Keeping Sydney liveable, productive and thriving for a sustainable future

Response to IPART's Draft Report and Determination

27 April 2020

Table of contents

Executive summary 1
IPART's draft decisions and implications for Sydney Water 1
Cost disallowances that IPART should include in prices 6
Mitigating inflation risk to maintain financial stability 10
1 Introduction 13
2 Response to draft decisions 15
2.1 Our position on IPART's draft decisions 15
2.2 Our position on IPART's draft recommendations 23
3 Capital expenditure 24
3.1 Recent events 24
3.2 Draft Determination process 25
3.3 Historical capital expenditure 25
3.4 Forecast capital expenditure 27
4 Operating expenditure 44
4.1 Recent events 44
4.2 Draft Determination process 44
4.3 Forecast operating expenditure 45
5 Notional revenue requirement 59
5.1 Notional revenue requirement under average weather conditions 59
5.2 Notional revenue requirement under drought conditions 61
6 Water prices 68
6.1 Our revised water prices 68
6.2 Different water use prices depending on dam levels 70
6.3 Demand forecasts used to calculate prices 74
6.4 Addressing cost risks 75
6.5 Demand volatility adjustment mechanism (DVAM) 79
6.6 Implementation issues 79
7 Wastewater prices 80
7.3 Wastewater price structures 84
7.4 Customer supported project – Vaucluse Diamond Bay 85
7.5 Implementation issues 85
8 Stormwater prices 87
8.2 Constrained area pricing approach 88
8.3 Low impact stormwater charge 88
8.4 Rouse Hill stormwater charges 88
8.5 Customer supported project – Waterway Health Improvement Program 89
9 Discretionary expenditure 90
9.1 The role of customer engagement 90

9.2 IPART's proposed framework for discretionary expenditure 90
9.3 Sydney Water's proposed discretionary expenditure 93
9.4 Future application of the framework 94

10 Recycled water prices 95
10.1 IPART's recycled water framework 96
10.2 Section 16A recycled water schemes 96
10.3 Sydney Water's proposed prices for mandatory schemes 99
10.4 Sharing of revenue from least-cost recycled water schemes 101
10.5 Recycled water servicing strategies - progress since our proposal 102

11 Other prices 104
11.1 Non-residential trade waste charges 104
11.2 Miscellaneous and ancillary charges 104
11.3 Dishonoured or declined payment and late payment fees 104
11.4 Unfiltered water charges 105
11.5 Unmetered water charges 106
11.6 Joint services arrangements 106

12 Form of regulation 108
12.1 Frontier shift and method 108
12.2 Weighted Average Cost of Capital 117
12.3 Other issues 128

13 Output measures 132
13.1 IPART's draft decision 132
13.2 Calculating the value of water under ELWC 139

14 Impacts of draft prices 143
14.1 Bill impacts of our revised prices 143
14.2 Affordability 149

15 Demand 152
15.1 Forecast customer numbers and water demand 152

16 COVID-19 impacts on Sydney Water 156
16.1 Impact on water demand is uncertain 157
16.2 We are facing a range of immediate operational impacts 157
16.3 We need to maintain investment in growth and other capital expenditure 158
16.4 We have strengthened customer assistance 159
16.5 Implications for IPART's regulatory framework 159

17 Appendices 160
17.1 Appendix A – Corrections and modelling issues 161
17.2 Appendix B – CONFIDENTIAL 169
17.3 Appendix C – CONFIDENTIAL 170
17.4 Appendix D – Further detail on SRMC and LRMC estimates for wastewater 171

17.5 Appendix E – Comments on IPART's proposed framework for discretionary expenditure 178
17.6 Appendix F – Contemporary inflation expectations 182
17.7 Appendix G – Financeability metrics impact of inflation forecasting 187
17.8 Appendix H – Estimating the value of water 189
17.9 Appendix I – COVID-19: Potential customer connections and demand impacts 192

18 Attachments 199
18.1 Attachment 1 – NERA review of IPART/Atkins efficiency assessment 199
18.2 Attachment 2 – NERA inflation forecasting and recovery of efficient debt costs 199

Figures

Figure 0-1 Average residential water and wastewater bill with 200kL/year water use ($2019-20) 5
Figure 3-1 Servicing 'infill' growth with existing capacity 34
Figure 3-2 Greenfield growth often needs new infrastructure 35
Figure 3-3 Actual and forecast dwelling growth by type (Sydney region) 36
Figure 3-4 Stormwater channel collapse 38
Figure 3-5 Water system limits in western Sydney 40
Figure 3-6 Upper Nepean storage (Nepean, Cataract and Cordeax dams) 42
Figure 4-1 Wastewater breakdown jobs compared to long-term monthly median, Jan 13 to Feb 20 51
Figure 5-1 Main changes in NRR ($million, 2019-20) 60
Figure 5-2 Water revenue components under drought conditions (4-year average, $2019-20) 62
Figure 6-1 A composite of drought water usage price ($2019–20) 74
Figure 12-1 Graphical representation of frontier shift correction to opex 116
Figure 13-1 Short-run value of water if we ignored future dam levels 140
Figure 13-2 Will dams rise, fall or stay the same? 141
Figure 13-3 Short-run value of water under different methods 142
Figure 14-1 Estimated water and wastewater bills for average residential customers using 200kL/year under average weather conditions ($/year, $2019–20) 144
Figure 14-2 Estimated water and wastewater bills for average residential customers using 200kL/year in drought ($/year $2019–20) 145
Figure 14-3 Comparison of annual bills based on 200kL/year – major Australian utility groups 149
Figure 14-4 Annual bills as a % of low-income and average income household disposable income 150
Figure 17-1 Investment required in the Bombo Wastewater Network 175
Figure 17-2 Bond breakeven 4-year inflation forecasts 184
Figure 17-3 4-year inflation forecasts from inflation swaps 184
Figure 17-4 IPART forecast vs. actual inflation 185
Figure 17-5 Creating a floor for the short-run value of water 190
Figure 17-6 A hybrid ELWC method for the value of water 191
Figure 17-7 Total daily demand (1 March to 15 April 2020) 192

Tables

Table 3-1 2016-20 actual capital expenditure for RAB - corrected 27
Table 3-2 Summary of recommended capital expenditure reductions 27
Table 3-3 Capital expenditure reductions and our counter proposal ($M, 2019-20) 28
Table 3-4 Critical and non-critical sewer reductions 29
Table 3-5 Applicability of efficiency reductions at this stage 31
Table 3-6 Asset renewal expenditure reductions 37
Table 3-7 ProMac growth capital expenditure profile ($M, 2019-20) 41
The forecast operating costs associated with the growth portion of ProMac are in Table 3-8. Table 3-8 ProMac growth operating expenditure profile ($M, 2019-20) 42
Table 3-9 ProMac total capital expenditure profiles ($M, 2019-20) 43
Table 4-1 Sydney Water's response to IPART's draft opex scope item reductions ($M, 2020-24) 45
Table 4-2 Water – reactive: proposed operating expenditure for 2020-24 46
Table 4-3 Wastewater reactive proposed operating expenditure for the 2020-24 regulatory period 49
Table 4-4 Expected increase in costs resulting from GHD audit recommendations ($2019-20, millions) 51
Table 4-5 IPART adjustments to BOOT operating expenditure ($2019-20, millions) 52
Table 4-6 Recalculated water quality costs for BOOT plants, Sydney Water ($2019-20, millions) 53
Table 4-7 Operating expenditure for electricity 2020-24 ($2019-20, millions) 54
Table 4-8 Expected capital cost of an additional 2% renewable energy target 55
Table 4-9 Recalculated electricity operating expenditure savings for the 2020-24 regulatory period ($2019-20, millions) 56
Table 4-10 Prospect to Macarthur operating expenditure ($2019-20, millions) 57
Table 5-1 Revised "average weather" NRR and comparison to IPART's draft decision ($ million, 2019–20) 61
Table 5-2 Sydney Water's Revised Proposal on tax depreciation 63
Table 5-3 Estimate days of delay with various proportion of customers in financial difficulty 64
Table 5-4 Bulk Water costs and adjustments ($million, 2019–20) 65
Table 5-5 Sydney Water's proposed capital expenditure on finance lease assets ($ million) 67
Table 6-1 Proposed water service and usage charges ($2019–20) 69
Table 6-2 Water demand forecast for water services pricing (ML) 69
Table 6-3 Estimated water bills with various water usage charges ($/year, $2019–20) 72
Table 7-1 Proposed wastewater service and usage charges ($2019–20) 81
Table 8-1 Sydney Water's proposed stormwater drainage charges ($2019-20) 87
Table 12-1 Range of frontier shift after adjustments 113
Table 12-2 Corrected figures in Table 3-2 / Table F-1 in the Draft Report 115
Table 12-3 Corrected figures in Table 4.2 / Table 4.6 in the Draft Report 115
Table 12-4 Internally consistent inflation estimates using IPART's approach ($,2019-20) 119
Table 12-5 Internally inconsistent inflation estimates using IPART's approach ($,2019-20) 119
Table 12-6 Current estimates of expected inflation over four years 121
Table 12-7 Financial impact of inflation forecasting risk for 2020-24 ($2019-20). 122
Table 12-8 Summary of solutions for inflation forecast risk 124
Table 12-9 Current estimates of expected inflation over four years 124
Table 12-10 Financial impact of inflation forecasting risk for 2020-24 ($2019-20). 125
Table 13-1 Output measures on discretionary and drought-related capital projects 133

Table 13-2 Output measures on water conservation 136
Table 14-1 Estimated water and wastewater bills for residential customers with various water consumption in average weather ($/year, nominal) 146
Table 14-2 Estimated water and wastewater bills for residential customers with high water consumption ($/year, $2019-20) 146
Table 14-3 Estimated water and wastewater bills with pensioner concession ($ 2019-20) 147
Table 14-4 Estimated water and wastewater bills for non-residential customers in non-drought conditions ($/year, nominal) 148
Table 15-1 'Base scenario' water demand (ML) 153
Table 15-2 'Drought scenario' water demand (ML) 153
Table 17-1 Contribution of volume to variable operating costs 172
Table 17-2 Scenario 1 (status quo), IPART takes no action, outturn inflation 0.65% 187
Table 17-3: Scenario 2 (option 2b), pure ex post true-up, outturn inflation 0.65% 188
Table 17-4: Scenario 3 (option 2a), hybrid, assumed inflation 1.62%. 188
Table 17-5 Residential customer number forecasts by scenario – water service 195
Table 17-6 Percentage change in residential customer number forecasts by scenario – water Service 195
Table 17-7 Residential customer number forecasts by scenario – wastewater service 195
Table 17-8 Percentage change in residential customer number forecasts by COVID-19 scenario – wastewater service 195
Table 17-9 Residential customer number forecasts by scenario – stormwater service 196
Table 17-10 Percentage change in residential customer number forecasts by scenario – stormwater service 196
Table 17-11 Total potable and unfiltered water demand forecasts by scenario (ML) 197
Table 17-12 Percentage change in total and unfiltered water demand forecasts 197

Executive summary

IPART's draft decisions and implications for Sydney Water

A challenging background for Sydney Water

This is a critical price review for Sydney Water. We are increasing our size and scale to serve a bigger city at a time of financial and economic stress induced by the global pandemic. We have faced a huge amount of change in our operating environment since our last IPART review in 2016. We have rapidly grown our customer base and expect to have connected 150,000 new residential water connections by the end of this regulatory period rather than the 90,000 we forecast in 2015. This represents an 8% growth in households so that we now serve more than 2 million water customers, of which about 1.9 million are residential.[1] However, our environmental performance has declined sharply. In 2019/20, we have so far had 1,161 reportable incidents under the POEO Act.[2] We expect to record 1,400 over the full year, which would be a 60% increase over 2018-19 and a 234% increase over 2017-18.[3] Meanwhile, changing customer and stakeholder demands require us to transform how we operate, to adapt to a more proactive enforcement and monitoring approach by the Environment Protection Authority and to deliver new services and greenfield infrastructure in Western Sydney.

The prospect of prolonged drought increased these challenges, while also bringing into focus the investment required to lay the foundations for more resilient long-term performance. The 2017-20 drought was unparalleled, with 2019 the driest year in New South Wales in recorded history.[4] This led to a sharp rate of deterioration in soil moisture, creating an extraordinary level of leaks and breaks. Outstanding leaks rocketed to more than 1,000 in early 2018, having started to climb in 2017 from an average of about 300 in the preceding years.[5]

While the immediate pressures of drought have abated following the heavy rains in February, low soil moisture and the growth of tree roots into our wastewater pipes have left their mark. We have rapidly expanded our maintenance resources to respond to these heightened service challenges and must maintain these levels until towards the end of the next regulatory period to improve our asset performance. The global pandemic is starting to modestly increase our costs as we adapt our operations and customer service to the new business environment we face since the government restrictions were imposed in March 2020. As an essential service provider, most of our investment is mission-critical, without which our customers and the wider community will be worse off. While working practices are having to adapt to new constraints, the construction industry is not heavily impacted. Our capital investment program is unaffected, and we expect that government

[1] *Sydney Water Price Proposal to IPART* July 2019 Attachment 8, p.20
[2] *Protection of the Environment Operations Act*, 1997
[3] We had POEO Act reportable incidents of 875 and 599 in 2018/19 and 2017/18 respectively.
[4] Rainfall in New South Wales was 250.2mm, 55% below the mean. *Bureau of Meteorology*, press release, 8 January 2020
[5] *Sydney Water Update to our Price Proposal*, November 2019, p.27. Measured as jobs outstanding at the end of each day.

stimulus measures are likely to focus on infrastructure development, with a particular emphasis on Western Sydney.

While it is difficult to anticipate medium-term impacts on the company, the direction of the impact on the wider economy is somewhat clearer. There is, however, no basis today to revise our expenditure plan on the basis of the pandemic and we have no plans to do so at this point. Strict social distancing was only introduced on 23 March 2020, so it is extremely early to assess direct impacts on Sydney Water that might be relevant to price-setting for a four-year term.

Any revised forecasts of demand or new connections would be purely speculative. As the regulatory framework, with the significant exception of operating expenditure, adjusts for most deviations at the end of the period some unexpected cost and revenue impacts can be reviewed later. Our growth funding request is already based on a conservative view of the likely costs.

However, there is one wider economic factor that clearly does have a specific directional impact on Sydney Water and that is the new, lower expectations for inflation. Inflation is on a sharp downward spiral at least for the rest of 2020. This has significant implications for the financial certainty for which Sydney Water can plan from this price review, given that IPART's approach to inflation forecasting applied to the nominal cost of capital exposes us to uncontrollable risk. Even based on pre-pandemic market expectations of future inflation, we are exposed to an under-recovery approaching $1bn over 2020-24, increasing to about an expected $1.3 bn as a result of the pandemic. Since the RBA now expects negative headline inflation for 2020, the first time since the 1960's, this exposure has increased significantly.

Draft Decision leaves customers exposed to insufficient funding

IPART have in some respects recognised the change in the scale and the structure of funding that we require. Without a structural change in water pricing, periods of drought will always put our cash flow under considerable strain. The combination of sharply declining revenues and increasing costs over the last two years has placed an excessive stretch on us in seeking to meet our customer and regulatory obligations. IPART's proposed drought water use price is an important step forward.

However, the evidence of the last two years clearly demonstrates that we have moved on to a new expenditure trajectory, well beyond the financial challenge imposed by drought. This is driven both by the need to renew, extend and innovate our service delivery and maintain the performance of our assets. Despite efficiency savings over this period, we will have spent almost $1bn (12%) more over 2016-20 than was provided for in the last determination.[6] This year alone we are forecast to spend 58%[7] and 15%[8] more than our capex and opex allowances respectively. IPART does not find any material capital expenditure for 2016-20 to have been imprudent, which confirms that this additional investment has been efficiently spent and will benefit customers.[9]

[6] $8,893m is our forecast total expenditure compared to IPART allowances of $7,935m for the period.
[7] $926 million compared to an allowance of $586 million.
[8] $1,040m of core opex is our forecast expenditure for 2019/20 compared to IPART allowance of $907m.
[9] IPART has recommended $27m of capital expenditure over 2016-20 to not be included in our RAB but this includes $15m of digital investment that we exclude ourselves, and $7m from the stormwater RAB that we believe is an error. This leaves $5m as disallowed.

The much bigger Sydney of the 2020s requires us to work with stakeholders to efficiently grow the city's infrastructure, while consistently renewing our assets to ensure we provide good customer service. We do not currently have the financial resources to meet this challenge while meeting our customers' requirements and regulatory obligations. IPART's proposed expenditure and retail prices for 2020-24 leave us almost $1bn short of the revenue that we require.[10] Under these circumstances, we are unable to deliver on our customers' expectations. There is furthermore a serious risk to our financial stability and to our ability to maintain our credit rating.[11]

This revenue deficit is composed of two main components:

- Firstly, $217m to finance total additional expenditure of about $1bn.[12] This includes $992m of additional expenditure that we recommend that IPART reinstate, as shown in the table below. 90% of the $992m is for investment in capital, most of which will be paid for by future customers. This is essential expenditure to improve our environment, service new and existing customers, repair drought-impacted assets, and improve the resilience of our system. We have already eliminated as much cost as we can from our plan, through efficiency savings of $193m in operating expenditure and through an internal challenge process on our investment program. Atkins recognise this has driven substantial efficiencies. The breakdown of this remaining expenditure is as follows:

Expenditure sought for reinstatement	Capex	Opex	Total
($ million, real 2019-20)			
ProMac	453	27	480
Environmental	143		143
Growth	236		236
Water and wastewater reactive maintenance		70	70
BOOT water treatment		7	7
Electricity		4	4
Renewals and other items	52	-	52
Total expenditure	**884**	**108**	**992**

- Secondly, $720m partially corrects for an inconsistency between how IPART forecasts inflation for our cost of capital allowance relative to the amount of inflation we can recover from our customers each year. The current approach penalises Sydney Water when inflation outturns at a lower rate than the 2.3% projected by IPART's inflation forecast. This exposes us to inflation forecast risk. At a time of severe economic contraction and falling inflation expectations, this risk has suddenly become even more material to Sydney Water.

