide capital and labour productivity, and investment, are likely to decrease in the short term"

We note from the Impact of COVID-19 that the economy-wide capital and labour productivity, and investment, are likely to decrease in the short term and these factors will impact on productivity. We agree that during the first year that there will be an impact on productivity with new working practices arising from COVID-19. However, we consider that after twelve months a utility should have developed and implemented new work processes and systems. At that point the impact of COVID-19 on productivity should probably be small.

The representations from WaterNSW concern our assumptions and methodology and there is no new information from the company or published data from other sources to influence our findings on continuing efficiency other than the potential impact of the current COVID-19 pandemic.

While the impact of COVID-19 is uncertain in the short run, we propose that the application of the continuing efficiency should be deferred to July 2022.

The impact of this change in efficiency profile is shown in Table 2-4 below. Deferring the implementation of efficiencies by one-year results in a significant reduction in continuing efficiency proposed for the 2020 determination period.

[2] PR19 Final Determination -Securing cost efficiency technical appendix, OFWAT December 2019

2.2.4. Impact on the recommended efficiency

The impact of continuing efficiency assumptions is shown in Table 3.4 below. This includes the deferral in the application of continuing efficiency to July 2022. These efficiency assumptions are applied to operating expenditure in Table 2-4

Table 2-4 - Operating expenditure: Continuing efficiency ($m)

($m 2019/20) year ending June	2021	2022	2023	2024	Total	Source
Atkins Draft Report	0.9	1.8	2.8	3.6	9.1	Atkins draft report Dec 19
Atkins Final Report	0.8	1.5	2.3	2.9	7.5	Atkins final report Mar 20
Revised proposals	0.0	0.8	1.5	2.3	4.6	Atkins supplementary report May 2020

2.3. Capital Expenditure

2.3.1. Capex catch up efficiency

'Catch-up' inefficiency refers to the fact that, because water companies are not operating in a competitive market, they are not compelled, through competitive forces, to be efficient. As such, they may be operating 'behind' the efficiency frontier (either carrying higher costs and/or delivering worse outcomes or performance than would arise in a competitive market). These efficiencies are applied to expenditure reported in the SIR and reflect the impact of recent or new capital planning and procurement initiatives being implemented.

In our Final Report we commented on the following four areas which we identified that WaterNSW should be able to make material improvement to its processes to move towards the efficiency frontier over the 2020 determination period. These are:

(i) Improvements to capital program development, optimisation and prioritisation;
(ii) Improvements to value engineering;
(iii) improvements in cost estimating and the management of contingencies, and;
(iv) The impact of new procurement processes and the likely savings from more effective program management.

WaterNSW have requested that we provide additional substantiation and benchmarks against our recommendations. We calibrated capital process catch up efficiency against utilities that we have previously reviewed both in Australia, UK and other jurisdictions. We acknowledge that there is a degree of subjectivity in the analysis however the relative subjectivity does provide a good test for utilities to catch up to industry peers. Incentive mechanisms which are assessed (rather than merely initially calibrated) on a relative basis typically provide a sharper incentive than absolute targets, in part this is because of the greater reputational incentives of being ranked relative to industry peers. Relative mechanisms are seen as more powerful, especially for companies seeking to catch-up industry peers.

We provide a summary below of comparative and relative efficiency challenge recommendations that we have made for IPART for prior price determination reviews.

Table 2-5 - Comparative catch up efficiency challenges for previous IPART review

Utility Review	Catch-up efficiency applied (cumulative %)			
	Year1	Year2	Year3	Year4
Sydney Water Review (2016)	2.9	5.8	7.2	8.6
Central Coast Council Review (2019)	3.25	7.5	10.75	13
Sydney Water Review (2012)	1.3	4.4	9.6	12
Atkins recommendation at Draft Determination WaterNSW GS (2020)	2.1	5.1	7.7	9.3

The range of catch-up efficiencies applied is comparable to what we recommended for Sydney Water in 2016 and who have demonstrated of achievability of these in both its current and previous determination periods.

By way of an international comparison benchmark, at its Final Determinations for PR19 and PR14 Ofwat set an industry average catch up efficiency challenge of 4.6% and 6.5% respectively for wholesale water services (the most comparable price control).

2.3.1.1. Our revised recommendations

Further to receiving WaterNSW's representations to IPART's draft determination we have looked again our proposed catch-up efficiency recommendations to reflect additional information provided by WaterNSW. We address each of these in turn below.

Additional information provided by WaterNSW to change our view on catch-up efficiency levers

Overall WaterNSW mention that they are:

> "*newly established (2015) and therefore it can be expected that our capital and asset management processes may be at an early stage of maturity and particularly so, when compared to processes at more well-established water utilities.*"

This is indeed the reason why the concept of the catch-up efficiencies is effective. The efficiency levers we discuss below seek to encourage moving towards becoming a more mature utility with improved business processes.

Catch up efficiency lever 1 - Capital Program Development, Optimisation and Prioritisation

We have not changed our view on this lever since our Final Report where we said the following:

> *"Effective capital program development helps to identify synergies, to challenge expenditure and to optimise capital programs by improved targeting of expenditure to areas where it is most required and prioritised according to needs. It usually involves a mixture of culture, incentives, systems and processes. It reflects our view that WaterNSW can improve the way it manages and prioritises expenditure at a program level for delivering optimal outcomes.*
>
> *We consider there to be scope for efficiency savings via the move from a horizontal project lifecycle delivery structure at the previous pricing submission which has now been made more vertical. Previously project managers were engaged with the project throughout the whole lifecycle. Subsequent to an internal WaterNSW review it was recognised that separate skill sets were required within different stages of the project lifecycle. This approach is in the process of being rolled out across the capital delivery structure and we consider this to be a move towards a more effective and efficient capital program delivery.*
>
> *We have not seen evidence that these efficiency savings have been factored into the wider capital expenditure program so recommend that these efficiencies are applied to a proportion of capital expenditure, that is, expenditure which is not allocated towards significant discreet projects.*
>
> *WaterNSW contends that the proposed application of this generic efficiency across the entire capital program is not appropriate due to the significant expenditure proposed on large, discrete infrastructure projects. We agree that there is limited opportunity for realising the types of synergies referred to program optimisation when there is such focus on specific projects. We have applied a gross catch-up efficiency of 0.5% p.a. however we have only applied this to 13% of total capital expenditure giving a net catch up efficiency of 0.065% p.a. across the whole program.*
>
> *The efficiency has been applied in a uniform incremental approach over the 2021-24 period, recognising that change can take time and the capital program in the early years is already partially committed."*

Catch up efficiency lever 2 - Value engineering

We have not changed our view on this lever since our Final Report where we said the following:

> *"Moving from the program level to the scheme-specific level, value engineering looks to reduce the cost of delivering a given scheme by challenging scope and methods and looking for alternative ways to achieve the outcome required.*

We have seen that WaterNSW has carried out some value engineering both internally and through challenging its engineering consultants for a number of its major schemes, particularly where costs have exceeded initial expectations. This efficiency allows for value engineering to become more widespread to ensure that schemes are delivered at an efficient cost for customers."

Catch up efficiency lever 3 - Cost estimating and the management of contingencies

We have moderated our view and recommendation on this efficiency challenge since our Final Report where we said the following:

"WaterNSW's approach to cost estimation is at an early stage of maturity. WaterNSW has a cost estimating framework to guide preparation of cost estimates. It also has unit rates database and has on staff a cost estimator responsible for updating the unit rates database using contract values. The regulatory submission has been based on a mix of internal estimates and external estimates. Business case's for capital project expenditure within WaterNSW all appear to include an expenditure item identified as a "management reserve". This tends to sit over and above contingency and capitalised business unit overhead amounts which are also included above the direct capital costs.