[10] We propose a net revenue requirement of $11.01bn compared to IPART's proposed $10.07bn
[11] If IPART does not accept our recommendations we are likely to spend an extended period with a credit rating of baa3. This is below the level of baa2, the target set by Treasury for state-owned corporations.
[12] Total expenditure of $1,016m includes $868m capital expenditure (post application of efficiency reductions) and $148m operating expenditure (including an additional $45m in projected costs for the SDP and Shoalhaven transfers in 2019-20 and 2020-21). The $217m revenue requirement also includes our proposed expenditure profile for finance lease expenditure. For modelling purposes, we use the 0.8% efficiency factor applied in the Draft Determination.

> Following the global health pandemic, breakeven inflation expectations were for inflation have fallen to about 1% over 2020-24 from recent levels of around 1.7%. Now the likelihood for at least 2020-21 is even lower and possibly negative. This is a risk that we cannot control, that is unrelated to the underlying efficiency and operation of our business. We estimate this risk has already cost us $300m in the current price period.

The inflation forecast risk arises from the use of two different inflation forecasts in determining the real cost of capital allowance compared to what we can recover through prices. It is well-known to IPART and has been addressed by economic regulators, through different mechanisms, across the United Kingdom and Australia.[13] We present a solution that IPART can implement while also having regard to the impact on customer bills. The solution will ensure Sydney Water is able to recover its real cost of capital allowance. Beyond this price review, a more permanent solution is required. In the current economic circumstances, deferring a financial resolution of the issue to 2024 will endanger Sydney Water's financial stability. Under the IPART Act, IPART must have regard to Sydney Water being able provide an appropriate return to its shareholder.[14] We have a legitimate expectation that our price determination will enable us to be financially sustainable.

Sydney Water proposes prices should remain at current levels

The financial consequences of increasing our expenditure and removing our exposure to inflation forecast risk means that IPART must reconsider its proposed 12% reduction in the average residential bill. Instead, consistent with best practice, IPART should follow the principle that allowed revenues and prices should reflect Sydney Water's efficient costs, including an appropriate return on capital invested. It would be inconsistent with IPART's policy to promote competition through cost-reflective price signals if IPART made an exception to this rule when setting the return on capital that we should receive. This would leave us without an appropriate return on capital that reflects the underlying costs of attracting finance and with less financial headroom to manage shocks than we should have, given the risks we manage for our customers (COVID-19 may turn out to be one such shock). Indeed, this would put our credit rating at significant risk and result in our customers paying more than is necessary or efficient for our services over the long-term.

We are not seeking a recovery of all costs relating to this unfortunate issue. By making this adjustment now and avoiding the full deferral of efficient costs until 2024, IPART will be providing continuity in average customer bills, while avoiding bill shock in the short term. Otherwise, even at a time of historically low interest rates, IPART would be effectively endorsing inter-generational inequity, by accumulating costs for essential service provision that will translate into higher future customer bills. In a review in which IPART is focused on improving resource allocation signals and ensuring that customers pay the efficient cost of the water they consume, this would be a perverse outcome.

Under our revised prices, bills would remain steady for an average residential customer in average weather but rise in drought conditions, as illustrated below. Assuming dam levels remain above

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[13] See "*Inflation Forecasting and Recovery of Efficient Debt Costs*" NERA report for Sydney Water, March 2020. See Attachment 2.

[14] IPART Act 1992 Section 15.1(c) stipulates that in making price determinations, the Tribunal should have regard *inter alia* to "*the appropriate return on public sector assets*".

60%, average residential customers would still receive around a 1% bill reduction in 2020-21 (in real terms).

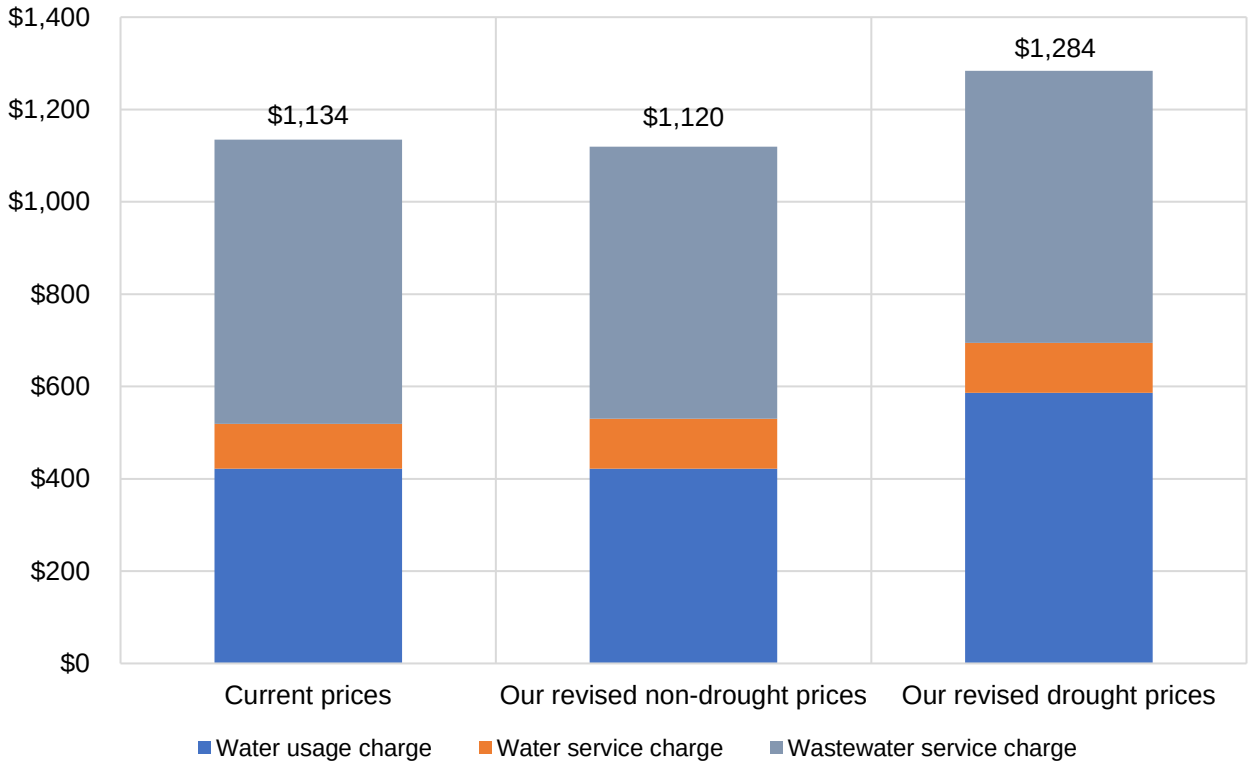

Figure 0-1 Average residential water and wastewater bill with 200kL/year water use ($2019-20)

We appreciate many of our customers will be experiencing financial difficulties at this time. We have extensive customer assistance programs to support customers who experience payment difficulty, and these have been extended as a result of the pandemic. We will continue to work with government to assist customers experiencing financial hardship and pensioners. Our residential bills tend to be the lowest of major Australian water utilities and our bills have a smaller impact on customers' budgets than energy bills.[15]

We propose lower usage prices, limiting costs for large water users

We support retaining the water usage price that we proposed of $2.11/kL. This is lower than the $2.30/kL proposed by IPART, which is outside the range of IPART's long-run marginal cost estimates. IPART's assertion that our long-run marginal cost estimates might be too low is unsupported and our estimates may equally be too high. This is important given the distributional implications of IPART's price structure proposals. We support putting customers more in control of their bills, and a drought water use tariff sends a better signal of the value of water during drought. However, large families, renters and large water-consuming businesses will all pay a much greater share of industry costs at times of drought under IPART's proposals. The case for these customers

[15] *Sydney Water Price Proposal to IPART 2020-24* July 2019. Attachment 5 p.18. 20. NPR data shows Sydney Water had the cheapest household bill according to 2017-18 NPR data and that water represented 4.8% of household disposable income compared to 7.4% for electricity according to 2017-18 data.

to also pay a larger share during average weather has not been sufficiently made to justify this change.

As a result, we propose that the drought water tariff should be $2.93/kL, rather the $3.12/kL, but we accept all the aspects of the drought water tariff design. We support the 60/70 rule as a workable definition for how the distinction between average weather and drought is determined. It may need reviewing in due course as government policy evolves, but we expect it to provide an objective, transparent basis to distinguish between the two modes of pricing until 2024.

On wastewater pricing, having reviewed IPART's position, we maintain that it should adopt our July 2019 proposal to change the wastewater usage charge to $0.61/kL, based on short-run marginal cost. We fully appreciate that it is important to support the development of recycled water and competitive solutions to infrastructure development. However, we are not convinced that an LRMC-based retail wastewater price sends the right signal to meet this objective or is an accurate basis for the retail wastewater usage price. The short-run marginal cost provides a more accurate basis for retail prices, as the primary cost driver is pollutant load rather than volume. There are also a number of complexities that need to be considered before long-run marginal cost pricing can be implemented with confidence. The $1.17/kL that IPART proposes to retain has insufficient supporting evidence. Going forward, we support a broader price structure review, which could encompass wastewater pricing, long-run marginal cost charging and customer preferences for different pricing models.

Cost disallowances that IPART should include in prices

Environmental expenditure

While we are investing in improving our environmental performance, it will take this next regulatory period to make substantial improvement. We need to plan to be compliant at *every* location *all* the time. As a prudent operator, we are committed to cost effective dispatch of our obligations, not compliance at all cost. We have learned from recent experience that we must plan more comprehensively to deliver full compliance, regardless of variations in weather and climate conditions. This is the natural and intended response to a regulatory regime in which fines and criminal prosecutions can apply in the event of breach.

In addition, the Environment Protection Authority (EPA) is being more demanding in its requirements than it has been in the past. It is entitled to take this approach. The EPA adopted a number of recommendations to improve its operations following a review by the NSW Auditor General in 2018. The EPA sometimes takes a different view of minimum requirements that we cannot anticipate. A recent example of this which directly affects our costs is the Pollution Reduction Programs for Cronulla and North Head. The EPA has recently reviewed our implementation plans and concluded that more work had to be included.[16] This direct involvement of the EPA, increasing the scope of work above what we had forecast to ensure compliance, is

[16] Letter from the EPA to Sydney Water, "*Dry Weather Sewage Overflow Abatement Draft Project Plans for North Head and Cronulla Systems*", 7 April 2020

another reason why we cannot accommodate the proposed 10% cut to the overflows to the waterways program (even before the additional efficiency cut described below).

In addition, the Atkins recommendation, supported by IPART, to insist on an 18% reduction to a portion of the critical sewers program is arbitrary and damaging to our incentives to present our most efficient plan to IPART in the next review. The logical response next time would be for us to apply a reduced efficiency reduction uniformly across all programs to avoid the claim that we have excluded some programs from an efficiency challenge.[17] It is not consistent for IPART and Atkins to say that we do not merit a catch-up efficiency factor, because we ran an effective internal efficiency challenge and benchmark well against peer companies,[18] but to then selectively over-ride the results of our process to apply catch-up efficiencies to specific programs.

As Atkins says, "*it is for Sydney Water to decide how it prioritises expenditure within its overall envelope to meet all of its obligations*".[19] Therefore, a catch-up efficiency applied to a portion of the critical sewers program ($84m) is in effect an efficiency catch-up applied to the capex program as a whole. This is not consistent with the IPART's statement that "*Atkins did not recommend a catch-up adjustment*."[20]This is an example of the lack of coherence and double counting in the Atkins efficiency assessment, on which we expand later in this summary. This is one reason that the $84m reduction should be removed and the expenditure reinstated. Other reasons are provided in Chapter 3.

Maintenance expenditure

We disagree with IPART's proposed $70m reduction to Sydney Water's reactive maintenance funding for our water and wastewater networks. This is, essentially, a prudency disallowance as IPART agrees the work should be done but does not believe customers should pay for it. IPART's draft decisions apply a penalty, based on their view that we should have done more planned maintenance and invested in high-cost leak detection technology. Had we invested earlier, IPART suggest we would have been better-placed to more efficiently fix the increased leaks and breaks that we experienced during the drought. However, to have invested for this contingency would have been an imprudent use of customers' money.

Expensive prior investment in early leak detection may have provided some respite in these conditions and a higher level of maintenance over the preceding decade may also have helped. However, customers would have had to pay for this higher level of investment. Additionally, planned maintenance, by its nature, has only a marginal impact in limiting first-time failures, due to challenges in predicting the location of first-time breaks in advance. At best, this is the wisdom of hindsight. In 2015 our service performance was excellent. Had we presented an expensive plan to reduce leakage, or to find and remove tree roots from sewers, IPART would have likely said it was not clear the benefits would outweigh the substantial costs and customers should keep their

[17] By replacing 18% across most programs, with say, 15% across *all* programs we could achieve the same total saving, but with a different distribution.
[18] For example, "*Sydney Water's documented approach to risk management is mature and relatively sophisticated*". Atkins Final Report, p 60.
[19] Atkins Final report p.11
[20] IPART draft determination, p.31

money. Indeed, the Atkins report of 2016 suggested that Sydney Water had the ability to take on greater risk and to potentially reduce maintenance expenditure.[21]

We take full responsibility for the performance of our assets and we make decisions based on the best information available at the time, factoring into our plans as best we can the possible impacts from climate change and rainfall patterns. We should be adequately financed to manage this responsibility. On operating expenditure, Atkins have included $104m of efficiency savings that we have presented that it represents as catch-up efficiency. Atkins note that, in its view, Sydney Water needs "*to adopt technology that most other frontier companies normally use*"[22]to improve leakage performance. So, if our costs are indeed inefficient in this area, it is double counting to require us to make further efficiency savings beyond this $104m of catch-up efficiency that is designed precisely to close the gap to the frontier company.

Prospect South to Macarthur link

IPART should reconsider the removal of the Prospect South to Macarthur (ProMac) link investment following rain that occurred in mid-February 2020. This post-rain decision, which occurred without consultation with Sydney Water, does not recognise that a large proportion of ProMac is required for growth which is occurring now. Without investment, even small increments in demand will place strain on our ability to service customers. For example, in some areas we currently run reservoirs below reserve service levels in high demand periods; other areas are experiencing pressure issues. Parts of the investment related to near-term growth issues have already moved into the delivery phase. Growth-driven investment accounts for $205m of the $453m of funding we ask IPART to reinstate in our plan.

In addition, the recent drought revealed that the southern dams are more exposed to rapid dam depletion than others serving the Sydney region, particularly as that supply area grows. Aggregate dam levels do not provide a reliable guide to local levels of water security. As the city expands to the south west, we should now capitalise on the planning that has been completed and proceed with the full ProMac investment. This will reduce risk from water supply outages and from a potential return to drought for the region, which includes the Western Sydney Aerotropolis.

Growth and expansion in Western Sydney

IPART's recommendation to reduce our general growth forecast assumes that the cost for 2020-24 should be similar to that of 2016-20 because the forecast number of properties to be connected is similar in each period. However, there are multiple drivers of cost for growth expenditure, including the number, location and type of new sources of demand (not just residential properties, but also new business and industry) and the capacity of existing networks in that location. Dwelling forecast growth data demonstrates that a higher proportion of new dwellings will be in greenfield areas over 2020-24 than in 2016-20.[23] There are significant commercial developments planned in greenfield areas in Western Sydney, including the Aerotropolis.

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[21] "*We are of the view that further reduction of planned renewals is unlikely to significantly impact on level of mains breaks or performance against the Operating Licence.*" Atkins Final Report, 2015, p.103
[22] Atkins Final Report p.57
[23] Sydney Housing Supply Market Forecast Report

In greenfield areas, we often need to spend on a combination of land costs, reservoirs, trunk mains and pumping stations to supply new properties with water. This is on top of the usual cost that we need to invest in to supply new properties in infill areas. The situation for new wastewater connections is analogous. This means the costs of growth in greenfield areas are a multiple of the costs to supply infill areas.

Our growth funding request is already based on a conservative view of the likely costs. The NSW Government has indicated a strong commitment to growth in Western Sydney. The expected slowdown in the economy in 2020 is only likely to reinforce this commitment, with recent signals that infrastructure development in Western Sydney will be used as a key catalyst for economic stimulus in response to the pandemic.[24] IPART should therefore reinstate the $236m of growth expenditure it has removed from our plan.

The efficiency assessment

Atkins does not follow a clear framework for reviewing efficiency. It identifies three categories of cost reduction (continuing efficiency, catch-up efficiency, and other reductions due to prudency and scope reduction). These are however not mutually exclusive. It applies both top-down and bottom-up reduction to the same cost categories. This risks overstating the potential for cost efficiencies.

The practical impact of Atkins' lack of a clear theory and transparent classification of efficiency savings is that it double counts the potential for cost savings. For instance, IPART (following Atkins) applies an additional frontier shift target to the forecast cost of capex because it considers Sydney Water's proposed costs do not include savings due to forecast productivity growth. However, cost reductions in our business plan are forecasts of our *total* future costs, including both frontier-shift (continuing efficiency) and catch-up efficiency. As a result, Atkins' forecast double counts frontier shift by requiring us to deliver both the frontier shift embodied in our capex forecasts *and* Atkins' estimate of the frontier shift across the economy as a whole. Atkins claims there is no double counting[25] but this is only because it arbitrarily classifies our capex efficiency savings as all catch-up efficiencies. However, our internal efficiency challenge process was based on bottom-up, forward-looking costs and was designed to take account of all productivity gains that we could achieve.

Atkins suggests its approach is justified in setting "*appropriate efficiency targets*"[26] because this is what Ofwat does. This is a mischaracterisation of Ofwat's approach. Ofwat only applies continuing efficiency (frontier-shift) to capital maintenance, not all capital expenditure. It does so precisely because the allowance for capital maintenance is based on historical costs, whereas the allowance for capital enhancement is based on forecast cost. Therefore, $37m (45%) of the $83m reduction for continuing efficiency should be reinstated in our capex program, with 45% representing the share of our program that we do not classify as related to capital maintenance.

Quantifying the full extent of this double counting is impossible to do given the granularity of the information provided by Atkins and lack of transparency about benchmarking with UK companies

[24] NSW Government media release, *Jobs boost through fast-tracked planning system*, 3 April 2020.
[25] Atkins Final Report p.35
[26] Atkins Final Report, p.35

which Atkins says it has done. However, as the above example demonstrates, each instance of double counting can easily be worth tens of millions of dollars of expenditure that could be used for the benefit of customers. Further examples of the problems with the Atkins efficiency assessment are set out in the report we have commissioned from NERA that is attached to this submission.[27]

There are also serious issues with the Atkins calculation of 0.8% as the correct factor for the annual frontier-shift challenge. Atkins refers to IPART analysis of Australian multi-factor productivity (MFP) data, which found a range of 0.6% to 0.8% is achievable in the long run in Australia. However, Atkins fails to demonstrate that we can achieve higher productivity growth than the Australian economy as a whole (0.7%). It also fails to account for input price inflation (producer price inflation is exceeding general inflation) and to acknowledge that productivity growth has been sluggish in recent years, trending down to 0.4% on an economy wide basis. More recently, the global pandemic is likely to further slow down the scope for productivity improvements. In summary, an efficiency factor of 0.4% to 0.6% appears more defensible than 0.8%. Every 10 basis points is worth approximately $20m in opex and capex to Sydney Water over the period.

Mitigating inflation risk to maintain financial stability

IPART is setting its regulated return on capital at a time of financial stress and economic uncertainty that is extreme, even by the standards of the global financial crisis a decade ago. IPART's uncertainty index has been triggered and we believe IPART should use its discretion to set a weighted average cost of capital that recognises this uncertainty and puts Sydney Water on a stable footing. This is even more important at a time when the combined economic impacts of the pandemic on our business are hard to predict. Falling bond yields have contributed to the 3.2% post-tax real cost of capital that IPART has used in its proposal but this was set before the current economic turbulence took hold.

This uncertainty is now exacerbated by the fact that a long-standing issue with the approach to forecasting inflation in the WACC has suddenly become magnified in importance. This is a challenge for all economic regulators. The AER has, for instance, just postponed the conclusion to its Queensland power networks reviews to await the RBA short-term inflation forecast in May and has announced a review of its inflation methodology.[28] In short, the pandemic has changed a shareholder under-recovery situation into a more dramatic and material issue that could threaten Sydney Water's financial stability and credit rating.

In determining allowed revenues prior to a regulatory period, IPART permits the recovery of a real cost of debt and equity where the real values are derived from a forecast of inflation. Inflation is compensated for by indexation of the regulatory asset base (RAB) at the end of each year with outturn inflation. With two measures of inflation, we are exposed to an inflation forecast risk for which there is no regulatory mechanism. Unless IPART takes action in the final determination,

[27] For further detail see Attachment 1 to this submission, "*Review of IPART/Atkins Efficiency Assessment*" Prepared for Sydney Water by NERA, 20 April 2020

[28] https://www.aer.gov.au/communication/aer-invites-submissions-on-proposal-to-delay-final-decisions-for-sa-power-networks-energex-ergon-energy-directlink-and-jemena-gas-networks; https://www.aer.gov.au/communication/2020-inflation-review

divergences between IPART's forecast inflation and outturn inflation will result in Sydney Water permanently under- or over-recovering nominal debt and equity costs. This will result in windfall losses (or in theory, gains) which are unintended and have no relationship to the operational performance or risk borne by the business. This outcome would be inconsistent with the regulatory objective of setting revenues and prices to recover the efficient costs of the business.

To illustrate the scale of the impact, financial markets have since April been expecting actual inflation to trend at about 0.65% for 2020-24, well below IPART's forecast inflation of 2.3%, indicating a fall below the current level of above 1%. If this occurs, Sydney Water will suffer a loss of over $1.3bn for 2020-24, a shortfall which would call into question our financial sustainability. We are unable to hedge this risk. However, our financial exposure and loss could well be worse. Market expectations of inflation are changing rapidly as the market adapts to new economic circumstances. The range of credible inflation outcomes for the next few years has widened. The Governor of the RBA has indicated that it is quite likely that Australia may this year experience deflation for the first time since the early 1960s.[29] The lower inflation outturns, the greater the potential permanent loss.

IPART must therefore take action to be consistent with its legislative duties under the IPART Act. IPART must have regard to a number of considerations, including the cost of providing the services, the promotion of efficiency and the requirement of an appropriate rate of return. These objectives are not well-served by a price determination that leaves us exposed to a very large variation in our potential cash flow over the period for reasons that are entirely outside our control. As a price-regulated corporation, Sydney Water already bears demand risk, but the variances that can arise due to deviations in demand from forecast are far less than the variance now at stake due to this inflation issue, where the exposure could easily be more than $1bn. The actual exposure will depend on how wide the gap is between IPART's 2.3% and outturn inflation and how large this gap is in each year of the four-year period.

This situation could take our credit rating below the level targeted by the NSW Treasury and below investment grade. This in turn could undermine the confidence of our customers in our ability to meet our regulatory obligations, our ability to raise finance at an efficient cost to support our investment program and our headroom to manage unanticipated financial shocks.

As there is limited time for IPART to consult before our Final Determination, our proposed interim solution is based on crystallising about 50% of the value of the expected shortfall due to the upwardly-biased inflation forecast, taking the market view of inflation reaching 0.65% across the four years as the key reference point. We propose including that value ($720m, including the tax we need to pay) in our net revenue requirement. This value is equivalent to assuming the loss we will make over the period if actual inflation is 1.6%, rather than IPART's 2.3%. The remaining 50% would be trued-up in 2024, leading to a further top-up to the revenue requirement at the start of the next period. In the unlikely event we had over-recovered, the difference would be netted off the revenue requirement.

[29] "*It is quite likely that year-ended headline inflation will turn negative in June. If so, this would be the first time since the early 1960s that the price level has fallen over a full year*". Governor of the RBA, 21 April 2020

Given the current deflationary outlook, this is a conservative attempt to limit the windfall loss that we appear likely to suffer based on IPART's draft determination. It has the benefit of keeping average customer bills stable and avoiding bill shock. We have considered the alternative solution of a full true-up from the start of the next period. However, our financial analysis demonstrates that the risk of the possible drain on our cash flow is significant and not one that we can afford to bear. Furthermore, there are no benefits from deferral of the full cost. It would increase, not reduce, bill shock over the next decade. It would breach the principle of customers paying for costs at the time that they are incurred. It would also suggest that IPART is not committed to consistently applying the principle that water and wastewater bills should reflect their full cost, and that it does not respect the principle that State-Owned Corporations should be regulated on the same basis as private companies.

1 Introduction

We welcome the opportunity to respond to the *Review of prices for Sydney Water Corporation from 1 July 2020 to 30 June 2024 – Draft Report* (the Draft Report) issued by the Independent Pricing and Regulatory Tribunal (IPART) on 24 March 2020, along with the *Draft Determination – Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2020* (the Draft Determination).

IPART's Draft Report sets out its draft decisions on the maximum prices that Sydney Water can charge from 1 July 2020 to 30 June 2024 and the reasons for these decisions. We appreciate the extensive work that has gone into preparing the Draft Report. This is especially relevant given IPART was required to consider not only our initial Price Proposal, but also the changes put forward in our November Update to improve system resilience and respond to drought. While the rainfall in February 2020 has replenished Sydney's dams, our commitment to making Sydney more resilient to climate change and accommodating future growth remains a core component of this response and our priorities moving forward.

This submission sets out our response to the Draft Report and Draft Determination and supporting documents such as the *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report* (the Atkins Final Report) and the *Addendum to Final Report.* IPART has made some significant departures in its Draft Report from current practice and our Proposal. We have tried to assess new approaches and any potential interactions as much as possible within the time available. We would be happy to further discuss any issues with IPART.

In the Executive Summary, we highlight our key concerns with the Draft Report and Determination and our proposed way forward. For simplicity of referencing, we have largely structured the rest of this submission to mimic the structure of IPART's Draft Report:

- **Chapter 2** summarises our response to each draft decision and draft recommendation
- **Chapters 3 and 4** highlight our concerns with IPART's recommended reductions to capital and operating expenditure respectively, and our proposed response
- **Chapter 5** provides updated revenue calculations, based on the expenditure we consider is required to deliver our services and protect the environment, our views on other modelling parameters and the identification of potential errors in the Draft Report
- **Chapters 6 to 8** include our response to IPART's draft water, wastewater and stormwater prices respectively, including IPART's proposed drought water usage price
- **Chapter 9** discusses discretionary expenditure and our views on IPART's proposed framework for to apply in this and future reviews
- **Chapter 10** includes our response to draft decisions on recycled water prices
- **Chapter 11** includes our response to other prices such as trade waste charges, miscellaneous and ancillary charges, dishonoured or declined payment and late payment fees, and unmetered water charges

- **Chapter 12** assesses IPART's draft decisions relating to the frontier company method, weighted average cost of capital (WACC) and other aspects of the regulatory framework, including recommendations on Sydney Water Developer Direct
- **Chapter 13** discusses output measures proposed by IPART and proposes some alternative measures
- **Chapter 14** discusses the impact of our proposed prices on customers
- **Chapter 15** discusses forecast demand and some methodological issues
- **Chapter 16** includes an exploration of the potential impacts of COVID-19 and the uncertainty surrounding these
- **Chapter 17** includes appendices for various chapters including more detailed information:
    - 17.1 Appendix A - Corrections and modelling issues
    - 17.2 Appendix B - CONFIDENTIAL
    - 17.3 Appendix C - CONFIDENTIAL
    - 17.4 Appendix D - Further detail on SRMC and LRMC estimates for wastewater
    - 17.5 Appendix E - Comments on IPART's proposed framework for discretionary expenditure
    - 17.6 Appendix F - Contemporary inflation expectations
    - 17.7 Appendix G - Financeability metrics impact of inflation forecasting
    - 17.8 Appendix H - Estimating the value of water
- **Chapter 18** includes expert reports from NERA Economic Consulting:
    - Attachment 1 - NERA review of IPART/Atkins efficiency assessment
    - Attachment 2 - NERA review of inflation forecasting and recovery of efficient debt costs

2 Response to draft decisions

2.1 Our position on IPART's draft decisions

We outline our general position on IPART's draft decisions (noted in blue text) below. Further detail is provided in the referenced chapters, mainly focusing on areas of difference or uncertainty.

Capital expenditure

1. To set Sydney Water's efficient level of past base capital expenditure at $3,223 million and cost pass-through expenditure at $68 million to be included in the Regulatory Asset Base (RAB) for the 2016-20 determination period.

We **oppose** the $7 million deduction regarding Green Square from the stormwater RAB which appears to have been incorrectly applied. See Chapter 3.

2. To set Sydney Water's efficient level of base capital expenditure at $4,152 million and cost pass-through expenditure at $368 million to be included in the Regulatory Asset Base (RAB) for the 2020-24 determination period.

We **oppose** program reductions relating to environmental improvement, general growth, renewals and the removal of funding for the Prospect-Macarthur 'ProMac' link. See Chapter 3.

We also **oppose** a continuing efficiency factor of 0.8%. See Chapter 12 and Attachment 1.

3. To accept Sydney Water's proposed contingent capital expenditure on network upgrades, to be recovered from prices if a Government decision is made to expand the Sydney Desalination Plant (SDP).

We **accept** the draft decision. See Chapter 3.

4. To set the asset life values noted in the Draft Report when including capital expenditure in the RAB.

We **accept** the methodology used for calculating asset life values.

We set out our position on the asset lives used for finance leases in Appendix B.

Operating expenditure allowances

5. To set the efficient level of Sydney Water's baseline operating expenditure at $3,889 million.

We **oppose** reductions relating to reactive maintenance and a number of other areas. We propose our view of efficient baseline operating expenditure in Chapter 4.

We also **oppose** a continuing efficiency factor of 0.8%. See Chapter 12.

6. To set the efficient level of Sydney Water's cost pass-through operating expenditure at $324 million.

We **accept in principle**, as it meets the intent of Sydney Water's proposal to recover drought-related costs. We question the application of an efficiency factor to these costs, which appears to assume activities will be in place for the full four years. See Chapter 4.

Notional revenue requirement

7. To set the "average weather" Notional Revenue Requirement (NRR) of $10.1 billion.

We propose a revised "average weather" NRR of $11.0 billion in Chapter 5.

8. To set the "drought" NRR of $10.7 billion.

We propose a revised "drought" NRR of $11.6 billion in Chapter 5.

9. For non-regulated revenue:

- To allow Sydney Water to retain the revenue from recycled water scheme where the water displaces some potable water sales, as compensation for lost potable water sales.
- To share with customers 10% of the revenue from the sale of biobanking credits.
- To share with customers 50% of other non-regulated revenue from rentals and recycled water schemes where the water does not displace potable water sales.

We **accept** the first two points but **oppose** sharing of rental and recycled water revenue at 50%, as this weakens the incentive for Sydney Water to pursue economic efficiencies that make customers better off in the long term. See Chapters 5, 10 and 12.

10. To subtract, from the NRR, the revenue from our decisions on the demand volatility adjustment mechanism, trade waste services, miscellaneous services, non-regulated assets, and raw water and bulk water services.

We largely **accept** IPART's approach. Our views on particular aspects we disagree with are explained in Chapter 5.

11. To set prices to recover the total NRR over four years, in present value terms.

We **accept** IPART's approach. See Chapter 5.

12. To calculate the tax allowance using:

- A tax rate of 30%
- Sydney Water's forecast of assets free of charge
- Sydney Water's forecast tax depreciation, adjusted for our decisions on capital expenditure.

We **accept** IPART's approach but have provided updated tax depreciation and other relevant proposed adjustments in Chapter 5.

13. To calculate the return on assets using a WACC of 3.2% and RAB values.

We propose that IPART **applies discretion** to ensure that a real WACC of no less than 3.2% is retained.

We propose an **additional adjustment** to the inflation forecast used in deriving the real WACC to be used. This is needed to ensure we can finance an appropriate level of service and provide a reasonable return to our shareholder (Government) over 2020-24. See Chapter 12.

14. To apply a true-up of annual WACC adjustments at the next Determination.

We **accept** a true-up at the next Determination against actuals but **propose an additional up-front** adjustment for a portion of expected inflation in 2020-24. This will smooth the impact on customer bills and avoid a larger increase in 2024 and beyond. See Chapter 12.

15. To calculate the working capital allowance at $42 million.

We **accept** IPART's approach but ask IPART to reconsider the removal of a seven-day grace period for late payments, particularly in light of expanded customer assistance under the current economic environment. See Chapter 5.

Water prices that respond to drought

16. To set two water usage prices and water sales forecasts based on:

- normal water storage conditions
- a drought scenario.

We **accept** the concept of two water usage prices, see Chapter 6.

17. To adopt the water sales forecasts set out in the Draft Report to set the base and drought water usage prices.

We have used water sales forecasts based on our Proposal, as explained in Chapter 6 and Chapter 15.

18. To set the base water usage price at $2.30/kL (in $2019-20) and hold the price constant over the 2020-24 determination period (excluding inflation).

We **propose** a base water usage price of $2.11/kL ($2019-20) for 2020-24. See Chapter 6.

19. To set the drought water usage price at $3.12/kL (in $2019-20) and hold the price constant over the 2020-24 determination period (excluding inflation).

We accept the concept of a drought water usage price but propose a price of $2.96/kL, due to our proposed lower 'average weather' price and some minor adjustments. See Chapter 6.

20. That the drought water usage price would commence when dam storage levels fall below 60% and remain in place until storage levels reach 70%.

We **accept** IPART's approach, based on administrative simplicity. 60% is a reasonable proxy for the start of most drought response activities under current policy settings. See Chapter 6.

21. To update the water usage price on a quarterly basis based on the final WaterNSW weekly water storage report of the previous quarter.

We **accept** IPART's general approach but ask IPART to address some implementation concerns. See Chapter 6.

22. To remove the current $0.13/kL uplift to the water usage charge if SDP is operating, as the costs of operating SDP would be recovered through the drought water usage price.

We **accept** the draft decision. See Chapter 6.

23. To accept Sydney Water's revised forecasts of customer numbers and set Sydney Water's maximum water service charges at $21.22 ($2019-20) for residential and non-residential customers with a 20mm meter.