We have applied a catch-up efficiency to reflect the potential for recent cost estimates to fail to capture efficiency improvements and for estimates to routinely include conservative assumptions. This has been phased in so that it does not apply to spend in 2020 where the program is generally already reasonably well advanced."

Our understanding of how the 'management reserve' is used by WaterNSW in its development of forward-looking business cases has now advanced. WaterNSW, through its representation to IPART state that:

"WaterNSW's 'management reserve' constitutes advice to decision makers on a potential upper bound expenditure scenario, and is not included in capital budgets. The 'management reserve' is listed as advice to our business leaders on a potential upper bound of cost risk, and is provided for the purposes of transparency in business cases. It is not included in the project approval, and does not form a part of forecast capital expenditure"

WaterNSW's has changed its approach to how the 'management reserve' is treated between the current and future determination periods, for which they have forecast their expenditure. In the 2016 period for some projects the management reserve was drawn down upon significantly, which led us to believe that these costs were forecast or planned for within the original business case. This was incorrect. All project line items are costed at the p50 level within WaterNSW's pricing submission, the management reserve provides an indication of the additional costs to get to the P90 level for that particular project, which we consider to be a reasonable and transparent approach. There remain opportunities for improvement of this process at a whole of program level. As projects vary significantly in size and expenditure levels there may be opportunities to balance the use of this 'management reserve' throughout the capital program at each pricing submission and expenditure review. We have moderated our view on this catch up efficiency moving from a 4% efficiency challenge to 2% across the four-year 2020 determination period

Catch up efficiency lever 4 - Procurement processes

We have not changed our view on this lever since our Final Report where we said the following:

"Procurement efficiency involves finding better ways to purchase capitalised goods and services. It can involve packaging of works, incentivisation and contractual arrangements, such as alliancing and partnering.

It is evident that WaterNSW has invested in improving its procurement approach and supporting tools and systems. The current framework appears stricter (i.e. less procurement control with the business)

than for comparable agencies. However, this is likely appropriate for WaterNSW's maturing business processes. The improved procurement function should provide greater insight into the overall program and identification of opportunities for efficiencies.

We have therefore applied an additional procurement efficiency adjustment equal to 3% from 2023 onwards. The efficiency is phased in in 2021 reflecting the fact that a significant proportion of capital expenditure in the first year of the next price path may already be procured."

Summary of changes based on new information provided by WaterNSW

In Table 2-6 below we provide a summary of our recommended catch up efficiencies based on additional information provided by WaterNSW within their submission to IPART on its draft determination.

Table 2-6 - Summary of catch up efficiencies based on new information provided by WaterNSW

Efficiency Lever	Cumulative efficiency challenge (%)				Atkins comment
	2021	2022	2023	2024	
Catch-up: capital program development, optimisation and prioritisation	0.065	0.13	0.195	0.26	No change from our Final Report (Feb-20)
Catch-up: value engineering	0.5	1	1.5	2	No change from our Final Report (Feb-20)
Catch-up: cost-estimating	0.5	1	2	2	Changed since our Final Report (Feb-20) due to additional information provided on the use of the management reserve in forecast capital costs
Catch-up: procurement	1	2	3	3	No change from our Final Report (Feb-20)
Total Catch-up efficiency	***2.1***	***4.1***	***6.7***	***7.3***	

Conclusions

Below we summarise our view of total catch up efficiency over each stage of the expenditure review process in Table 2-7 below. We have listened and responded to new information provided by WaterNSW as the process has moved along and our understanding of the business developed.

Table 2-7 - Summary of capex catch up efficiency

Stage of expenditure review	Cumulative efficiency challenge (%)			
	2021	2022	2023	2024
Atkins Draft Report (Dec-19)	3.0	7.0	10.0	12.0
Atkins Final Report (Feb-20)	2.1	5.1	7.7	9.3
Atkins view further to new information provided by WNSW (May-20)	2.1	4.1	6.7	7.3

2.4. Continuing efficiency

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

In line with our recommendations on continuing efficiency for operational expenditure and in our Final Report, we applied a cumulative continuing efficiency of 0.8% per annum for capital expenditure, however since our Final report we have revised how this is applied. We are now applying continuous efficiency using a geometric progression approach as opposed to arithmetic progression as we had done in our Final Report.

There is no new information from WaterNSW or published data to influence our findings on continuing efficiency other than the potential impact of the current Covid-19 pandemic. We recognise that management will be focused on maintaining services during this time of operational constraints and the need to upgrade safe working practices. We therefore propose that the continuing efficiency adjustment is deferred and applied from July 2021.

3. Operating expenditure

3.1. Water NSW Representation

In WaterNSW's response to the draft determination, it made representations in five items of operating expenditure and accepted adjustments to three further items. The items of expenditure, showing adjustments made in our draft and final reports, is shown in Table 3-1.

Table 3-1 - Items of expenditure

SCOPE ADJUSTMENTS	2016 period expenditure	2020 period	Atkins proposals		Water NSW
($m 2019/20) year ending June		July proposal	Draft Report	Final Report	
CM Source protection	17.16	20.09	-0.9	0	Agreed
CM Land management	65.10	68.09	-2.60	-1.50	Disputed
CM Water quality science	5.38	10.00	-2.00	-2.00	Disputed
Monitoring	43.53	56.37	-4.20	-3.60	Disputed
Additional Monitoring for SWC	0.00	7.17	-7.17	-4.00	Disputed
Metro Plan and drought studies	3.94	5.37	-7.17	-1.80	Disputed
Totals	**135.11**	**167.10**	**-24.04**	**-12.90**	**~**

3.2. Land Management

In our Final Report we commented that that proposed increase in expenditure in the 2020 period was due in part to an increase in fire risk management activities through a contract with the Rural Fire Service (RFS). We added that the estimates did not appear to offset the likely savings of in-house costs and the level of contingency appeared high. We made a scope adjustment of $1.5m.

WaterNSW has experienced the impact of the bush fires in the summer of 2019-20 which it states was *the worst bushfire season on record*. We stated in our Final Report that it did not take into account the impact of these bush fires as these were not fully known when the report was prepared. WaterNSW commented that its proposals included the retention of 'in house' teams to work with the RFS. It commented that:

> *… the bushfire impacts in the catchment would have been significantly worse but for the actions of the RFS in collaboration with in-house fire management staff. The new approach ensured that other key parts of the supply (ie the Metropolitan Dams) remained unaffected …*

WaterNSW also commented that the contingency includes for the pass through of costs from the RFS for the hire of helicopters for a range of fire fighting activities which it considers essential for responding to bush fires. While these costs may vary across years, it represents the average cost of this service over a determination period.

We have accepted the explanations provided by WaterNSW and have not made any scope adjustment to the proposed expenditure other than the efficiency challenge applied across all operating expenditure.

3.3. Water quality science

WaterNSW proposed $10m expenditure in the 2020 determination period which was almost double the actual expenditure in the 2016 period. The program of work included a wide range of activities which were not clearly defined or prioritised, not costed in detail or achieved internal approvals. We accepted that the 2016 period was under-resourced but questioned the achievability of the program.

In its representation, WaterNSW explained some of the science program activities and that these are going through the business approval processes. However, we have not seen any further programs and business cases to support this increased level of expenditure.

In the Final Report we supported an increase in expenditure from $5.4m in the 2016 determination period to $8.0m, an increase of nearly 50%, but we found there was insufficient information to justify an increase to $10m. The effect of this adjustment is to extend the science program over five years rather than four-year period. We therefore do not propose any changes to our adjustment.