We **propose** a service charge of $108.06 ($2019-20), using our base water usage price of $2.11/kL and our revised NRR. See Chapters 5 and 6.

24. To maintain the current SDP service charge cost pass-through as described in the Draft Report.

We **accept** the draft decision, which will allow recovery of residual SDP costs not recovered via the drought water usage price to be passed through to service charges. See Chapter 6.

25. To allow Sydney Water to recover the capital costs for expanding its network, if it is required to accommodate additional flows from an expanded SDP, via an annual cost pass-through to the water service charge.

- The trigger for this pass-through would be the NSW Government deciding to expand the SDP.
- The cost-pass through would apply from the financial year following the decision.
- At the end of the determination period, the depreciated value of these assets would be added to Sydney Water's RAB and recovered through the NRR.

We **accept in principle**, but request IPART clarify in its final decision that operating costs are also included in the cost pass-through via the CCP formula (clause 6, Schedule 1) included in the Draft Determination. See Chapter 6.

26. To maintain a water service charge cost pass-through for Shoalhaven transfers, as described in the Draft Report.

We **accept in principle**, but request IPART clarify in its Final Report how this works in conjunction with the drought water usage price. See Chapter 6.

27. To reduce Sydney Water's NRR by $20.1 million over the 2020-24 determination period, to address the over-recovery of revenue by Sydney Water over the first three years of the 2016-20 determination period, due to a material difference between its forecast and actual water sales.

We **accept the general approach** to applying the demand volatility adjustment mechanism (DVAM) but request IPART reconsider some parameters used. We used a revised figure of

$17.1 million in our NRR calculations. See Chapter 5.

28. At the next determination of Sydney Water prices, to consider an adjustment to Sydney Water's NRR to account for over-recovery or under-recovery of revenue due to material differences between forecast water sales and actual water sales over the four years from 1 July 2019 to 30 June 2023.

- A material difference is defined as +/-5% of forecast revenue from water sales over the four year period.
- Water sales forecasts for 2019-20 are the same as in IPART's 2016 Final Report.
- To use the quarterly water sales forecasts for the 2020-21 to 2022-23 financial years. This would apply the drought, or non-drought, demand forecasts on a quarterly basis, depending on which price and demand forecast is relevant for that quarter.

We **accept in principle**, but request IPART clarify in its Final Report how it proposes to deal with adjustment to revenue when consider applying the materiality calculation over the entire 4-year applicable period. See Chapter 6.

Wastewater prices

29. To maintain the wastewater usage charge at $1.17/kL (in $2019-20).

We **propose** a wastewater usage charge of $0.61/kL ($2019-20). See Chapter 7.

30. To set the residential wastewater service charge at $341 (in $2019-20).

We **propose** a residential wastewater service charge of $497 (in $2019-20). See Chapter 7.

31. To set a deemed residential wastewater usage allowance equal to the wastewater usage charge for 150kL deemed wastewater discharge.

We **accept** the draft decision. See Chapter 7.

32. To set a non-residential wastewater service charge, based on the relevant meter size multiplied by the customer's sewerage discharge factor.

We **accept** the draft decision. See Chapter 7.

33. To remove the discharge allowance component of the wastewater service charge for non-residential customers and instead apply the usage charge to all deemed wastewater discharge.

We **accept** the draft decision. However, we request to delay implementation by one year to allow us to communicate this change to the affected customers. See Chapter 7.

34. To set a minimum charge to a non-residential meter equal to 75% of the 20mm wastewater service charge.

We **propose** the minimum charge for non-residential customers is no less than the standard residential charge as a whole. See Chapter 7.

Stormwater drainage prices

35. To set the stormwater drainage charges as set out in the Draft Report for Sydney Water customers in declared stormwater catchments.

We **propose** the stormwater charges as described in Chapter 8.

36. To set the stormwater drainage charges and land drainage charges for Rouse Hill stormwater customers, as set out in the Draft Report.

We **accept** the draft decision. See Chapter 8**.**

37. To continue to exempt Kellyville Village customers from Rouse Hill stormwater drainage and land drainage charges, and instead charge these customers the declared stormwater catchment drainage charges.

We **accept** the draft decision. We will consider transitioning Kellyville Village customers to Rouse Hill stormwater and land drainage charges at the next price review. See Chapter 8.

Discretionary expenditure

38. To establish a discretionary expenditure framework, to apply to current and future discretionary proposals.

We would **prefer deferring** consideration of a new framework. We note some inconsistencies and potential unintended outcomes in Chapter 9 and Appendix E.

39. To allow Sydney Water to recover the costs of the following projects from its broader customer base:

- For the wastewater ocean outfalls at Vaucluse-Diamond Bay, $62.2 million recovered from all wastewater customers as a meter based charge.
- For the Water Health Improvement Program, $22.2 million recovered from all stormwater customers on a per property basis.

We **accept** the draft decision. See Chapter 9. We identify implementation issues for the charges proposed by IPART and propose a formula change in Chapters 7 and 8.

40. To request that as part of its response to this Draft Report, Sydney Water outlines how it proposes to ensure progress on discretionary projects is communicated effectively to its customers.

We **propose** to communicate progress of customer supported projects via bill insert and/or website but not show as a separate charge on customers' bills. See Chapter 9.

41. To request that Sydney Water include a business case, proposed output measures and customer engagement strategies in future discretionary proposals.

We **accept** the draft decision. See Chapter 9.

Recycled water prices

42. To continue to defer setting prices for Sydney Water's recycled water schemes.

We **accept** the draft decision. We request further clarification of this decision and note we will adjust prices if and when required to ensure they continue to meet IPART's pricing principles. See Chapter 10.

43. To treat forecast revenue from least-cost recycled water schemes by:

- For schemes where recycled water displaces potable water sales, allowing the utility to retain the revenue.
- For schemes where recycled water does not displace potable water sales, sharing the revenue on a 50:50 ratio with the broader customer base.

We **accept** the first point in the draft decision, subject to clarification on the scope of revenue that can be retained, and **oppose** the second (see draft decision 9). See Chapter 10.

Other prices

44. To set the maximum trade waste prices as listed in the Draft Report.

We **accept** the draft decision. See Chapter 11.

45. To set the maximum prices for miscellaneous and ancillary services to apply from 1 July 2020 as listed in the Draft Report.

We **accept** the draft decision. See Chapter 11.

46. To set the maximum price for late payments as set out in the Draft Report.

We **accept** the draft decision. We request that IPART confirm and republish terms and conditions for late payment fees in their Final Determination. See Chapter 11.

47. To set the maximum price for dishonored or decline payments as set out in the Draft Report.

We **accept** the draft decision. See Chapter 11.

48. To set the maximum unfiltered usage charge at $0.30/kL less than the usage charge for potable water.

We **accept** the draft decision. See Chapter 11.

49. To maintain the current approach to charging unmetered properties, which includes:

- A water service charge equal to the residential service charge.
- 180kL of deemed water usage per year (i.e., 180 kL times the water usage prices).

We **accept** the draft decision. See Chapter 11.

50. That when a property is temporarily unmetered, for the unmetered period it should be charged:

- A water service charge equal to the residential service charge, plus
- The water usage price applied to the average daily usage over the previous twelve months, specific to that property, multiplied by the number of days that the property is unmetered, or
- Zero if average daily usage data is unavailable.

We **oppose** the draft decision, as it is overly complex, impractical and may lead to unintended outcomes. We propose retaining current practice for unmetered properties. See Chapter 11.

51. To defer regulation of SWDD construction services.

We **accept** the draft decision. See Chapter 12.

Form of regulation

52. To set a 4-year determination period.

We **accept** the draft decision. See Chapter 12.

53. To set a maximum price cap.

We **accept** the draft decision. See Chapter 12.

54. To maintain the efficiency carry-over mechanism for operating expenditure for the 2020-24 determination period.

We **accept** the draft decision. See Chapter 12.

55. To maintain an option to enter unregulated pricing agreements with large non-residential customers (defined as those with annual water consumptions greater than 7.3 ML).

We **accept** the draft decision. See Chapter 12.

Output measures

56. To apply the output measures on discretionary and drought-related capital projects as listed in the Draft Report, for reporting to IPART in the pricing proposal for the next Determination.

We **accept in principle**. We **propose** some changes to make measures more meaningful and less burdensome to report on. See Chapter 13.

57. To apply the output measures on water conservation, leakage and water recycling detailed in the Draft Report, for quarterly reporting to IPART.

We **accept in principle** but note concerns with frequency of reporting for some measures and have proposed some changes. We do not agree with a proposed target measure for the Rosehill-Camellia scheme, which is run by an external party. See Chapter 13.

2.2 Our position on IPART's draft recommendations

We outline our general position on IPART's draft recommendations below. Further detail is provided in Chapter 12.

IPART's recommendations on Sydney Water Developer Direct

1. That Sydney Water

- Review the Engineering Competency Requirements and require SWDD to meet the same standards as WSCs.
- Review its quality management system and provide evidence that it satisfies the same criteria applied to prospective WSCs through the tender process.
- Revisit its assumptions for the allocation of staff time to WDD activities and increase the utilisation rate it applies to the cost build-up.
- Formalise a level of service agreement between itself and SWDD for the provision of SWDD software.
- Adjust the SWDD pricing model to base pricing on a rolling average number of applications as opposed to an anticipated flat rate.

We **accept** IPART's recommendations but consider IPART has applied an incorrect interpretation of "commercial rate of return". We also reject any suggestions of uncompetitive behaviour. See Chapter 12.

3 Capital expenditure

Key messages

- Over 2020-24, we proposed capital expenditure of $5,087 million to service existing and new customer demand while maintaining our assets.
- IPART's Draft Report proposes to reduce this by 18%, made up of program specific reductions of $853 million (net of $116 million of increases) with a further $83 million reduction from 'continuing efficiency' factors.
- The largest single item removed is the Prospect South to Macarthur (ProMac) link, removed immediately after the February 2020 rainfall. This decision does not recognise the large proportion of ProMac for servicing growth which is occurring now and which is exacerbating system limitations.
- We are especially concerned that $173 million of reductions was removed from programs which are essential to improving environmental performance by reducing wastewater overflows.
- We are seeking the reinstatement of $884 million of capital expenditure, relating to critical wastewater network programs, the ProMac link, growth investment and asset renewals.
- Our position on continuing efficiency factors is outlined in Chapter 12.
- It is too early to forecast the potential impact of COVID-19 on our capital programs. In any event, we note that differences between forecast and actual capital expenditure will be reviewed by IPART at the next price determination.

3.1 Recent events

The recent emergence of the COVID-19 pandemic will likely have ongoing economic impacts; however, there is a high level of uncertainty around the magnitude, type and scope of these impacts. It is too early to forecast the impact on our capital and operating expenditure forecasts. To date, our capex program is proceeding as planned.

Possible medium-term impacts could include:

- higher costs associated with modifying work practices to protect contractor and operational staff
- cost increases associated with sourcing locally manufactured goods, equipment and materials
- changes in development rates but also changes in the type of development which occurs.

For example, there may be a short- to medium-term impact on residential growth rates, but there is already an increased interest in industrial development (as firms seek to bring production capacity back onshore quickly). Signs from government indicate that development in Western Sydney will be encouraged to proceed, and the construction industry has not been restricted from trading.

We discuss the uncertainty around the impacts of COVID-19 further in Chapter 16.

3.2 Draft Determination process

IPART's recommended reductions are in line with those of its consultant Atkins.[30] Atkins reviewed our original forecast expenditure in our Price Proposal and the November 2019 Update. Atkins' initial draft report was provided to us for comment in December 2019. Our comments on draft recommendations emphasised the criticality of the environmental and asset renewal programs. The reviewers understood the additional information provided and reduced some expenditure cuts in these areas. We also commented on growth expenditure reductions but these were not changed.

Initially, Atkins' final report recommended a capital expenditure reduction of $430 million in total, including the removal of $62 million of ProMac.[31] However, the addendum[32] written soon after the February 2020 rain removed the remainder of ProMac expenditure without consultation.[33]

Atkins' final report recognises our progress since 2016, including:

- the improved processes which underpin our capital forecast
- that we applied significant top down efficiency challenges to many programs, demonstrating a more mature approach to risk.

This feedback is welcome but is at odds with some aspects of the recommended program-specific reductions. In particular, we did not apply a top down efficiency reduction to programs where future costs were uncertain but considered more likely to increase. In effect, the efficiency challenge was inherent in holding ourselves to a cost forecast at the lower end of expected outcomes. Despite this deliberate risk-based decision, Atkins concluded that the average efficiency reduction applied across other programs should also apply.

3.3 Historical capital expenditure

IPART has recommended that $27 million of 2016-20 capital expenditure is not included in our regulatory asset base (RAB). This includes:

- a $14.6 million reduction related to the BxP IT project which we identified

[30] Atkins Final Report 2020, Version 3.3.
[31] This was the portion of the investment known as the Eastern Front, which would be developed later in the period
[32] Atkins 2020, Sydney Water Corporation Expenditure and Demand Review, Addendum to Final Report v2.0.
[33] We feel it would have been reasonable to inform us of such an important decision as soon as it was made. Given the very tight timeline we are on to build ProMac we need to move quickly, and knowledge of this decision may have impacted our actions between February and late March, when Atkins' report was provided for review.

- a deduction of $7 million from the stormwater RAB
- two small reductions of $5.3 million in total.[34]

We do not agree with the $7 million deduction from the stormwater RAB. It is unclear exactly why the deduction has been made, as the explanation in IPART's Draft Report does not match its pricing model. [35] Also, both the explanation and the modelled values appear to be incorrect.

IPART's Draft Report explains that the overall $27 million reduction includes:

> *A reduction of **$9 million** to the waterway health program, a stormwater service, to reflect actual expenditure and a correction to its program code.*[36]

It refers to page 336 of Atkins' Final Report. However, this reference only discusses the future Waterway Health program and does not mention any deduction. While we did spend around $9 million less than the allowance for the Waterway Health program over 2016-20 our original submission (and associated AIR/SIR spreadsheets) has always included the lower actual amount.[37]

IPART's pricing model includes a **$7 million** deduction from the RAB at the start of 2016-20. We assume this relates to an earlier Atkins' query about treatment of external funding for the Green Square Trunk Drainage project. The funding arrangements for this were complex, with contributions from the NSW Government's Housing Acceleration Fund (HAF) and the City of Sydney, and the rest through regulated prices. This was clarified for Atkins and its final report notes:

> *…for the 2016 Determination, IPART deducted $7 million (net of tax) for this HAF cash contribution from the Green Square capex amount in SIR Capex 2 for 2014-15. Sydney Water received the HAF funding in 2014-15 but this was not (and has never been) included in the RAB therefore we have not proposed any adjustments for this project.*[38]

It appears the discussion of a $9 million reduction in IPART's Draft Report and the $7 million reduction in the financial model are errors that should be rectified in the Final Determination. The result of this correction is shown in Table 3-1.

[34] These two reductions include reducing expenditure by $2.6 million on growth project SGO107 to match an updated estimate identified during the efficiency review; and a change to the profile for Upper South Creek as a result of moving more of the expenditure into 2020.
[35] The model we have reviewed has the filename, "2020 SWC Pricing Model - Draft Report - for Sydney Water".
[36] Review of Prices for Sydney Water from 1 July 2020, Draft Report, p 29.
[37] The original allowance for 1016-20 was $18 million but we were only able to spend $9 million for various reasons, so the amount we submitted for 2016-20 actuals was $9 million (taking account of what we did not spend). For avoidance of doubt, there is no reason to remove another $9 million.
[38] Atkins Final Report 2020, Version 3.3, p 221.

Table 3-1 2016-20 actual capital expenditure for RAB - corrected

Item	Amount ($M, 2019-20)
2016-20 actual capex – our Submission	**3,249.8**
BxP adjustment	-14.6
Stormwater RAB	0
Other small adjustments	-5.3
2016-20 actual capex – corrected total	**3,229.9**

3.4 Forecast capital expenditure

3.4.1 Draft Determination – overview and our response

IPART's recommendations on 2020-24 capital expenditure include program-specific changes and the application of continuing efficiency factors on the annual totals. The breakdown of the resulting 18% reduction is shown in Table 3-2.

Table 3-2 Summary of recommended capital expenditure reductions

Item	Amount ($M, 2019-20)	% change
4 year capital forecast ($M)	**5,087**	-
Program specific reductions	-969	-16.8%
Program specific increases	+116	2.3%
Forecast-wide continuing efficiency reduction[39]	-83	-1.8%
Total	**4,152**	**-18.4%**

This chapter covers the program specific reductions, many of which we disagree with as they:

- will adversely impact critical environmental programs. We made intentional risk-based decisions *not* to apply efficiency reductions to these programs due to indications that costs were only likely to be higher
- do not acknowledge that greenfield growth servicing generally costs more than servicing 'infill', nor that we already significantly reduced our growth expenditure forecast to account for uncertainty.[40]

The ProMac investment should be fully reinstated for two reasons. There are pressing short-term growth needs, including in areas where servicing is already constrained. It will also provide system resilience in the face of drought.

[39] Covered in Chapter 12
[40] In total, we reduced the growth forecast by around $700 million

Table 3-3 details $884 million of program specific reductions would like re-instated.

Table 3-3 Capital expenditure reductions and our counter proposal ($M, 2019-20)

Program / bundle	Our forecast	Reduction	Counter proposal
Critical and non-critical sewers	533	-132.7	103
Wet Weather Overflow Abatement	224	-40.3	40.3
General Growth adjustments - water and wastewater	1,123	-236	236
Asset renewals - Stormwater, reservoirs, WWTP	748	-52	52
Other small reductions	219	-24.2	-
Sub-total (ex ProMac)	***2,847***	***-485***	
ProMac	484	-484	453
Total	**3,331**	**-969**	**884**

We discuss our rationale for each program area in the sections below.

Cost pass-through capital expenditure

IPART has accepted our proposal to spend $364 million to upgrade the network to accept more water from the Sydney Desalination Plant, if the NSW Government approves its expansion. IPART has also approved $68 million in the 2016-20 period. We fully support these decisions.

3.4.2 Critical and non-critical sewers

Program specific reduction	**-$132.7 million (-25%)**
Counter proposal	+$103 million for a total of $503 million

Why we oppose this reduction

- The Overflows to Waterways sub-program must be delivered to improve environmental performance – a recommended scope cut of 10% is arbitrary and cannot be accommodated
- It was appropriate not to apply an efficiency challenge – all delivery cost uncertainties pointed to increases. This has been confirmed in recent job quotes
- Applying an arbitrary efficiency factor ignores our deliberate decision not to do so. In any event, there is very little scope for realising an 18% efficiency at this stage of planning.

For its review, Atkins combined wastewater network investment programs. These were separated in our submission as the assets included and their management strategies are quite different. To clearly present why we oppose these reductions, we have separated the program components and our understanding of the reductions in Table 3-4.

Table 3-4 Critical and non-critical sewer reductions

Critical and non-critical sewers	Forecast ($M)	Reduction ($M)	Rationale for reduction
Critical Sewers (*less* major sewers scope)[41]	410.6	-103	10% (-$19M) scope reduction to 'Overflows to waterways' component -18% (-$84M) efficiency reduction on remainder
Capitalised Sewer Breaks	75.9	-29.6	30% scope reduction on the combined programs
Retic Sewer program	46.3		

Scope cut on 'overflows to waterways' element is not acceptable

Although Atkins' report acknowledges the need for significant action to attain compliance it recommended a 10% scope cut to the 'Overflows to waterways' sub-program, as our response was not proportionate to the performance deterioration.[42]

We agree that Pollution Reduction Program (PRP) notices issued by the Environment Protection Authority (EPA) include challenging timetables and we tried to develop a scope in a way which manages the cost. However, the EPA assesses workplans to meet PRPs. While this is ongoing, the EPA has reservations that the current scope may not be adequate and has asked for more work to be included[43]. Given this, the 10% scope cut to 'Overflows to waterways' cannot be accommodated and the $18.8 million reduction should be reversed.

Efficiency calculation appears incorrect

We are unable to replicate the efficiency reduction calculation as described in Atkins' final report.[44] An $84 million reduction implies that an 18% reduction was made on a base of $467 million. However, the base critical sewers expenditure of $411 million less a 10% scope reduction is $392 million. A reduction of 18% of this would equal $70.5 million. Even if an 18% efficiency reduction was appropriate it should not be $84 million.[45] It is our view that $13.5 million of the efficiency reduction is due to a calculation error.

Efficiency cut of 18% not appropriate

It is not appropriate that Atkins disregard our deliberate decision not to apply an efficiency reduction to the Critical Sewers program. The program was reviewed but was considered risky in terms of cost and delivery.

When the original forecast was reviewed from the 'top down' perspective, the Critical Sewers program was considered in the same way as the other programs. At that point, the forecast costs

[41] This includes some of the most important work for the 2020-24 period to de-silt and renew sections of the NSOOS, SWSOOS and BOOS sewers.
[42] Atkins Final Report 2020, pp 204-205.
[43] Letter from the EPA to Sydney Water, 'Dry Weather Sewage Overflow Abatement Draft Project Plans for North Head and Cronulla Systems', 7 April 2020.
[44] Atkins Final Report 2020, p 205.
[45] The only way we can calculate an efficiency reduction of 18% as $84 million is by including the $75.9 million for the Capitalised Sewer Breaks program. This program was already subject to our efficiency reduction and should not be reduced again.

were considered low, with the known work scope and risk factors suggesting that any movement was much more likely to be upwards.[46]

This has since been confirmed by an independent report commissioned by Sydney Water and another which was required by the EPA. It has also been confirmed through recent procurement of relining work in a more remote bushland location. The pricing was based on the provider's detailed investigation of the work sites with specific access conditions requiring:

- Scaffold to ensure safe access due to '5m drop off rock edge'.
- New access paths and safety fencing for 800m where there are 'steep embankments and >40 degree slopes, rock edges and drop offs'
- A winch to pull in a 300m hydraulic hose weighing 2,400kg.

The unit rate is much higher than for standard relining work.[47]

Potential negative impact on incentives

Disregarding our decisions not to apply efficiency reductions to the Critical Sewers and Wet Weather Overflow programs negatively impacts our incentive to conduct a proper 'top down' review in future.

We considered each program in context and applied different efficiency factors depending on specific risks to costs, delivery and compliance. We considered efficiency opportunities across four areas:

- Improved cost estimation / intelligence - Enhanced cost intelligence and analytics to improve estimation, contingency and variation management
- Procurement and Delivery (P4S) – a simplified supply chain and enhanced commercial incentives across planning, procurement and delivery
- Enhanced Program & Portfolio Management – an expanded project/program/portfolio prioritisation toolkit and enhanced data for more active management
- Optimised Solutions - Improved integrated planning to enhance capture of synergies between renewals and growth investments.

If this granular approach leads to a forecast-wide 'average' efficiency being applied to our higher risk programs, then this could change our incentive to accurately forecast these in future.

Very limited scope for 18% cut now

Even if we agreed that an efficiency reduction was appropriate, actions to improve efficiency are either already built into forecasts or they cannot practically be actioned. This is because the scope is now much more defined, with design and even procurement having been completed in some cases. Table 3-5 shows how the four efficiency improvement areas set out above could be applicable to the Critical Sewers program now.

[46] Including that a high proportion of the future work was expected to be in hard to access areas making recent sewer relining cost benchmarks much less relevant.
[47] The unit rate has come in below $800 per metre after some renegotiation and this is considered competitive for these conditions. The quote document clearly identifies many of the complex site conditions with photographs and measurements and this can be provided to IPART on a confidential basis.

Table 3-5 Applicability of efficiency reductions at this stage

Efficiency reductions considered	Applicable?	Comments
Improved cost estimation / intelligence (up to 4.9% over 5 years)	*Limited opportunity*	Costs already known for imminent work, so this could only apply to later years
Delivery & Procurement (up to 5.0% over 5 years)	*Not possible*	Specialised work will not be delivered via P4S. Some work already procured.
Enhanced Program & Portfolio Management (up to 3.8% over 5 years)	*Limited opportunity*	Could only apply in later years
Optimised Solutions (up to 5.0% over 5 years)	*Not possible*	Critical Sewers work scope has no useful overlap with growth

It is not appropriate to apply an efficiency reduction to the Critical Sewers program. In our view, a $71 million (corrected) efficiency reduction should not be applied.

3.4.3 Wet Weather Overflow Abatement

Program specific reduction	-$40.3 million (-18%)
Counter proposal	+$40.3 million for a total of $224 million

Why we oppose this reduction

- It could lead to unacceptable environmental performance or an overspend to attain compliance
- There is no scope flexibility – we will report regularly against a plan already reviewed by the EPA
- The program is not “on the back foot” as stated by Atkins
- The link between future efficiencies and different program component marginal costs is baseless
- The program was challenged during the internal efficiency assessment – it was just clear that cost uncertainty meant that a reduction was not prudent
- There is very little scope for applying an 18% efficiency reduction at this stage of planning.

Applying 18% efficiency ignores our risk-based decision

Atkins reduced the forecast for the Wet Weather Overflow Abatement (WWOA) program by $40 million by assuming that the 18% average efficiency challenge applied to other programs was valid and that the original scope should still be delivered.

This is unrealistic, arbitrary and is unsupported by the facts. It is also at odds with Atkins’ observation that our approach to risk has matured. When we conducted the ‘top down’ efficiency review, analysis suggested that these costs were more likely to be under-estimated. The risk-based decision was not to apply a reduction.

Program 'marginal costs per point' are still misunderstood

The program is required to achieve 60 credit points over four years. Our forecast submitted in July 2019 targeted 40 credit points but it was updated to meet the higher target set by the EPA.

Both Atkins and IPART rely partly on calculated differences in program marginal costs to assert that efficiency improvements must be possible.[48] This is not valid. As explained in the Update to the Price Proposal in November 2019,[49] the 'cost per point' for the original 40-point program is higher than for the final 20 points because they include different work. The original program costs also included planning costs for the next phase of delivery. This was not recognised by Atkins.[50]

WWOA program is on schedule

The WWOA program is not "on the back foot" as noted by Atkins and IPART.[51] While the change in regulatory requirement was confirmed too late for our original submission, the planning to support timely delivery has progressed very well. For the first four catchments in scope, Options Analysis Business Cases have been completed and detailed design work is in progress. Delivery Approval Business Cases are expected to be completed by July 2020.

The work plans have been reviewed by the EPA and the Environment Protection Licences (EPLs) have been re-issued accordingly.

Very limited scope for 18% cut now

As shown for Critical Sewers in Table 3-5, even if an efficiency reduction was appropriate, at this stage there is very little scope to reduce costs. The program scope is now well defined with design and some procurement having been completed. Assuming that the program can be deliver delivered for 18% less at this stage is not reasonable. An efficiency reduction of $40 million should not be applied.

[48] The premise is that the '$ per credit point' marginal cost for the first 40 points is higher than the '$ per credit point' for the final 20 points.
[49] Table 2-14, Price proposal 2020–24, Update to 1 July 2019 proposal, p 36.
[50] Planning cost for the next delivery phase were included on the reasonable assumption that work would need to continue after 40 credit points were achieved. The existing EPLs envisage that further work will be required from 2024, so it made sense to start to plan for this. It would not be efficient to start from scratch in July 2024. This means that the marginal cost assumed by Atkins for the final 20 points does not include some of its planning costs.
[51] Atkins Final Report 2020, Version 3.3, p 321.

3.4.4 General growth adjustments

Program specific reduction(s)	Water: -$55.9 million (-16%) Wastewater: -$180.2 million (-24%)
Counter proposal	+$236 million for a total of $1,123 million

Why we oppose this reduction

- To account for uncertainty, growth capital expenditure forecasts were reduced by 20% prior to submission (in addition to detailed optimisation already undertaken at the project level).
- Greenfield growth servicing generally costs more than servicing 'infill' (per new dwelling) so comparing investment between periods is not applicable. We have previously explained that the capacity at the edge of our system is limited.

The adjustments to water and wastewater growth programs are based on a simplistic premise which is incorrect. Atkins has reduced 2020-24 'general' growth capital expenditure to reflect average annual growth expenditure over 2016-20. This assumes that the cost for 2020-24 should be similar to that incurred over 2016-20 because the forecast number of new properties connected is similar in each period.

IPART's report requested information about the amount of greenfield growth which is forecast. We have addressed this here and have clarified that greenfield growth will include jobs as well as dwellings.

Growth investment forecast already reduced for uncertainty

It is important to note that our growth capital investment forecasts were reduced by 20% prior to submission in July 2019. This was after the programs had already been reduced for expected efficiency improvements. We applied this extra reduction to 'share' part of the risk of growth not occurring as forecast. This manages the risk of customers paying upfront for investment which may not be required. While we maintain this is the right approach, it means that further reductions create additional financial risk for Sydney Water.

The location of growth drives the cost

The location of growth and existing network capacity are the most important factors in the cost of servicing the next new property. 'Infill' growth generally costs less especially if existing infrastructure capacity can be leveraged. This illustrated in Figure 3-1 for a water network but the concept for wastewater is the same.

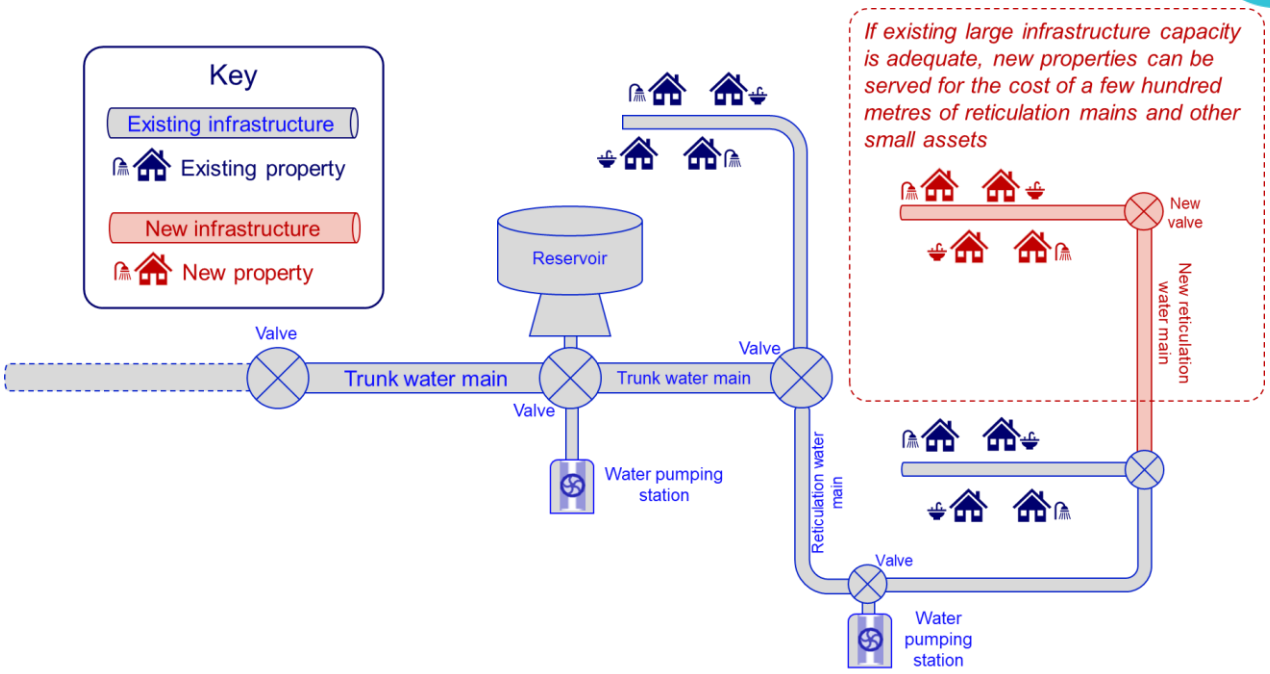


Figure 3-1 Servicing 'infill' growth with existing capacity

'Greenfield' growth often occurs where there is little or no infrastructure already in place. Additional demand can trigger the need for new trunk capacity and other larger asset investments such as for pumping stations, reservoirs or treatment plant.

Greenfield servicing example – Oran Park reservoirs and associated infrastructure

In order to service further growth around Oran Park in the South West Growth Area, new trunk water network and reservoir capacity is required.

In addition to precinct trunk mains (which are developer delivered under commercial agreements) and reticulation network costs to deliver water to individual new premises, servicing growth in this area will include costs for land, reservoirs, trunk mains and a pumping station.

This is a significant difference when compared to 'infill' servicing over 2016-20 where we have not had to construct any new reservoirs at all.

Trunk mains will be built in stages as the demand grows, and reservoir capacity will be added when the service levels reduce. We expect that 2x24Ml reservoirs will be required by mid-2022. The lowest cost option includes two reservoirs, as the shape and contours of the site cannot accommodate a single larger unit.

Servicing greenfield growth can create a step change in network capacity to support future development. While our investments will seek to achieve the lowest lifecycle cost, on a 'cost per property' basis it can still be many times higher than for infill.[52] This is illustrated in Figure 3-2.

[52] For avoidance of doubt, we will always consider what the right size of new capacity should be, considering the incremental costs of larger infrastructure and the costs and practicalities of staging.