3.4. Monitoring

WaterNSW proposed $56.4m expenditure in the 2020 determination period which was a 30% increase in actual expenditure in the 2016 period. We took into account a lower level of sampling and testing in some years of the 2016 determination period due to drought conditions and an omission in the original submission. This resulted in a net increase of $8.7m in the 2020 period. In the Final Report we accepted that there was a need for $1.2m p.a. additional monitoring expenditure which was equivalent to a 10% increase in activity,

WaterNSW has made further representations on several issues and events post our Final Report which we detail and comment on.

(i) Allowance for current wetter weather cycle: conditions during the 2020 Determination Period are not likely to represent an 'average' year

We recognise that there have been significant rainfall events following the drought in the current year. However, there is insufficient evidence to suggest that in the medium term that rainfall will be above average in the 2020 determination period to make any adjustment to monitoring expenditure above what we have supported.

(ii) Inflow response: Following the February 2020 rain a detailed monitoring program was developed with Sydney Water and NSW Health

Accepted as this relates to a specific and agreed monitoring program.

(iii) Post fire recovery: a rehabilitation plan is underway which includes some monitoring;

Accepted as this relates to a specific program

(iv) Catchment audit recommendations: the draft report was received in March 2020 and included recommendations for additional monitoring at three sites

Accepted.

The impact on monitoring expenditure is shown in Table 3-2 below.

Table 3-2 - Catchment management - monitoring expenditure

MONITORING EXPENDITURE					
$m 2020 Year ending June	**2017**	**2018**	**2019**	**2020**	**Total**
2016 Determination period					
Reported monitoring expenditure	11.56	8.71	11.91	11.35	43.53
Adjust for abnormal year	0.00	3.00	0.00	0.00	3.00
Add for omission	0.36	0.36	0.36	0.36	1.44
Total	11.92	12.07	12.27	11.71	47.97
Average expenditure over period	11.99	11.99	11.99	11.99	47.97
2020 Determination period					
$m 2020 Year ending June	**2021**	**2022**	**2023**	**2024**	**Total**
WNSW proposal	13.48	14.17	14.61	14.12	56.37
Final Report proposal	12.58	13.27	13.71	13.22	52.77
2020 Determination period - additional monitoring					
Bushfire recovery	0.06	0.00	0.00	0.00	0.06
Inflow event response	0.13	0.09	0.06	0.03	0.31
Draft catchment audit	0.07	0.07	0.07	0.07	0.28
Total additional monitoring	0.26	0.16	0.13	0.10	0.65
Total monitoring	12.83	13.43	13.84	13.32	53.43
Adjustment to WaterNSW proposals	-0.65	-0.74	-0.77	-0.80	-2.95

3.5. Additional Monitoring

WaterNSW proposed $7.2m expenditure in the 2020 determination period for additional sampling and testing costs at the request of Sydney Water.

Request from Sydney Water

We commented in our Final Report that

> *Sydney Water has requested WaterNSW undertake the monitoring as this represents the most efficient way to gather the additional data. WaterNSW understands that Sydney Water has assessed that the resultant efficiencies in filtration plant operations will exceed the cost of the additional monitoring, resulting in lower costs to Sydney Water's customers, as outlined in Sydney Water's pricing proposal. WaterNSW and Sydney Water have agreed that the additional monitoring is subject to the cost being included by IPART in the WaterNSW's next pricing determination.*

We have not seen any submission from Sydney Water to show the benefits and costs of this additional sampling and testing program. It is unclear where the benefits are and how these are passed to Sydney Water customers. Alternatively, if the initiative is for Sydney Water to be more efficient within the determination target expenditure, then this is a matter for the water supply agreement between WaterNSW, as a supplier, and Sydney Water.

Scope of sampling and testing

WaterNSW explained that the proposed expenditure comprised $4.7m direct costs and $2.5m overhead costs. We reviewed the sampling program a second time for the Final Report, in particular for the sites where sampling is carried out by both Sydney Water and WaterNSW. We also asked to what extent WaterNSW was able to include the additional sampling and testing within its current program given that annual expenditure has been increased above the 2016 period. At that time WaterNSW commented that synergies had been considered and only incremental costs proposed.

WaterNSW has advised that there is some duplication of sampling at testing upstream of treatment works sites but added that these costs are small; we are not able to confirm this. It added that there are other monitoring locations for WaterNSW are within the lakes and accessible by boat which are driving the greater cost.

Findings

There are two findings. The main driver for this additional monitoring is a request from Sydney Water where WaterNSW understands the monitoring costs will be offset by efficiencies in filtration plant efficiencies. We are not able to confirm that benefits of these potential efficiencies are passed on to Sydney Water customers. We conclude that this is a matter for WaterNSW and Sydney Water to resolve within the existing water supply agreement.

In addition, we found no reason to change our Final Report conclusion that there is some double counting of sampling and testing at the proposed sites and there is potential to make savings here.

We had accepted the $0.25m sampling and testing costs for the additional Duckmaloi source in our Final Report as this was additional scope.

3.6. Metro Plan

In the Final Report, we commented that while the short-term drought planning work is needed to support the capital projects proposed, the medium to long term planning is business-as-usual. We accept there is increased work to develop plans for the medium term, we question whether the level of additional activity would continue through the whole of the 2020 determination period. On this basis we have reduced the level of expenditure in years 2023 and 2024.

WaterNSW has provided further information in its representation on the draft determination. It commented that

> *the Metropolitan Water Plan (MWP) will be replaced with the Greater Sydney Water Strategy (GSWS) by the DPIE and is expected to be finalised in late 2021. As a result, the GSSA will have to be revised after the GSWS is finalised.*

Expenditure in 2023 is required to deliver components of the GSAA including hydrology, updated demand forecasts and feedback from the recent drought. We have revisited this activity in parallel with the capital expenditure proposals which we discuss in Section 4. We have accepted this additional information and make no adjustment to this expenditure.

WaterNSW also commented that expenditure in 2024 includes investigation of the potential for WaterNSW assets to provide storage capabilities to support renewable technologies. While there is little detail to support this work, it is an important activity and modest cost. It will nonetheless be important to define a deliverable for this expenditure.

3.7. Summary of efficient operating expenditure

We summarise our recommended efficient expenditure in Table 3-3 below. This includes revisions to specific operating expenditure adjustments and the revised efficiency challenge which we summarise in Section 2.