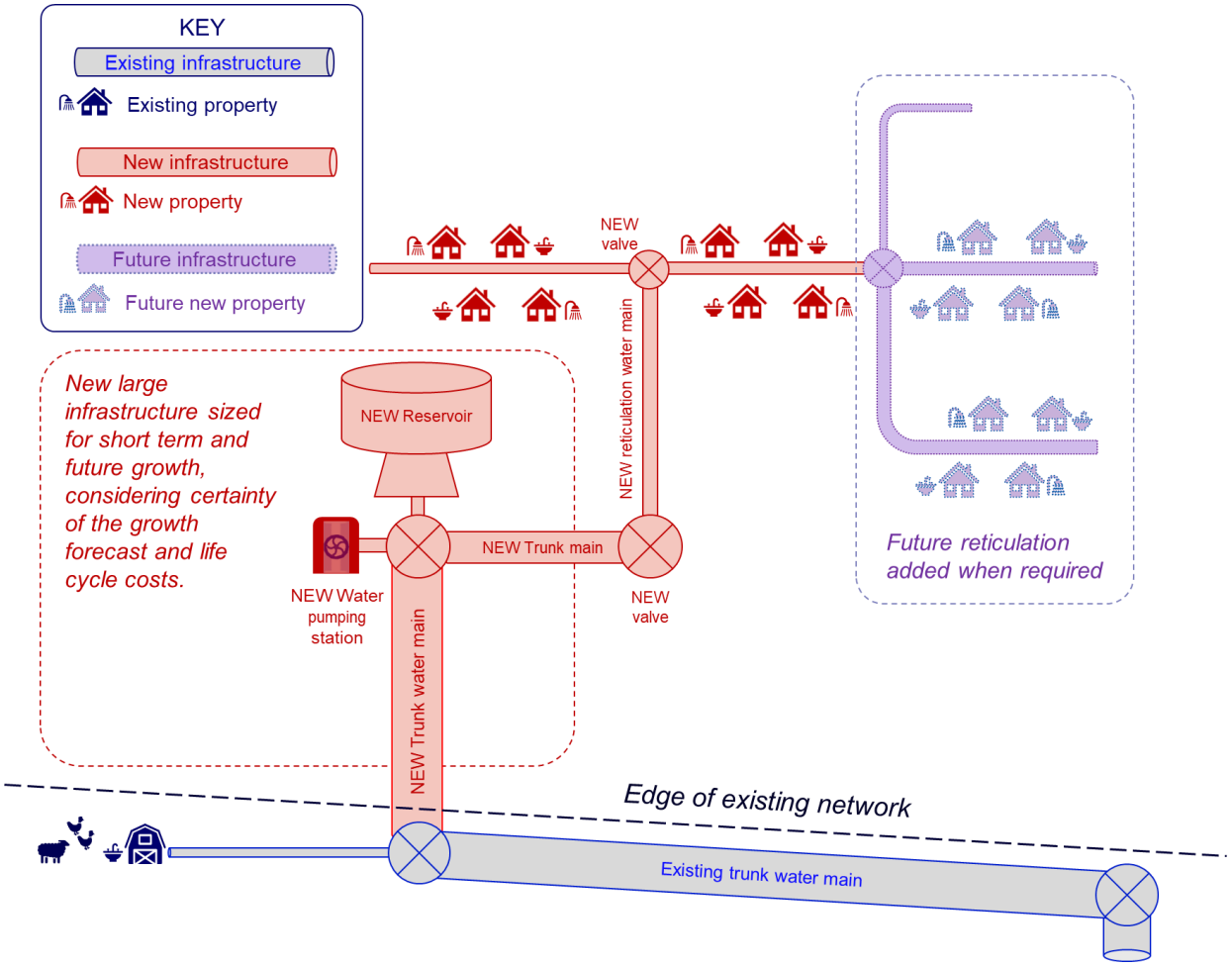


Figure 3-2 Greenfield growth often needs new infrastructure

While these examples are illustrative, Figure 3-5 (see ProMac discussion) show that growth is occurring now in areas where there is little existing infrastructure. Again, the situation for wastewater infrastructure is analogous.

The investment impacts of growth locations over 2020-24 have been emphasised in our documentation to-date. For example, in our Price Proposal we stated (emphasis added):

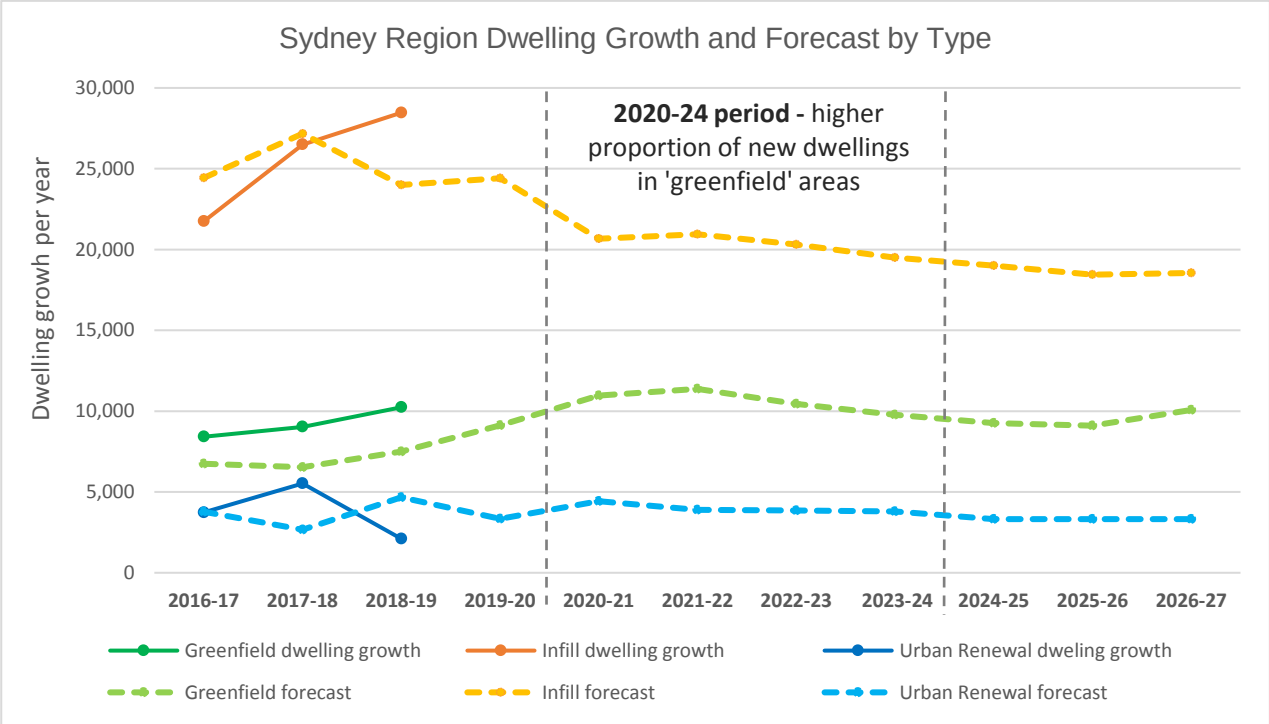
> *There is **no existing infrastructure in some of these new development areas**. Whereas recent growth investment has tended to be simple service extensions and discrete augmentations at system bottlenecks, our growth forecast of $1.6 billion reflects that **we can no longer service growth with existing capacity**.*[53]

Changing proportions of 'infill' and 'greenfield' growth

Over 2016-20 a higher proportion of growth in new properties was in 'infill' areas and in many cases we have serviced this by adding reticulation networks to existing trunk capacity.[54]

[53] Price proposal 2020–24, Attachment 9: Capital expenditure, p 7.
[54] It is important to note that this situation does not endure forever. The opportunity to use existing capacity is reducing in areas such as Parramatta, due to the scale of the urban renewal and planned increases in density.

Over 2020-24 the forecast is for a similar number of new properties compared to 2016-20 but with a growing proportion in greenfield areas. This is shown in Figure 3-3.



Source of forecasts: Housing Supply Forecast Model (HSFM) 2016.
Note: For clarity, 'non-urban' dwelling growth (which is very low) is not shown.

Figure 3-3 Actual and forecast dwelling growth by type (Sydney region)

It can also be observed that actual greenfield dwelling growth over 2016-20 tracked higher than the forecast for the first three years.

Growth investment for jobs in Western Sydney

Finally, the context for growth investment in Western Sydney must account for the creation of new infrastructure and jobs growth. An integral part of the Western Parkland City concept is the creation of jobs including around the around the Western Sydney Airport and the Aerotropolis precinct.[55]

Accounting for both dwelling and employment growth provides a better indicator of likely greenfield investment needs, rather than solely focusing on new dwellings. We consider the $236 million removed is based on flawed logic which disregards information we have already provided.

[55] As an example, around 45,000 new jobs are forecast for the Aerotropolis precinct by 2036.

3.4.5 Various renewal programs

Three asset renewal program cuts we request that IPART reconsiders are shown in Table 3-6.

Table 3-6 Asset renewal expenditure reductions

Program / bundle	Our forecast ($M)	Reduction ($M)
Stormwater renewals	138	-15.8
Reservoir Renewals	123	-16.9
WWTP renewals	487	-18.8
Asset renewals totals	748	-52

The reductions made to these were much higher in Atkins' Draft Report and we appreciate that the reviewers took the time to understand the additional information we provided and reduced the cuts. Parts of the final report agree that asset renewal expenditure needs to increase in some areas. Further information on each of these programs is presented below.

3.4.5.1 Stormwater renewals

This reduction of $15.8 million applies to the Stormwater Renewals and Flood Risk programs. In simple terms, these seek to maintain the trunk stormwater network such that it can structurally withstand very large stormwater flows and transport these away safely. This helps maintain community safety and reduces property or infrastructure damage.

It is effectively treated as an 'avoid fail' asset class as it is most likely to fail when most needed and because rebuild costs are much higher than proactive remediation. Investment needs are based on asset risk assessments and we seek to time these efficiently – undertaking renewals when risk ratings are 'high' and 'very high'. Atkins accepted much of our arguments on this and greatly reduced the very large original reduction of -58%.

We acknowledge that there is an element of trust in accepting our risk analysis. As an indicator of the forces that stormwater assets are intermittently subject to and the consequences of failure, Figure 3-4 shows a channel collapse in February 2020.

Figure 3-4 Stormwater channel collapse

While this is a situation we seek to avoid, the severity of the February rain is a reminder of the importance of maintaining these less prominent assets. The outstanding expenditure reduction means that some identified or planned work will be deferred, potentially increasing risks to the community and property.

3.4.5.2 Reservoir renewals

A reduction of $16.9 million still applies to the Reservoir renewals program. Atkins' first draft included a much higher reduction which included planned renewals at the Potts Hill reservoir. This was a significant concern due to the criticality of Potts Hill.[56]

Atkins' final report has ring-fenced Potts Hill from this reduction and has reduced it significantly. The reviewer also acknowledged that much of the work for 2020-21 is already procured and excluded this from the expenditure reduction. While much smaller, the outstanding expenditure reduction leaves a residual risk to our reservoir assets, potentially contributing to risks to service continuity and public safety.

3.4.5.3 WWTP renewals

A reduction of $18.8 million still applies to the Wastewater Treatment Plant renewals and other related programs.

The Atkins' first draft proposed a much larger reduction on the basis that there was little EPL non-compliance related to plant. Our response explained how our process identifies asset renewal needs which can exist within a plant which has not breached any of its environmental obligations. The process considers a more granular set of metrics to target an acceptable level of risk while

[56] This site is the source of drinking water for around 1.5 million people and the reservoir renewal there is an important priority for 2020-24.

maintaining continuity of services, environmental compliance, safety and lifecycle costs. We also provided the list of active and prioritised candidate projects in the forecast.

While the outstanding reduction represents a small proportion of the amount we forecast, it means that some work will not go ahead with possible negative consequences on plant performance, higher lifecycle costs and compliance.

3.4.6 Prospect South to Macarthur link

Program specific reduction	-$484 million (-100%)
Counter proposal	$453 million should be included over 2020-24 to cater for new customer demand (growth) ***and*** improve system resilience

The Prospect South to Macarthur link (ProMac) investment is still justified on dual drivers of customer demand and system resilience

- A significant proportion of ProMac has always been required to service short term growth, including to meet our service obligations in areas where growth which has already occurred
- The remainder of the investment completes the link between systems later in the period, providing important network resilience.

We proposed the Prospect South to Macarthur link (ProMac) investment in our November Update. The project links the two water delivery systems, to serve growth in a fast-developing area of western Sydney and to provide system resilience in the context of drought. At that time, the most pressing driver was to slow the depletion of the southern dams (Cataract, Cordeaux and Nepean) to actively manage drought related supply risk to customers in these systems.

Atkins initially accepted that the ProMac investment should be allowed. When the rain in February increased the total dams' storage Atkins reversed this in an Addendum to its report:

> *Following this dramatic increase in storage volumes...we consider it timely to adjust our recommended expenditure…*[57]

While servicing growth was always one of the objectives of ProMac, this driver does not seem to have been considered by Atkins or IPART when removing the allowance.

The full investment is still required

While the imminent threat to the water supply in the southern systems has receded, the fundamental drivers of the investment remain valid. The sections below explain the urgency of the growth driver and the need for system resilience in the medium to longer term. The associated operating expenditure need is also addressed here.

[57] Atkins 2020, Sydney Water Corporation Expenditure and Demand Review, Addendum to Final Report v2.0, p 7.

Growth remains a pressing driver

Over half of the proposed link infrastructure between the Prospect South and the Macarthur water delivery systems will service new growth areas and the pressing need for new infrastructure remains.

This growth is occurring on the fringes of our existing system, particularly around the Western Sydney Aerotropolis and the South West Growth Area. Where infrastructure exists at all, it was originally designed with rural servicing in mind. Figure 3-5 contrasts the lack of infrastructure in the growth areas (orange and green) with other more developed areas on the edge of the network (Liverpool, Campbelltown and Camden).

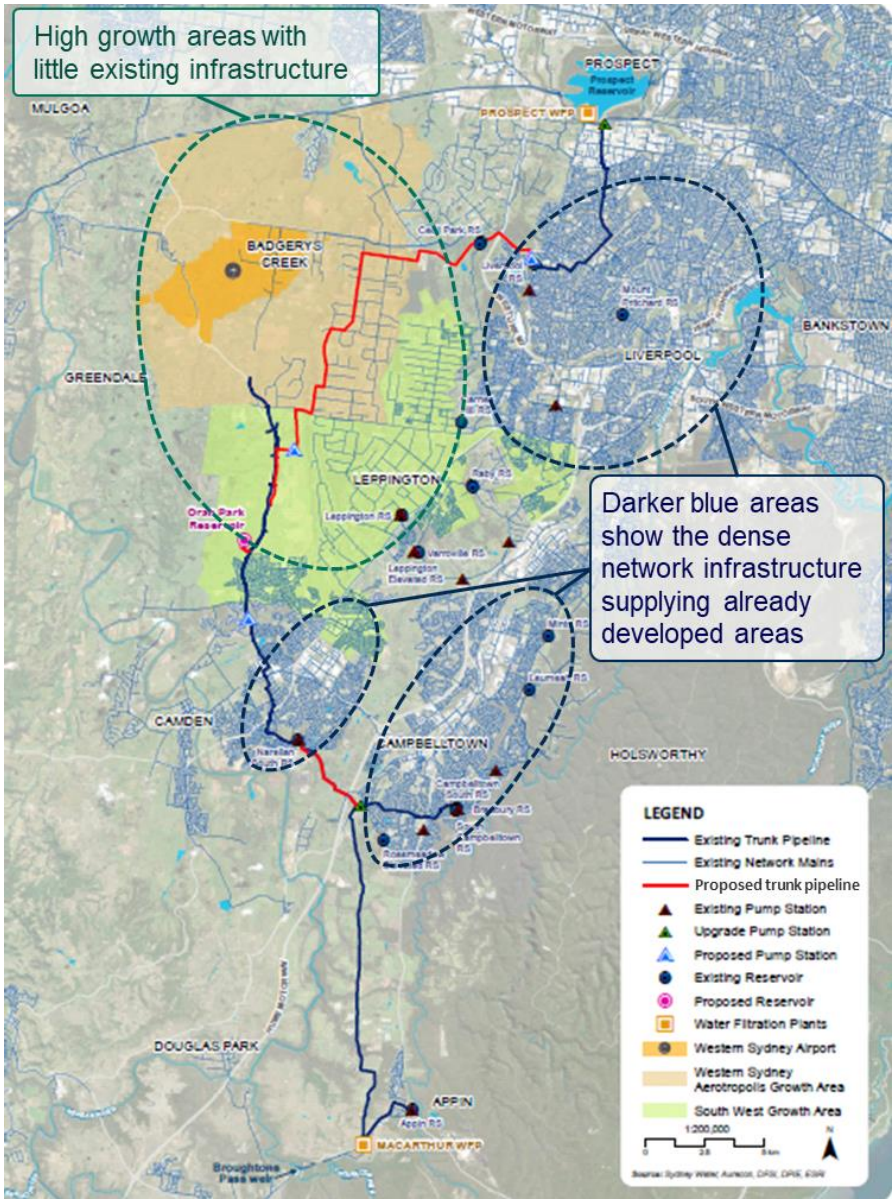


Figure 3-5 Water system limits in western Sydney

Parts of the network are already over-committed due to the growth which has occurred. Increasing demand is impacting our current system performance including:

- pressures which are below the minimum commitment in our Customer Contract in some locations
- operating reservoirs below their reserve service levels in high demand periods, putting the system at increased risk of running out of water if there is an incident (which is an indication of a lack of system resilience).

We have also forecast potential repeat pressure failures for over 1,000 customers by around 2023, in contravention of our Operating Licence standard.[58] Until these issues are resolved some development is being held back, as the system is unable to supply more water.

The actual and forecast development in these areas has increased since our July 2019 Proposal. In particular, the release areas have changed as NSW Government planning around the airport progressed over the last two years. In developing pricing proposals, we have to 'lock down' expenditure forecasts so that various modelling, governance and documentation steps can be completed in time. In this case, expenditure forecasts were largely settled by around October 2018.[59]

Actual growth is being realised in this part of western Sydney. Development approvals have been awarded and construction has commenced in many of the areas served by ProMac, and the new airport is rapidly advancing. Through the development approval processes we are involved in it is clear that many of these developments have a high likelihood of eventuating.[60] Further information for IPART is provided in confidential Appendix C.

We are already investing to alleviate the current performance issues and to service the growth which is occurring. Over the 2020-24 period we forecast that investment of $205 million of ProMac will be required, regardless of drought conditions.

The forecast expenditure profile for the growth investment is shown in Table 3-7.

Table 3-7 ProMac growth capital expenditure profile ($M, 2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24	2020-24 total
ProMac 'Growth' portion capital expenditure	45.0	199.0	5.0			205.0

Note that this profile assumes that $32 million of the $77 million Atkins allowed for 2019-20 is spent in next period. This has been possible because we paused some aspects of the project to assess the impact of the rain in February. Other parts have already moved into delivery, consistent with the near-term growth issues.