Table 3-3 Summary of efficient operating expenditure

WATERNSW EFFICIENT+B3:G37 LEVEL OF OPERATING EXPENDITURE					
($m 2019/20) year ending June	**2021**	**2022**	**2023**	**2024**	**Total 2021 to 2025**
WATER NSW PROPOSED EXPENDDITURE					
Catchment management	29.22	29.21	30.15	28.19	116.77
Dam safety	8.76	7.95	7.87	7.51	32.09
Water delivery and other operations	27.99	28.90	29.34	29.06	115.28
Maintenance	24.73	24.56	24.59	23.45	97.34
Environmental Planning and Protection	1.07	1.04	1.08	0.87	4.06
Asset Management	1.33	1.30	1.32	1.27	5.21
Other	4.39	4.41	4.42	4.35	17.57
PRE-EFFICIENCY OPERATING EXPENDITURE					
Total pre-efficiency	97.48	97.37	98.77	94.69	388.32
Total used for Atkins assessment	97.48	97.37	98.77	94.69	388.32
WNSW EFFICIENCY PROPOSAL					
Efficiency applied	-0.97	-0.97	-0.99	-0.95	-3.88
WATER NSW PROPOSED EFFICIENT EXPENDITURE					
WaterNSW Efficient expenditure	96.51	96.40	97.78	93.75	384.44
ATKINS SCOPE ADJUSTMENTS					
CM Land management	0.00	0.00	0.00	0.00	0.00
CM Water quality science	-0.50	-0.50	-0.50	-0.50	-2.00
Monitoring	-0.65	-0.74	-0.77	-0.80	-2.95
Additional Monitoring for SWC	-1.00	-1.00	-1.00	-1.00	-4.00
Metro Plan and drought studies	0.00	0.00	0.00	0.00	0.00
Total post-adjustments	95.34	95.14	96.50	92.39	379.37
ATKINS EFFICIENCY ADJUSTMENT					
Catchup efficiency	-0.86	-1.71	-2.61	-3.33	-8.50
Continuing efficiency	0.00	-0.76	-1.53	-2.20	-4.49
Total efficiency adjustments	-0.86	-2.47	-4.14	-5.53	-13.00
Total post efficiency adjustments	94.48	92.66	92.36	86.87	366.37
ATKINS EFFICIENT OPERATING EXPENDITURE					
Catchment management	28.46	27.97	28.39	26.04	110.86
Dam safety	8.68	7.75	7.54	7.07	31.04
Water delivery and other operations	26.10	26.43	26.34	25.56	104.43
Maintenance	24.51	23.94	23.56	22.08	94.09
Environmental Planning and Protection	1.06	1.01	1.03	0.82	3.93
Asset Management	1.31	1.27	1.26	1.19	5.04
Other	4.35	4.30	4.23	4.09	16.98
ATKINS TOTAL EFFICIENT EXPENDITURE					
Total	94.48	92.66	92.36	86.87	366.37

4. Capital expenditure

4.1. Revised capital expenditure recommendations

Below we provide our recommendations in response to WaterNSW's comments on the capital expenditure elements of the Draft Determination.

4.1.1. Drought Planning

In its July 2019 submission, WaterNSW included two drought response schemes related to planning for potential [redacted]. All of the costs related to planning works in 2020 and 2021 with no construction expenditure.

The drought options study, completed in January 2019, defined a suite of measures and trigger levels which WaterNSW used as the basis for all of its drought planning works. [redacted]

In our Final Report, we found that the proposed preliminary planning activity was prudent but recommended an adjustment to the costs, based on an update provided to us in interview by Water NSW. This resulted in a reduction from $25.5M to $21.0M for [redacted] and from $27.5M to $21.7M for [redacted].

In its Response to the Draft Determination, WaterNSW made the case for increased [redacted] planning costs. It sought $74.4M of expenditure, made up of:

- $24.1M for preliminary planning for both [redacted] and [redacted] ($12.1M each); and
- $50.2M for detailed planning for [redacted].

Since the initial submission, Greater Sydney reservoir storage levels have recovered significantly and are above 80% at the time of writing.

WaterNSW has provided a number of confidential extracts to make the case that it should undertake detailed planning for [redacted]. We have only seen extracts and not the full documents underlying them. The extracts do not define what detailed planning would involve except with reference to informing the Greater Sydney Water Strategy. They do nonetheless make it clear that detailed planning is "subject to endorsement".

The cost estimate provided for the detailed planning works[4] includes a number of items which we consider would only be appropriate when a firm commitment is made to proceed with the scheme such as:

[redacted]

The proposed expenditure for detailed planning is significant. At this stage, we find that WaterNSW has not been able to demonstrate that:

- it is likely to be prudent to carry out detailed planning for this particular scheme as compared to other schemes which might be carried forward by other parties, and that both scheme-specific preliminary planning and robust strategic plans support this;
- the proposed scope of works is prudent and appropriate for this stage of commitment to the scheme [redacted];
- the costs are robust and efficient [redacted]

[3] Source: email from WaterNSW 4 May 2020
[4] WaterNSW document [redacted] received 13 May 2020
[5] Document [redacted]

- detailed planning of this nature needs to be carried out on the proposed short timescales i.e. nearly all (98%) expenditure carried out by end 2021-22.

Given that reservoir levels are now significantly in excess of the triggers for construction of drought schemes envisaged in the drought options study (e.g. [redacted] storage for construction of the [redacted] and [redacted] for construction of Avon deepwater), and a comprehensive strategy has not yet been developed for future supply-demand and drought response, we cannot recommend allowing the proposed significant additional expenditure, which would require firm commitment to the scheme in order to be considered prudent.

We have, however, supported the drought planning operating expenditure associated with the Greater Sydney Water Strategy (see Section 3). We also recommend accepting WaterNSW's updated preliminary planning cost estimates and have recommended adjustments to reflect these as outlined below.

[redacted]

[redacted]

4.1.2. Warragamba Environmental Flows (e-flows)

In our Final Report we recommended that significant expenditure on the Warragamba e-flows project should be deferred by two years to commence in 2022. WaterNSW's proposed completion date for the project is December 2024. The recommendation in our Final Report pushes the completion date back to December 2026, outside the 2016 determination period. As a result of this recommendation, there was a downward adjustment of $89.3 million within the 2020 Determination Period in our Final Report. This recommendation was subsequently adjusted in an addendum to our Final Report so that we recommended only a one year deferral of this project.

As noted in our Final Report, the e-flows project has been progressed alongside the project to raise the Warragamba Dam wall to date to allow constraints and opportunities across the two projects to be identified, the projects are functioning separately. Our Final Report recommendation to defer expenditure on the e-flows project was made on the basis of:

- The amount of uncertainty and opposition to the raising of the dam wall leading to more time being required to decouple the e-flows project from the dam wall raising project.
- WaterNSW's corporate focus in coming years being primarily on the drought response.

In its response to IPART's Draft Determination, WaterNSW stated that the phasing for the Warragamba e-flows project in its pricing submission aligns with its current understanding of when the works are likely to proceed. As a result, WaterNSW considers that a re-phasing of the project as recommended in our Final Report may result in a shortfall in capital funding for the project over the pricing period.

We queried WaterNSW regarding the status of both projects. WaterNSW advised (on 1 May 2020) that the timing of raising of the Warragamba Dam project advised by it to the NSW Government Delivery & Performance Committee (DaPCo) at the end of April 2020 is that NSW environmental assessment approval is expected in March 2021 and the Detailed Business Case for the project is expected to be submitted to the NSW government by May 2021 at the latest.

At the time of our Final Report, the Detailed Business Case was stated by WaterNSW as being expected at the end of 2019. Therefore, based on this latest information provided by WaterNSW, the Detailed Business Case timing is now May 2021, 17 months or so later than had been initially anticipated in the information reviewed in the preparation of our report to IPART.

Although our original consideration that WaterNSW's corporate focus in coming years would be primarily on the drought response, and deferring the Warragamba e-flows project would better enable WaterNSW to respond to the drought, the heavy rainfalls experienced at the start of 2020 have made this view less critical. However, we consider that the delays related to the preparation of the Warragamba Dam wall raising Detailed Business Case and subsequent government approvals, in addition to the time it will take to uncouple the e-flows and dam raising projects continue to be relevant, and the delays have lengthened compared with our understanding at the time of preparing the Final Report and Addendum to this report.

As a result, we maintain the recommendation in the addendum to our Final Report to defer the timing of expenditure for the Warragamba e-flows project by one year.

4.1.3. Greater Sydney Resilience Provision

This expenditure refers to the Prospect to Orchard Hills Transfer resilience provision. In our Final Report we recommended that expenditure on this project would not be prudent because there are two existing pipelines with interconnectors already in existence. Within its response to IPART's Draft Determination WaterNSW indicated that we misunderstood the nature of the project and that it will involve, *"configuring part of the existing Warragamba to Prospect pipeline to enable reverse pumping from Prospect. This would occur in the event that the pipeline from Warragamba to the Orchard Hills offtake is taken out of service*".

WaterNSW have additionally commissioned an external firm to review the needs for this project who reiterated that,

> *"If one of the pipelines between Warragamba dam and the Orchard Hills offtake were to fail catastrophically there would be two consequences:*
> *1. The rupture of one pipeline will rapidly release a large volume of water and is likely to cause the failure of the adjacent pipeline; and,*
> *2. There is no alternate supply to the 200,000 people and 12,400 local businesses supplied from Orchard Hills WFP.*
>
> *If one of the pipelines between the Orchard Hills offtake and Prospect were to fail the consequences would be less severe in the short term for the following reasons:*
> *1. Orchard Hills could continue to be supplied from Warragamba;*
> *2. Prospect WFP has at least partial alternate supply from the Upper Canal system; and,*
> *3. There is approximately 30 days supply available from Prospect Reservoir"*

WaterNSW's external consultants concluded that this project would represent prudent expenditure but did not provide any more justification for the need and timing for the project . In its business case WaterNSW indicate that the "*investment would also support the planned infrastructure growth in and around the Orchard Hills supply area such as the new Western Sydney Airport and the Western Sydney Aerotropolis"*

We consider that increasing resilience further within this particular area of the system, which appears to have sufficient resilience already does not appear to be an efficient use of expenditure at the current time. As such we continue to recommend that expenditure for this project would not be prudent at the current time. Having said WaterNSW may wish to revisit this in four years' time if and when growth and development in the Orchard Hills area are further progressed and the need for this project may be greater.

4.1.4. Greater Sydney Supply Augmentation

In our Final Report, we made a $4.2M adjustment to take account of the high level of overheads which were assigned to the scheme in the cost estimate we were shown. We found that the cost estimate provided to us, which was the most recent one made available, and appeared to be the basis of the submission, incorporated overheads equivalent to 33.8% of direct costs, significantly higher than the recent projections provided by WaterNSW of 4.8% for this project.

It its response to the Draft Determination WaterNSW stated that *"the overhead presented in the preliminary business case reflected an outdated overhead estimate"* and the costs in the pricing submission *"do not include any uplift to align the budgeted overhead amount to the overhead estimate calculated as part of the business case developed two years prior.".* It also states that "*the overhead included in WaterNSW's pricing submission for the project is lower than the overhead presented in the preliminary business case".*

We understand the argument being made by WaterNSW in regards to this scheme. However, we consider that if significantly lower overheads have now been allocated to this scheme than assumed at Preliminary Business Case (PBC) then non-overhead costs must have gone up by approximately $4M since the PBC to keep the expenditure in line with the amount approved by the Board in the PBC. We would expect to see some justification or revisiting of business cases for this level of cost variance. We would also expect to see substantiation (e.g. updated cost estimate matching the pricing submission) rather than simple reassurance that the overheads are lower than the PBC.

We have therefore recommended maintaining the adjustment to this line item.

4.1.5. CIMS

WNSW disagrees with the draft report conclusion that the CIMS expenditure for project delay and assurance measures were imprudent and that $0.6 million should be removed from the RAB. WNSW provided justification in its submission which had not been shared with us before. On this basis we accept that the capital expenditure should be reinstated.

4.1.6. ICT data centre costs

In our Final Report we proposed reduction of $300k per year to incentivise efficient behaviour with respect to storage of data. WaterNSW advise that "of the annual $700k investment, $300k is provisioned to fund infrastructure growth with the reminder provisioned for mandatory firmware upgrades and software licensing.".

We have reviewed this in light of the allowance for growth which we had not been made aware of previously. We consider that that the justification and message to manage data in an efficient way still stands but any separate or stand-alone expenditure challenge on this would be negligible as such we accept that the capital expenditure should be reinstated.

4.1.7. Change in capitalisation policy

In our Final Report we recommended a reduction on the RAB for the 2016 determination period of $25.9m due to WaterNSW's change in capitalisation policy in 2018/19. This was to avoid double counting with cost recovery already received for operational expenditure. WaterNSW expressed concerns over our approach to deriving this figure because

> *"the view is based on an assumption that the full amount of actual capitalised overheads in 2018-19 and 2019-20 was previously allowed as operating expenditure in the 2016 Determination. While the increase in the amount of capitalised corporate overheads for the WaterNSW business was driven by the change in allocations, the increase in capitalised Business Unit overheads only partly reflects the change in capitalisation policy.*
>
> *This is because there was also an increase in business unit overheads during the period, which was capitalised but had not been included in the 2016 operating expenditure allowance. This increase in overheads is reflective of the increasing capital intensity of WaterNSW and the Greater Sydney business segment in particular attracting additional overheads."*

WaterNSW has requested that the full amount of $25.9m is reinstated into the RAB. WaterNSW provided additional breakdown detail on this topic within its response to IPART. Table 4 of the WaterNSW response shows

the level of capitalisation for BU overheads and corporate overheads for each year of the 2016 determination period. The change in capitalisation rules occurred from 2019 and applied to the last two years of the 2016 period. WaterNSW outline the impact of capitalising corporate overheads is shown, based on the new and old rules. The analysis shows capitalisation of $9.62m and $17.24m in 2019 and 2020 respectively under the new rules compared with zero amounts using the previous method. There is a general assumption that 60% of these capitalised costs are allocated to Greater Sydney. Applying the same 60% allocation results in capitalisation of $5.8m for 2019 and $10.3m in 2020; a total of $16.1m.

We note that the capitalisation of business units in the analysis show smaller variations between the new and old methods and we have accepted these amounts. WaterNSW commented that some of the capitalisation of corporate overheads relates to ICT costs and additional corporate costs. We consider the same principle applies to ICT costs. We have not seen the case for additional corporate costs but note that the level of corporate expenditure is relatively high when compared with other utilities. We commented on this in our Final Report.

We recognise that there are different views as to how this expenditure has been accounted for and we are not challenging the need for a change in rules; only that the same rules are applied consistently to the allowed and actual expenditure over a determination period. The high-level principle guiding our recommendation is that these expenditures have already been recovered through operating expenditure in the 2016 determination period. Customers would be paying twice both in the short term and longer term if this full expenditure was reinstated.

We have therefore applied the same principle as in our Final Report but have recommended a lower value ($16.1m) of capitalisation is removed from the RAB based on the additional information provided by Water NSW. This is indicated in Table 4-1 below.