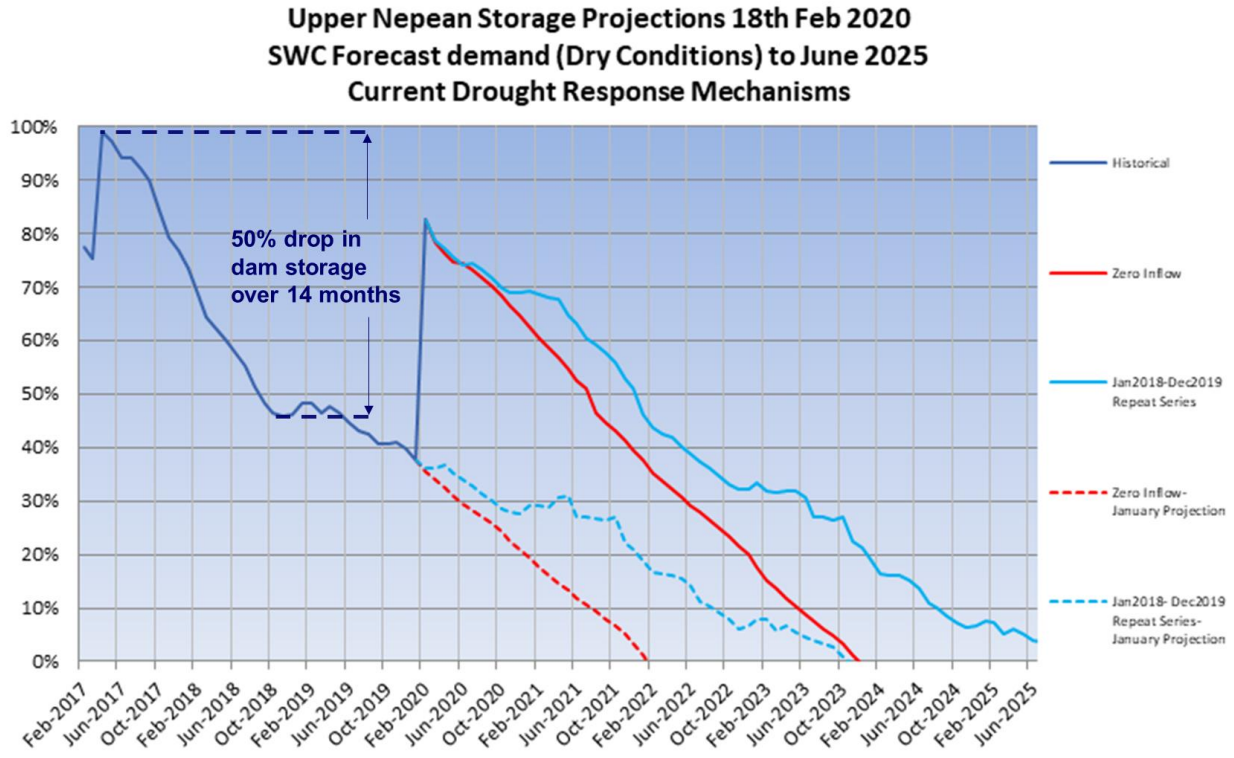
[58] Sydney Water modelled estimate by 2023 based on DPIE growth forecasts.
[59] In most cases, largely based on modelling of growth from 2017.
[60] For example, Section 73 approvals. A 'Section 73' compliance certificate is issued to developers once they have complied with our notice of requirements (if their development is required to comply).

The forecast operating costs associated with the growth portion of ProMac are in Table 3-8. Table 3-8 ProMac growth operating expenditure profile ($M, 2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24	2020-24 total
ProMac 'Growth' portion operating expenditure	-	-	7.0	10.0	10.0	27.0

The link will improve system resilience

We need to build system resilience to be able to respond to drought and reduce supply risks to the Prospect South and Macarthur water delivery systems. While the water storage position for the southern systems is much improved, the dams are smaller than Warragamba and can deplete very quickly. The sharp drop in storage from May 2017 to December 2018 is shown in Figure 3-6.



Source: WaterNSW

Figure 3-6 Upper Nepean storage (Nepean, Cataract and Cordeax dams)

The figure also shows indicative impacts of different inflow scenarios making it clear that the Macarthur water delivery system is a high-risk supply node during drought.

Our experience in the recent drought is that such fast changes in conditions require accelerated planning and delivery of drought response infrastructure, with no contingency or lead time. It is very difficult, if not impossible to build new pipelines or desalination plant, or to modify dams, in the short time periods over which the system can fail. This is indicative of the need to invest in system resilience.

As originally envisaged, the ProMac link will leverage the growth investment, creating resilience by linking the two water delivery systems. The link infrastructure is forecast to cost *an additional* $248M on top of the ProMac growth expenditure.

Given that the water supply situation can change quickly and dramatically, we consider that it is prudent to build the ProMac link infrastructure and required growth investment as originally planned, starting now. In this case, the additional link infrastructure includes assets which are expected to be needed to meet growth after 2024. We estimate that $145 million of the $248 million additional 'link' expenditure falls into this category.

The total capital expenditure forecast is $453 million, with $45 million of expenditure in the current year taking the total to $498 million. The expenditure profile is shown in Table 3-9.

Table 3-9 ProMac total capital expenditure profiles ($M, 2019-20)

ProMac	2019-20	2020-21	2021-22	2022-23	2023-24	2020-24 total
Capex – growth	45.0	199.0	5.0			205.0
Capex – for resilience	0	59.2	77.1	75.5	36.3	248.1
Total ProMac capex	45.0	258.0	83.0	75.0	36.0	453.0

The operating cost forecast for this investment profile is the same as shown in Table 3-8 although there would be an increase to around $15 million per year from 2025 (as more assets would then be fully operational).

Our recommendation and alterative options

As noted above, we recommend that IPART accepts the full cost of the ProMac project in 2020-24, to meet growth and system resilience objectives. This would be a four-year total capital investment of $453 million, starting immediately.

If IPART does not accept this, our second preference is that IPART accepts the growth-related ProMac expenditure, with a four-year total investment of $205 million (as shown in Table 3-7). This investment would also need to start immediately.

4 Operating expenditure

Key messages

- We proposed total operating expenditure of up to $5.9 bn over 2020-24, including cost pass-through expenditure and water purchasing costs.
- Core operating expenditure of $4.0 bn has been reduced by $158m (4%) in IPART's Draft Report.
- We challenge $108m of proposed reductions which relate to reactive maintenance, BOOT plant treatment costs, electricity and the Prospect South to Macarthur link.
- We are particularly concerned about proposed cuts to reactive maintenance. Although IPART has allowed some of our proposed increase, the full funding request is needed to address higher expected workloads. Since our November 2019 forecast, these costs have faced upward pressure, via EPA feedback on environmental improvement plans.
- Recent experience indicates we are operating in a more volatile weather environment and face heightened risk from extreme dry and wet weather events.
- Additional uncertainty has recently emerged due to COVID-19. It is too early to forecast the impact of this on our operating costs. However, we may face increases in areas including cleaning and staff costs.

4.1 Recent events

As noted in Chapter 3, the recent emergence of the COVID-19 pandemic will have ongoing economic impacts; however, there is a high level of uncertainty around the magnitude, type and scope of these impacts. It is too early to revise our forecasts. We are seeing modest upward pressure on costs in areas such as cleaning, increased wastewater blockages and staff-related costs. For example, due to split shifts at some sites required by social distancing measures. We are also rapidly adjusting to support large numbers of office staff who are now working from home. We provide examples of some of the immediate effects we are experiencing in Chapter 16.

4.2 Draft Determination process

IPART's recommended reductions are in line with Atkins.[61] Atkins reviewed our original forecast expenditure and the November 2019 Update. Atkins' initial draft report was provided to us for comment in December 2019. Our comments on draft recommendations emphasised the criticality of operating expenditure increases to meet increased cost drivers and maintain performance. We

[61] Atkins Final Report, Version 3.3, March 2020.

acknowledge the reviewers reduced some expenditure cuts. However, we remain concerned about some of the reductions and the rationale used to support them. Furthermore, changes in conditions since the Atkins review should be considered in assessing our operating expenditure.

Recently, we have experienced a range of extreme weather events, with a deep drought and widespread bushfires followed by massive rainfall. While such extreme natural events are difficult to predict, such climate volatility is expected to become more common.

Atkins' Final Report notes that we are on track to spend 5.4% more than the operating expenditure (opex) allowance over 2016-20, including $119m and $72m overspends in 2018-19 and 2019-20.[62] However, this was based on the previous 2019-20 forecast. The updated core operating expenditure forecast for 2019-20 is $1,040m which is $133m over the allowance.

Supported by our recent experience, we argue that most of IPART's proposed cuts to our baseline opex should be reversed. In fact, in some areas, costs are now expected to be even higher (for example, wastewater maintenance). We provide more detail below.

4.3 Forecast operating expenditure

4.3.1 Draft Determination – overview and our response

In its Draft Determination, IPART reduced our operating expenditure by $157.6m. This is 2.7% off total opex of $5.9bn or 3.9% off our $4.0bn core opex forecast. The reduction comprises $164.9m of scope reductions, offset by a $7.4 million change in efficiency savings. Table 4-1 summarises these scope reductions and our position.

Table 4-1 Sydney Water's response to IPART's draft opex scope item reductions ($M, 2020-24)

Opex item	Our forecast	IPART reduction	Our position
Water – reactive	98	40	Oppose
Wastewater -reactive	273.2	30	Oppose
Prospect to Macarthur link	38.8	39	Oppose $27M, (see ProMac section in Chapter 3)
City Planning	32	16	Accept. As response to Atkins' draft, a cost pass-through arrangement should apply if an obligation is put in place.
Water conservation	80	20	Accept. This is a transfer to cost pass-through for communications campaigns and not a reduction.
BOOT water treatment	407	7.7	Oppose $6.6M. Cost estimates updated based on new evidence.
Infrastructure resilience	8	8	Accept. This should be done as part of business as usual.
Electricity	158.4	4.24	Oppose.

[62] Atkins Final Report, p 111.

Total	**164.9**	**Opposed: $107.8m**

The following sections explain our rationale for the items we oppose. We also seek clarification on IPART's adjustments to our water conservation allowance.

While this chapter highlights some inconsistencies in Atkins' review of scope reductions, it does not consider the approach to continuing efficiency. This is addressed in Chapter 12.

4.3.2 Water – reactive

In November, we forecast $98m more opex for reactive maintenance on water networks for 2020-24. This reflected the latest analysis indicating that very high levels of water main breaks and other damage caused by very dry soil were expected to endure. This workload is still expected to continue irrespective of weather, due the soil movement already caused.[63]

IPART proposed a $40m (-41%) reduction to this opex (see Table 4-2). IPART accepted Atkins' view that water lost from the system above the Economic Level of Leakage (ELL) over 2016-20 reflected inefficient operations and that the costs of this should not be recovered from customers.

Table 4-2 Water – reactive: proposed operating expenditure for 2020-24

	$2019-20, millions	Percentage of original forecast
Sydney Water proposed allowance	98	NA
IPART draft reduction	40	-40.8%
IPART draft allowance	58	59.2%

IPART's conclusion of operational inefficiency assumes:

- the increase in reactive maintenance over the 2020 period was partially brought on by reduced planned maintenance over the 2016 regulatory period.[64]
- that our lack of flow monitoring and leakage detection systems[65] result in a delayed response to leakages.[66]

We oppose the proposed reduction of $40m on the basis that:

[63] As we have noted in previous submissions, the soil moisture levels in the Sydney area observed over 2017 and 2018 were amongst the lowest in around 100 years of records. Given that soil has already shifted, assets which are in the ground are subject to increased stress which a change in weather from dry to wet does not necessarily solve. The change to wet can cause further disruption to how assets are supported in the ground, especially where the earlier soil shift has created space around the asset.
[64] Atkins, 2019, *Sydney Water Corporation Expenditure and Demand Forecast Review – Final Report, IPART,* March, p 118.
[65] This includes pressure monitoring systems, acoustic loggers or other data detectors.
[66] Atkins, 2019, *Sydney Water Corporation Expenditure and Demand Forecast Review – Final Report, IPART,* March 2020, p 157.

- this work is required to fix broken assets regardless of leakage performance (noting that leakage impacts are a consideration in how the response is managed)
- we should not be penalised because past planned maintenance did not foresee extreme weather conditions. If we had forecast higher planned maintenance in 2016 premised on forecast dry soil conditions, it is unlikely that IPART or Atkins would have accepted it.
- more planned maintenance would not necessarily have reduced leaks and breaks due to extended dry conditions as it is costly to find and pre-empt a first failure in a water network.
- we should not be penalised for not investing in the high-cost leak detection technology for which there has been no clear justification in the past.

We appreciate that IPART has partly recognised the need for more reactive maintenance, and that we aim to reduce leakage to the economic level. Actions we are undertaking to improve leakage and our position on losses included in customer bills are noted in Chapter 13. However, we note that the fundamental driver of this reactive maintenance is to respond to broken assets and even in the absence of a leakage target, the need for this work would remain. The reduction in this allowance will make it more challenging to fix assets and maintain appropriate service delivery.

Our planned and reactive water maintenance has been efficient

In 2016 Atkins highlighted that we had performed well with regards to leakage, such that our leakage target continued to be achieved.[67] Atkins considered that, with a clear headroom against all performance targets (including water continuity 20% under the reference level), there was scope to take greater risk on performance and that, following previous reductions in expenditure, further reductions over the period would not impact performance. [68]

This suggests that:

- there was no clear reason in 2016 for increasing planned maintenance to reduce leakage or reduce unplanned interruptions
- there was no justification in 2016 for investment in improved leakage detection technology.

Even if we had increased planned maintenance during the 2016 regulatory period, this would have been costly, and may not have led to a significant reduction in leakage. Contrary to Atkins' claims, there are limitations on the extent to which planned measures can avoid reactive work for water related services.

Planned maintenance is based on a probabilistic risk mitigation framework informed by historic performance data. Planned maintenance targets high risk pipes based on their likelihood of breaking and the consequence if a break occurred. Under this framework, the series of events driven by extreme and volatile weather patterns would have been considered low probability, low risk events, and therefore not targeted for planned maintenance. Indeed, given the uncertainties in

[67] Atkins-Cardno, 2015, *Sydney Water Corporation Expenditure Review – Final Report, IPART,* December, p 38.
[68] Atkins-Cardno, 2015, *Sydney Water Corporation Expenditure Review – Final Report, IPART,* December, pp 15, 30, 102, 103.

predicting where reactive work occurs, if we had taken a more risk averse approach to planned maintenance, this would have been considered imprudent.

We should not be penalised for not yet widely investing in high-cost leakage detection technology. Enhanced leakage detection technology may have assisted in identifying and addressing issues earlier. However, the strong performance in leakage leading up to the 2016 regulatory period did not warrant increased investment in improved detection technology. This view is supported by Atkins 2016 report, which suggested it believed that we had the ability to take on greater risk on performance and potentially lower proactive spending (both capital and operating expenditure).

4.3.3 Wastewater – reactive

Wastewater reactive expenditure is related to protecting the community and environment from risks arising from wastewater overflows. Reactive work involves clearing up and repairing assets after an overflow occurs.

Our EPLs sets minimum and mandatory requirements. Our Operating Licence can be cancelled if we have been convicted on more than three occasions within a 12-month period of criminal offences.[69] Since July 2019, the EPA has commenced four criminal prosecutions for dry weather wastewater overflows.[70] It is investigating two other dry weather wastewater overflow incidents with the potential for criminal prosecution. These proceedings highlight that it is critical we comply with our mandatory requirements.

Our July proposal identified the need for greater reactive maintenance of the wastewater network in 2020-24.[71] In our November Update the expenditure on wastewater reactive was revised upwards to account for the impact of extreme weather conditions.[72] This higher level of workload is expected to endure as dry soil conditions have resulted in a large increase in root ingress to pipes.

IPART has proposed a reduction in wastewater reactive maintenance spending of $7.5m per year or a total reduction of $30m over 2020-2024. We acknowledge that IPART has already accepted $243m in wastewater reactive expenditure. However, we consider the full amount should be included to allow us to meet our mandatory requirements. Current information suggests that even our increased forecast will not be sufficient to meet ongoing environmental requirements.

[69] Where offences are punishable by a fine of at least $10,000.
[70] There are now four matters before the courts: North Epping, Bangor, Northmead and Carramar.
[71] Sydney Water, Price Proposal, *Attachment 10: Operating Expenditure*.
[72] Sydney Water, Update to Price Proposal, Nov 2019.

Table 4-3 Wastewater reactive proposed operating expenditure for the 2020-24 regulatory period

	$2019-20, millions	Percentage of original forecast
Sydney Water proposed allowance	273.2	NA
IPART draft reduction	30	11.0%
IPART draft allowance	243.2	89.0%

We oppose IPART's proposed reduction of $30m noting that:

- it is not reasonable that t planned maintenance expenditure for 2016-20 could have been based on an assumption of extreme climate conditions
- more planned maintenance would not necessarily have reduced the number of chokes induced by extended dry conditions
- the EPA has explicitly set a higher expectation for meeting wastewater overflow EPL requirements, based on an independent assessment of activities required to improve environmental performance. We estimate that these activities require additional expenditure of around $60 million more than our November forecasts
- other events are also contributing to higher workload, such as major rainfall in early 2020, and, more recently, blockages caused by the use of non-toilet paper alternatives.