4.2. Efficient capital expenditure in the 2016 determination period

Table 4-1 Summary of efficient capital expenditure in the 2016 determination period

WATERNSW PROPOSAL - CAPEX - WATER SERVICE					
($M 2019/20) year ending June	2017	2018	2019	2020	**2017-20 Total**
Existing mandatory standards	16.7	33.5	71.5	84.4	206.0
New mandatory standards	0.9	0.9	9.8	7.5	19.1
Discretionary standards	0.0	0.1	0.4	0.0	0.5
Growth - funded by developer charges	0.0	0.0	0.0	0.0	0.0
Growth - funded by other	0.0	0.0	0.0	21.0	20.9
Government programs	0.0	0.0	0.0	52.7	52.7
Business efficiency	12.2	8.7	5.5	0.0	26.3
Total	29.8	43.2	87.0	165.6	325.6
Atkins/Cardno recommended adjustments for specific programs or projects					
Capitalisation policy RAB adjustment			-5.8	-10.3	-16.1
Supply Augmentation Overhead Adjustment				-3.6	-3.6
[redacted]					
Existing mandatory standards - June 2019 SIR and Nov 2019 AIR reconciliation			-5.0		-5.0
New mandatory standards - June 2019 SIR and Nov 2019 AIR reconciliation			-4.3		-4.3
Discretionary standards - June 2019 SIR and Nov 2019 AIR reconciliation			-0.1		-0.1
Growth - funded by developer charges - June 2019 SIR and Nov 2019 AIR reconciliation			0.0		0.0
Growth - funded by other - June 2019 SIR and Nov 2019 AIR reconciliation			0.0		0.0
Government programs - June 2019 SIR and Nov 2019 AIR reconciliation			0.0		0.0
Business efficiency - June 2019 SIR and Nov 2019 AIR reconciliation			6.7		6.7
Sub-total adjustment			-8.4	-51.5	-59.9
ATKINS/CARDNO ASSESSMENT OF EFFICIENT EXPENDITURE					
($M 2019/20) year ending June	2017	2018	2019	2020	**2017-20 Total**
Existing mandatory standards	16.7	33.5	60.7	74.0	185.0
New mandatory standards	0.9	0.9	5.4	4.3	11.6
Discretionary standards	0.0	0.1	0.3	0.0	0.4
Growth - funded by developer charges	0.0	0.0	0.0	0.0	0.0
Growth - funded by other	0.0	0.0	0.0	17.3	17.4
Government programs	0.0	0.0	0.0	18.4	18.4
Business efficiency	12.2	8.7	12.1	0.0	33.0
Total Efficient Expenditure	29.8	43.2	78.6	114.1	265.7
Separate reporting of [redacted]	0.0	0.0	0.3	14.1	14.4

4.3. Efficient capital expenditure in the 2020 determination period

Table 4-2 Summary of efficient capital expenditure in the 2020 determination period

WATERNSW PROPOSAL - CAPEX - WATER SERVICE							
($M 2019/20) year ending June	2021	2022	2023	2024	2025	2021-24 Total	2021-25 Total
Existing mandatory standards	79.8	69.3	63.6	64.1	44.2	276.8	321.0
New mandatory standards	11.7	10.3	15.6	6.6	0.8	44.2	45.0
Discretionary standards	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by developer charges	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by other	20.9	98.2	108.5	10.5	0.0	238.1	238.1
Government programs	34.8	39.1	29.2	20.3	6.6	123.3	130.0
Business efficiency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	147.2	216.9	216.9	101.5	51.6	682.4	734.0
Atkins/Cardno recommended adjustments for specific programs or projects							
Supply Augmentation Overhead Adjustment	-0.6					-0.6	-0.6
Greater Sydney Resilience Provision	-1.9	-5.7	-5.5	-3.9	-2.0	-17.0	-19.0
Warragamba E-flows	-11.6	-28.2	7.2	6.9	12.2	-25.8	-13.6
Avon Deep Water Access	-18.8	-98.2	-108.5	-10.5	0.0	-236.1	-236.1
DRS K project on hold	-1.9					-1.9	-1.9
[redacted]							
Fleet - error adjustment				0.3	1.3	0.3	1.6
2025 uplift for potential five year determination					28.6	0.0	28.6
Sub-total adjustment	-51.1	-129.6	-106.9	-7.2	40.2	-294.8	-254.6
ADJUSTED EXPENDITURE BEFORE APPLICATION OF EFFICIENCY TARGETS							
Existing mandatory standards	77.8	63.6	58.1	60.6	72.2	260.1	303.7
New mandatory standards	14.2	12.8	15.6	6.6	0.8	49.2	50.0
Discretionary standards	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by developer charges	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by other	1.4	0.0	0.0	0.0	0.0	1.4	1.4
Government programs	2.6	10.8	36.3	27.2	18.9	76.9	95.8
Business efficiency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	96.1	87.2	110.0	94.3	91.8	387.6	479.5
Atkins/Cardno recommended additional capital efficiency targets (beyond those applied by the company)							
Catch-up efficiency (%)	2.07%	4.13%	6.70%	7.26%	7.83%		
Catch-up efficiency ($M)	-1.98	-3.60	-7.37	-6.85	-7.19	-19.8	-27.0
Continuing Efficiency (%)	0.00%	0.80%	1.59%	2.38%	3.16%		
Continuing Efficiency ($M)	0.00	-0.67	-1.64	-2.08	-2.68	-4.4	-7.1
ATKINS/CARDNO ASSESSMENT OF EFFICIENT EXPENDITURE							
($M 2019/20) year ending June	2021	2022	2023	2024	2025	2021-24 Total	2021-25 Total
Existing mandatory standards	76.2	60.5	53.3	54.8	64.4	244.9	309.3
New mandatory standards	13.9	12.2	14.4	6.0	0.7	46.4	47.1
Discretionary standards	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by developer charges	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Growth - funded by other	1.4	0.0	0.0	0.0	0.0	1.4	1.4
Government programs	2.5	10.3	33.4	24.6	16.8	70.8	87.7
Business efficiency	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Efficient Expenditure	94.1	83.0	101.0	85.4	82.0	363.4	445.4
Separate reporting of [redacted]	9.6	0.0	0.0	0.0	0.0	9.6	9.6

4.4. Efficient capital expenditure by asset type

Based on the revised expenditure above we report in Table 4-3 below our amended findings on efficient capital expenditure by service and asset type. We have retained the specific adjustment for the removal of the 'major facilities' asset class as these relate to the proposed expenditure on the [redacted] which we recommended are reported separately.

WaterNSW commented that our approach to prorating the adjustments was not appropriate or reflective of the actual categories for future expenditure. We have updated our approach to account for the pre-efficiency adjustments up front and then applying the weighted post-efficiency adjustment expenditure between the asset classes. This reflects the overall adjustments that we have proposed. We have also adjusted the expenditure to reflect the change in classification of the Warragamba e-flows project from 'dams' to 'pipelines' and 'major mechanical'.

Table 4-3 Recommended efficient capital expenditure by asset type

Asset Class (Capital Expenditure $m)	**Recommended Asset Life**	**2021**	**2022**	**2023**	**2024**	**2025**	**Total 2021-2024**	**Total 2021-2025**
Dams	200	5.35	8.56	13.22	5.00	7.16	32.13	39.29
Other storages	80	1.38	0.00	0.00	0.00	0.30	1.38	1.67
Meters	15	1.22	1.19	1.15	1.15	1.07	4.72	5.79
ICT systems	7	12.03	8.32	7.17	7.96	8.04	35.47	43.52
Vehicles	5	1.43	0.57	0.55	0.83	0.76	3.38	4.15
Buildings	40	9.19	4.54	1.39	1.38	3.74	16.49	20.23
Plant and Machinery	12	1.37	1.03	1.56	0.56	1.00	4.52	5.53
Pipelines	120	5.04	2.68	8.68	6.39	5.05	22.79	27.84
Major mechanical	30	7.42	14.74	26.99	18.20	15.10	67.34	82.44
system controls	10	4.27	2.35	1.43	1.56	2.18	9.62	11.80
roads/ minor civil	30	45.08	38.85	38.62	41.95	37.32	164.50	201.82
5 year inspections	5	0.29	0.15	0.27	0.39	0.25	1.10	1.35
major facilities	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total post-efficient expenditure							363.44	445.42

5. Asset lives

In our Final Report to IPART we concluded that it was appropriate to increase the average asset life proposed by WaterNSW in its submission. In the 2016 Determination, IPART applied a useful life of 60 years for both existing and new assets over the 2016 Determination period. This was based on the assumption that the capital investment profile would not materially change between the two periods.

WaterNSW proposed sixteen asset life categories in its Special Information Return (SIR) plus land, which is not depreciated, with all of its capital projects mapped to one of these categories. Based on these asset lives, the weighted asset life to the new assets that WaterNSW is proposing between 2021 and 2024 is 61.16 years. WaterNSW's data shows an increase in the weighted asset life in 2022 and 2023, driven by the high level of proposed expenditure on pipelines and dams.

Our Final Report recommended the following adjustments to the asset lives proposed by WaterNSW:

(a) An increase in the asset life for dams from 100 years to 200 years
(b) An increase in the asset life for pipelines from 80 years to 120 years
(c) An increase in the asset for ICT assets from six years to ten years.

We have reviewed our proposals in response to the WaterNSW response to the Draft Determination and comment below.

In its submission on IPART's Draft Determination, the NSW Government states:

> *"The Government notes that IPART has extended asset lives for all new dams (from 100 to 200 years), pipelines (80 to 120 years) and ICT (6 to 10 years) resulting in a lower depreciation allowance. This change is a significant increase in previously approved asset lives. We note that these asset lives are well above design standards creating issues with financing and the business case justification for these investments.*
>
> *The Government asks IPART to review its assumed asset lives in line with recognised depreciation allowances for these types of assets."*

In its submission on IPART's Draft Determination, WaterNSW considered that the proposed increase of the asset life for dams from 100 to 200 years had been based on insufficient evidence and incorrect reasoning. This view was based on the acceptance by IPART of the 100-year asset life for dams recommended by WorleyParsons, IPART's consultant in its 2009 Review of Asset Life Determination for SCA. Although there is an inconsistency between the regulatory life and 200-year accounting life, WaterNSW considers that this is not evidence in itself that the regulatory asset life for dams should be 200 years. Although WorleyParsons also stated in the same technical assessment that "Given the nature of SCA's dams, an economic asset life of 200 years may be justified," WaterNSW considers this statement does not provide any evidence as ultimately WorleyParsons determined that the asset life of a dam was 100 years in its review. WaterNSW also cites a number of other sources that apply only a 100-year life for dams for regulatory purposes.

We discussed this issue further with WaterNSW. WaterNSW advised that while it accepts that components of dams may be very long lived in a technical sense, it is inappropriate to assign a very long economic life to these assets due to uncertainties over the value derived from the assets over these long periods. The examples of uncertainty cited by WaterNSW include closure of dams found to be uneconomic to use as supply sources (of which there are a number in Greater Sydney) and the observed need in recent decades for significant upgrades of dams to meet revised safety standards.

We accept that there is uncertainty over the economic value of dams over very long periods. However, we note that similar uncertainties exist for other assets types, e.g. the impact of technical obsolescence on control system assets. We also note that the Greater Sydney dam portfolio has been subject to scrutiny of their value through long-term planning and the recent drought planning. The identification of future water security measures that are higher cost sources than the existing dams suggests that there is little potential on current information for an existing dam to become a stranded asset. Finally, the relatively long life of dam assets compared to other asset classes (whether 100 years or 200 years) means that any potential uncertainty is less material than other potential uncertainties. For these reasons, we maintain our recommendation that an asset life of 200 years be assigned to dam assets.

We also noted in our Final Report that some capital projects that have been categorised as 'Dams' by WaterNSW include a range of different assets with differing asset lives, such as major capital works, pipelines and pumping station. For these projects, we noted that it is important to disaggregate the overall capital costs into its civil, electrical and mechanical asset components in order to derive a reasonable asset value and estimation of depreciation. As a result, we recommended that expenditure on large capital projects should be disaggregated by WaterNSW to its major components.

WaterNSW states in its submission on the Draft Determination that if a 200-year useful life is retained by IPART, all its future projects currently allocated to the dams category should be reallocated to the pipelines category. Revisiting the reallocation of this expenditure is consistent with the recommendation made by us in our Final Report. However, we have not reviewed all of these projects in detail to make an informed decision as to whether it is appropriate that they be classified as pipeline projects. We consider that it is appropriate that the Warragamba E Flows project is allocated as a pipeline based on our review of this project.

The projects classified as "dams" are summarised below.

Table 5-1 - Projects classified as dams

Project Description	Asset Class	Asset life
Warragamba Eflows Construction	Dams	100
Warragamba Eflows Construction	Dams	100
Fitzroy Falls investigation & upgrade works	Dams	100
Fitzroy Falls investigation & upgrade works	Dams	100
Cataract Training Wall Design and Construct	Dams	100
Cataract Training Wall Design and Construct	Dams	100
Wingecaribee Peat barrier upgrade	Dams	100
Wingecaribee Peat barrier upgrade	Dams	100
Dam Safety Post PRA works	Dams	100
GS Post-PRA Dam Safety Upgrade Program	Dams	100
GS Post-PRA Dam Safety Upgrade Program	Dams	100

Regarding pipelines, WaterNSW notes in its submission on the Draft Determination that its pipeline classification includes both pipelines and pump stations. This differs to Sydney Water which applies separate asset lives for pipelines and pump stations. WaterNSW's asset life for pipelines is 80 years and Sydney Water's asset life for pipelines is 140 years. Consistent with the preceding discussion, we consider that increased disaggregation provides a better outcome and therefore we recommend that the 120 years asset life for WaterNSW's pipelines be retained. WaterNSW should then identify the expenditure component for its projects currently classified as pipelines that are more appropriately considered pump stations. We recommend that the component of expenditure for pump stations be assigned a 30 year asset life in line with WaterNSW's "major mechanical" and "major facilities" categories and somewhat higher than the 25 years for the "major electrical category".

The projects classified as pipeline projects are summarised in Table 5-2 below:

Table 5-2 - Pipeline Projects

Project Description	Asset Class	Asset life
Nepean Tunnel Diversion Culvert	Pipelines	80
Blue Mountains Pipeline Renewals	Pipelines	80
Blue Mountains Pipeline Renewals	Pipelines	80
Greater Sydney Resilience Provision	Pipelines	80
Greater Sydney Resilience Provision	Pipelines	80
Greater Sydney DRS K	Pipelines	80
Greater Sydney DRS L	Pipelines	80

Project Description	Asset Class	Asset life
Greater Sydney DRS A	Pipelines	80
Avon Deep Water Access	Pipelines	80
Prospect Pipeline Urgent Works Warragamba Dam	Pipelines	80
Greater Sydney DRS A	Pipelines	80

Regarding our recommended change in the asset life for ICT assets, WaterNSW's submission states that the 10 year life recommended, based on the materiality of large, corporate systems, did not reflect the actual life achieved for many of its ICT assets, particularly hardware. WaterNSW also states that a single asset life for ICT assets doesn't reflect the more granular approach it adopts to assigning lives for ICT assets for its own purposes. We agree that there is benefit in a more granular approach to assigning lives for ICT assets. We recommend that more asset life categories for ICT assets be adopted, in line with those used by Sydney Water.

We have carried out an analysis to derive the weighted average asset life for the IT expenditure proposed for the 2020 period from Table 6-7 of our Final Report and the additional information provided by WaterNSW in Table 18 of its response to the Draft Determination. This analysis is shown in Table 5-3 below.

Table 5-3 Analysis of Weighted Asset Lives for the 2020 determination period

Item	Ref	Greater Sydney $m	Software (%)	Software Asset life	Hardware (%)	Hardware Asset life
ICT Data Centre	WEM093	1,563	50%	7	50%	4
ICT Renewals and Replacement	WEM122	4,122	50%	7	50%	7%
Dam Instrumentation Automation Telemetry	WEM146	6,395			100%	10
ICT Telecommunications	WEM152 & WEM155	1,823	50%	7	50%	5
ICT Operational Technology	WEM153 & WEM158	4,964	30%	7	70%	4
ICT Corporate Systems incl. CIMS	WEM156 & WEM123	3,117	100%	7		
ICT End User Computing & Collaboration	WEM157	2,755	100%	7		
ICT Water Market Systems	WEM159	3,228	100%	7		
ICT Business Process Automation Program	WEM162	905	100%	7		
Geospatial equipment and Software	WEM165	868	50%	7	50%	10
WaterNSW Seismic Monitoring Network	WEM166	785	25%	7	75%	10
ICT Cyber Security	WNM008	960	75%	7	25%	5
ICT Analytics	WNM009	4,361	100%	7		
Plant Scada Upgrade	WEM131	5,623			100%	10
Total		**41,469**	**Weighted asset life (years)**			**7.24**

Source: WaterNSW SIR and 2019 submission. Table 18 of the WaterNSW response to the draft determination

We propose that a weighted asset life, rounded to seven years, is applied to all ICT and electronic assets.

6. Allocation of corporate capex

WaterNSW, in its response to the IPART draft determination, proposes to allocate corporate capital expenditure across its business segments using total expenditure (totex) as the allocator. The current methodology is to apportion this expenditure across business segments using the value of direct salaries. This methodology is consistent with its Cost Allocation Manual (CAM) and was to be applied from 2020. The CAM was based on the IPART Cost Allocation Guide.

Corporate capital expenditure allocated to the Greater Sydney comprises mainly ICT (information systems) with $27.8m[6] over the 2020 period, property $4.5m, and fleet $3.3m. This excludes $12m expenditure which is directly allocated to Greater Sydney (100%) and $1.6m partly allocated (66%).

Using the existing methodology, this equates to $98.6m of shared costs plus those that are directly attributable. The allocation to other businesses is $24.7m to WAMC and $32.61m to Rural Valleys.

In its response to the Draft Determination WaterNSW states that it is proposing to change its allocation method to use total expenditure (totex) in all three businesses. The effect of the proposals is shown in Table 21 of the WaterNSW Response[7]. This results in an increase of $22.5m to Greater Sydney and reductions of $12.4m to WAMC and $10.1m to Rural on Valleys. The table also shows that the revenue impact of this change in methodology is not material to the Greater Sydney and Rural Valleys businesses and a 7.5% reduction in WAMC.

WaterNSW explained that the totex calculation

> *Excludes certain lumpy one-off project expenditure to ensure that overheads are allocated to core steady state projects.*

The methodology is unclear on what projects are included or excluded.

WAMC explains that this proposed change reflects a more holistic approach to the allocation of shared corporate capital expenditure across each of the determinations. It also comments that the allocation method is consistent with the allocation of corporate operating expenditure.

We have reviewed this proposal to change the allocation method and comment that:

(i) Do the ICT systems reflect common services provided to all businesses? For example, does the Water Market System relate directly to the Rural Valleys? Also are customer services systems, mainly used by Rural Valleys allocated directly?

(ii) The allocation methodology should fairly reflect how these assets are used across the businesses. For example, the quantum of the assets – system capacity, building area and vehicles driven by the number of staff using these facilities.

(iii) ICT expenditure is not directly related to the value of capital expenditure.

(iv) The proposed methodology proposes to exclude some large capital projects which would otherwise unduly result in 'lumpy' variation in annual expenditure although it is unclear which projects are included or excluded. Even with these exclusions, annual variations in expenditure are likely, both with Greater Sydney and Rural Valleys (for example major dam improvement works). This is illustrated in the variance in allocated operating expenditure in the 2016 determination period shown in Table 6.3 of the WaterNSW July 2019 pricing proposal[1].

(v) The nature of the businesses is variable with the result that Greater Sydney, with a high level of expenditure may receive an unequitable share of expenditure, which is not necessarily reflective of the drivers for corporate expenditure.

(vi) If ICT was an internal business within a WaterNSW 'Group' structure, it would normally look to charge for its services on the number of users rather than relative expenditure.

For these reasons we do not consider that it is the correct time to alter the approach to corporate capex allocation from the current approach (direct salaries) to totex (capex + opex). Any change in this regard ought to be looked at comprehensively across all of WaterNSW's business units and Determinations and taking account of the real drivers of corporate capex spend.

[6] Pricing proposal for Greater Sydney, WaterNSW July 2019

[7] Response to the IPART Draft Determination, WaterNSW April 2020

For now, we recommend maintaining the allocation based on direct salaries, as it is reasonably transparent and cost reflective. There are a number of components of this that would need to be reviewed in detail across the WaterNSW Determinations before a change in approach is confirmed.

7. Demand projections

7.1. Sydney Water

Sydney Water makes up 99% of WaterNSW's sales volumes. As outlined in our Supplementary Report for Sydney Water, we have not recommended any changes to Sydney Water demand forecasts in our Final Report as a result of responses to the Draft Determination.

This is because, although the scenarios developed by Sydney Water suggest that COVID19 may lead to slightly lower water demand (0.5% in the low impact scenario to 3.2% in the high impact scenario), Sydney Water has made the case that growth projections had increased by approximately 1% compared to those used as the basis for its July 2019 submission, moving the starting point for COVID19 impacts upwards.

Sydney Water expects its largest non-residential potable water users to continue operations. It has highlighted the potential for greater non-residential growth through development in Western Sydney, for example, and through potential onshoring of production capacity. It anticipates that there may be significant transference of personal use from non-residential to residential sectors, which it expects to have zero net effect on total demand.

Whilst clearly highly uncertain, these effects may counterbalance the reductions in demand anticipated as a result of COVID19. Taking account of the potential countervailing effects and given that the low and medium scenario effects are within estimation errors previously experienced, we have not recommended any adjustments to the demand projections in our Final Report. In our Final Report we recommended a 2.2 Gl p.a. adjustment to the projected sales volumes to Sydney Water to take account of potential process losses. This is because WaterNSW used demand forecasts provided by Sydney Water for total system demand at the outlet meters on the filtration plants, whereas, except for Prospect WFP, WaterNSW's revenue meters are on the raw water supply (i.e. inlet) rather than outlet meters.

We estimated these losses by applying 0.7% of capacity based on studies carried out elsewhere.

In its response to the Draft Determination, WaterNSW stated that it considers that this factor should be applied to the total demand at these filtration plants, rather than the capacity, noting that the filtration plants do not always operate at maximum capacity. The suggested a figure for process losses of approximately 0.9 GL p.a.

We have considered this suggestion. However, we have not recommended changing the recommended allowance for process losses as the 0.7% applied comes from two studies of process losses as a percentage of capacity and not of output. To be consistent with how the figure has been derived, it therefore needs to be applied to the capacity and not the total demand on the plants.

7.2. Other customers

We have also not recommended changes to the demand forecasts for Water NSW's other customers.

This is because projected demand levels are similar to historical outturn demand and, applying the same logic as for Sydney Water, we do not have evidence to support significant sustained shifts in total demand as a result of COVID19 relative to the July 19 submission. The only demand projections which are higher than recent levels relate to Wingecarribee Shire Council. However, the rate of growth projected for Wingecarribee is lower than has been experienced in recent years, and we consider the demand projections remain a reasonable estimate.

Graydon Jeal
WS Atkins International Limited
Woodcote Grove
Ashley Road
Epsom
KT18 5BWWoodcote Grove
Ashley Road
Epsom
KT18 5BW

Tel: +44 (0)1372 726140