Efficient planned and reactive wastewater maintenance in the current period

In the face of extreme weather conditions in recent times, it would not have been possible to completely address the increase in reactive incidents with planned maintenance. We acknowledged in our November Update that a reduction in planned expenditure in the previous regulatory period had contributed at least partially to an increase in the need for reactive expenditure. In response, we are revising our wastewater asset strategies to increase proactive inspection and maintenance. However, for planned maintenance to be efficient, it has to be targeted and deliberate.

In 2016 Atkins noted how recent performance on wastewater chokes and dry-weather overflows had been well within Operating Licence limits.[73] At that time, environmental performance was also acceptable. This led it to conclude that we had scope to take greater performance risk while reducing proactive spending.[74]

In the 2020 review, Atkins has over-simplified the relationship between planned and reactive expenditure. There are a range of other factors, such as unpredictable weather conditions, that drive reactive work irrespective of the amount of planned maintenance done. Proactive spending cannot always detect where pressures exist on the network, and some planned maintenance

[73] Atkins-Cardno, 2015, *Sydney Water Corporation Expenditure Review – Final Report, IPART,* December, p 120.
[74] Atkins-Cardno, 2015, *Sydney Water Corporation Expenditure Review – Final Report, IPART,* December, p 30.

programs, such as the waterways program, are targeting different types of problems that cannot be addressed with other responses.[75] This view was supported in Atkins 2016 review which noted that, "*it is difficult to predict the level of wastewater blockages as it can be climate dependent and random (60% of chokes are first time chokes)*".[76]

Planned maintenance is designed to target high risk issues, while reactive expenditure is a response to all incidents including those not considered high risk.[77] In 2019 planned maintenance addressed approximately 500 issues, while there were approximately 19,000 incidents that needed to be addressed by reactive maintenance. Even with effective levels of targeted planned maintenance, first-time breaks that will need to be fixed can occur anywhere in our network.

Increased wastewater reactive costs

Recent regulatory and environmental changes are now expected to continue to put significant upward pressure on our wastewater reactive operating expenditure.

New EPA expectations to meet our Environment Protection Licence obligations

In March 2019 the EPA placed a special condition in all our EPLs to commission an independent assessment into our processes for managing dry weather sewerage overflows. GHD was commissioned to do this. In March 2020 GHD provided its final report, which included 37 recommendations related to a range of issues, including public health and safety and internal processes.[78]

On 19 March 2020 the EPA accepted all recommendations from GHD's final report. These recommendations provide clearer guidance on EPA expectations to comply with the requirements of our EPL. The EPA expects that we are adequately resourced to consistently meet environmental obligations.[79]

In line with GHD's recommendations, the EPA has advised it expects an ongoing increase in maintenance services. This will require a sustained resource increase. For example, it expects improved response times, year-round dawn to dusk response capability[80], and more frequent staff training. We expect this to cost around $60m more than the forecast included in November Update (see Table 4-4). This estimate includes an increase of over 100 FTEs, higher contractor clean-up expenses and more production employees and field service technicians (amongst other role increases). A business case to address these issues is expected to be finalised by June 2020.

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[75] The incidents targeted in the waterways program has not been manageable with root cutting/CCTV because of the difficulty of access and concerns around the safety of staff and contractors. These issues t become annual programs because the blockages recur and therefore lining is a far more sustainable solution. While the waterways program for renewals targets the impact of the 450 chokes that cause overflows to waterways, increased reactive costs are still needed to respond to the remaining 19,500 chokes across the rest of the area of operations.
[76] Atkins-Cardno, 2015, *Sydney Water Corporation Expenditure Review – Final Report, IPART,* December, p 233.
[77] This includes instances where the cost of increased proactive work would far outweigh the benefits of the failure it is seeking to avoid.
[78] GHD, 2020, *Sydney Water Corporation: Dry Weather Sewage Overflow Response Report*, March.
[79] Letter from the EPA to GHD, 19 March 2020, Subject: Sydney Water Dry Weather Sewage Overflow Response Final Report.
[80] Including weekends, evenings and public holidays

Table 4-4 Expected increase in costs resulting from GHD audit recommendations ($2019-20, millions)

	2021-22	2022-23	2023-24	2020-24	2020-24
Total increase in costs	13.04	16.97	15.05	16.44	58.55

System impacts can occur from various extreme weather conditions or events

As noted in November, the increase in wastewater chokes since late 2017 was largely driven by dry soil conditions. More recently, we have experienced a rapid rise in breakdown maintenance jobs following the major rainfall in February 2020.

Figure 4-1 shows the increase in the reactive wastewater workload in the last two years, with every month since October 2017 requiring more jobs than the long-term median. This reached a peak in February with more than double the jobs recorded than the long-term median.

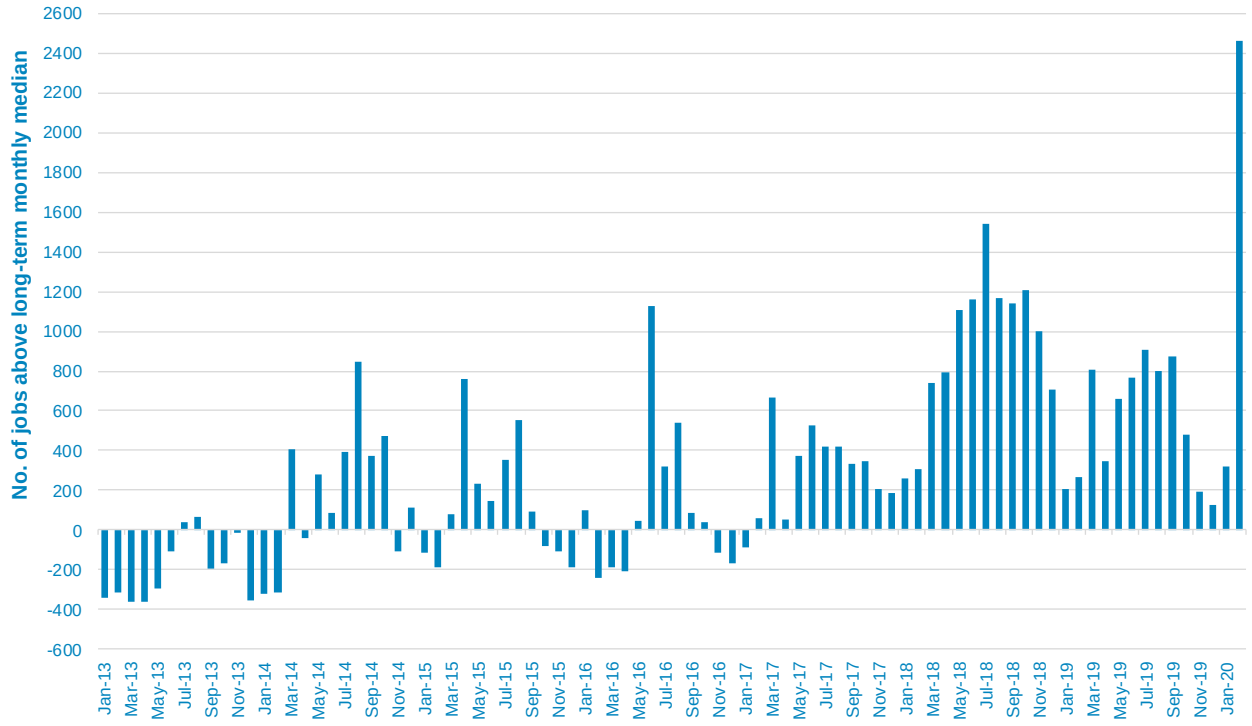

Figure 4-1 Wastewater breakdown jobs compared to long-term monthly median, Jan 13 to Feb 20

Fixing breaks in our wastewater network is a minimum requirement and this has been recognised by IPART. EPL requirements are not targets and limits apply independent of prevailing weather conditions. However, even after the end of drought, other types of severe weather can make it more challenging to meet these requirements. Regardless of recent rain events, tree roots remain where they have grown into wastewater pipes so a higher level of work will continue in 2020-24.

4.3.4 BOOT treatment cost

Our November Update included a total of $405.8m in operating costs associated with BOOT plants.

IPART has accepted Atkins' recommendation to reduce the allowance for BOOT treatment costs by $7.7m over 2020-24. This includes a $1.1m reduction for reduced water volume, which we have accepted. Table 4-5 shows that remaining $6.6m reduction is applied over the first two years, with Atkins having assumed a more favourable water quality forecast. [81]

Table 4-5 IPART adjustments to BOOT operating expenditure ($2019-20, millions)

	2020-21	2021-22	2022-23	2023-24	2020-24
Reduction in costs driven by water quality	-3.30	-3.30	0	0	-6.60

Atkins considered that our original proposal had taken a low risk approach in determining future costs. Our treatment costs were based on a statistical average of six years of daily raw water quality data to 2017 to account for the uncertainty of the next occurrence of a significant rainfall event.

A key indicator of water quality is water colour, which is measured in hazen units. Water quality above 20 hazen units is a key driver of water treatment costs for Prospect BOOT which filtrates 85% of Sydney's water supply. Atkins considered that water quality would not be as low as our forecast, and even if it occurred, it would be later in the period. In January, we suggested an approach that was adopted by Atkins in its Final Report to reduce our treatment costs in the first two years, as a way to better share risk between Sydney Water and our customers.

Recent events have now allowed for a more accurate estimation of costs. The major rainfall event in February resulted in a deterioration in water quality above 20 hazen units in Warragamba dam, which will continue into the new period. We are now certain that water quality will be worse than the average adopted in our original forecast and we will incur higher costs than originally proposed.

We have recalculated water quality over the next four years in line with the quality following a major rainfall event that occurred in 2012 that caused a similar rise in dam levels and hazen levels as seen in February this year. We then forecast colour change over the next four years based on the rate of improvement following the 2012 inflow event.

Using the updated calculation, BOOT treatment is expected to cost $410m over the period, that is, $4.1m more than we said in November.[82] However, we are able to reduce these treatment costs by undertaking additional pre-chlorination treatment at our own plant. For every $1 of costs incurred for pre-chlorination, $1.50 is saved in BOOT payments. Incurring additional pre-chlorination costs (mainly chemicals) of $3.4m will avoid $5.2m of BOOT costs resulting in a net saving of $1.8m, further reducing our revised forecast to $408m. Refer to Table 4-6 below.

[81] This reflects Table 5-24 from Atkins Final Report, p 161.
[82] This includes our acceptance of IPART's $1.1 million reduction related to volume.

We have taken a degree of risk in deriving these estimates. Modelling underlying our water quality predictions assumes that there will be no further major rainfall events over the next four years. We are taking on risk if further major rainfall events occur. Given worsening climate conditions and predictions of increased frequency of extreme rainfall events,[83] we consider this risk to be material.

Table 4-6 Recalculated water quality costs for BOOT plants, Sydney Water ($2019-20, millions)

	2020-21	2021-22	2022-23	2023-24	Total
November proposal[1]	100.8	101.4	101.5	102.1	405.8
Updated cost increase above November proposal (without additional pre-chlorination)	5.6	2.7	-0.9	-3.3	4.1
Total revised costs (without additional pre-chlorination)	106.4	104.1	100.6	98.8	409.9
Updated cost increase with additional pre-chlorination above November proposal[2]	5.9	2.7	-1.3	-5.0	2.2
Total revised costs for BOOT treatment (with additional pre-chlorination)[2]	106.6	104.1	100.2	97.1	408.1

Note: 1. Includes IPART's draft reduction to volume of water.
2. Includes additional cost of pre-chlorination above our November expenditure proposal.

Given this new information, we request that IPART reinstates the $6.6m of BOOT treatment costs as it is now very likely that we will incur higher costs than originally proposed early in the period. While this includes higher pre-chlorination chemical costs at our Sydney Water-owned plant, this approach leads to a smaller overall increase.

4.3.5 Electricity

Our July Price Proposal included operating expenditure related to electricity of $158.4 million over 2020-24. IPART's Draft Determination reduced total electricity expenditure by $4.24 million (Table 4-7). This is based upon cost savings that Atkins believes we would have achieved if we had invested in renewable energy projects in earlier periods.

[83] CSIRO, 2018, State of the Climate 2018, p 8.

Table 4-7 Operating expenditure for electricity 2020-24 ($2019-20, millions)

	2020-21	2021-22	2022-23	2023-24	Total
Sydney Water electricity allowance	40.9	39.5	39.1	38.9	158.4
IPART electricity allowance	40.9	38.98	37.24	37.04	154.16
Reduction in allowance	0	0.52	1.86	1.86	4.24

IPART's Draft Determination accepted Atkins' recommendation for an additional renewable generation target of 2% of grid supplies by the end of 2020-24.

We challenge this position and oppose the cost reduction because:

- it disregards the fact that we only invest in renewable energy when it is financially sound
- Atkins does not provide evidence to substantiate its position
- there are errors in energy savings calculations, cost calculations and energy-specific terminology.

As noted in our proposal, we have a mature and efficient approach for managing energy costs and a team with energy industry expertise. The track record is strong with material energy cost savings achieved over 2016-20. We adopt a portfolio approach to investing in renewable projects to reduce market risk exposure and reliance on grid supplied electricity, up to the point where this would lead to higher cost to customers. We undertake long-term NPV calculations to assess potential cost savings, considering the avoided electricity cost, the export electricity rate and input availability.[84]

Under this prudent and efficient approach, we have committed to delivering around 10 GWh (around 2.8%) of annual electricity needs from generation. This is supported by a capital program which includes only those projects which will achieve a net-positive outcome over their lifetime.

No evidence that an additional 2% renewable energy target is cost effective

We oppose the 2% stretch target proposed for renewable energy. IPART provides no analysis as to why a 2% target was set or would be efficient. Atkins' analysis only notes the potential benefits of such a target without considering the costs. This does not accord with our own internal cost-benefit analysis for assessing investments in such schemes.[85]

[84] Cogeneration requires adequate biogas volume to support continued generation, hydro requires long-term viability of water flows, and solar arrays require adequate land or rooftop space.
[85] Sydney Water manages our energy costs over our portfolio of assets, including opportunities for renewable energy generation, in a cost-effective manner. Our portfolio is based on business cases with positive net present values (NPVs). Further, as noted in our November Update, we engaged external experts to develop a long-term pricing model taking account of demand-supply balance, generation mix and market price, and manage our rates through a progressive purchasing contract.

We estimate that meeting the 'additional 2%' would require around 7,200 MWh of generation per year. Considering capacity requirements by renewable generation type, we forecast that the 2% stretch target would cost at least an additional $3.3 million in capital expenditure (Table 4-8).

Table 4-8 Expected capital cost of an additional 2% renewable energy target

Type of renewable generation technology	New capacity (kW)	Capital cost per kW unit ($/kW)	Total capital cost ($m)
Cogeneration (9% of current)	930	3,500	3.3
Solar (30 times current)	5,100	1,500	7.7
Hydro (15% of current)	870	4,000	3.5

We consider the target is inconsistent with our energy sourcing framework as it has no regard to:

- analysis of our current renewable energy assets
- the ability to further leverage renewables within the current mix
- the cost of achieving such a target.

We query whether the additional 2% target would lead to prudent or efficient expenditure. The capital costs of additional renewable capacity would not be sufficiently offset by operating cost savings.

Corrected calculation of energy savings proposed by Atkins

IPART's reported cost savings are incorrect due to errors in the quantity of renewable generation, the calculation of opex savings and units of measurement used.

Between Atkins' report provided to us in February 2020 (for fact-checking) and its Final Report (March 2020), there was an increase in assumed energy savings. In Table 5-19 of Atkins Final Report, the 'additional renewables' increased by almost 10 GWh from 11.8 GWh to 21.6 GWh.[86] We consider this is a reporting or calculation error that does not reflect the position put forward by Atkins in the report provided to us in February 2020.

In its February version Atkins suggested that a stretch target of 2% (7.2 GWh) of grid supplies would be achieved by the end of 2020-24 in line with the additional renewables profile in Table 4-8. In contrast, the Final Report published by IPART proposes a 2% (7.2 GWh) target with a profile of 7.2 GWh per year for the 3 years of the regulatory period commencing in 2021.

Furthermore, Atkins appears to overestimate the potential operating cost savings by $2.9 million. We have attempted to reconstruct Atkins' calculations based on the unit rates detailed in Table 5-19 of their report.[87] In our view, the electricity operating expenditure saving due to the increased additional renewables would only be $1.3 million (excluding any capital expenditure), as shown in

[86] From 11.8 GWh in the February 2020 report to 21.6 GWh in the March 2020 report.
[87] The same unit rates are used in Table 5.19 of the February and March 2020 report.

Table 4-9. This operating expenditure saving is also presented in Table 5-24 of their report. Moreover, the unit rate should be reported as $/MWh, not as $/GWh.

Table 4-9 Recalculated electricity operating expenditure savings for the 2020-24 regulatory period ($2019-20, millions)

	2020-21	2021-22	2022-23	2023-24	Total
Increased additional renewables (GWh)	0	1.00	3.60	7.20	11.80
Opex saving ($m)	0	0.1	0.4	0.8	1.3
Revised electricity expenditure ($m)	40.9	39.4	38.7	38.1	157.1

Our energy efficiency programs

IPART enquired about activities we have undertaken to improve energy efficiency and lower electricity costs.[88]

We have an established program to identify, assess, implement and track energy efficiency improvements across our operations and investment is only undertaken where there is a clear business case. Projects range from lighting replacements through to detailed process optimisation. The pipeline of projects is maintained mostly through a program of energy efficiency audits. Over 2016-20, we implemented 2,921 MWh of energy savings per year with a cumulative cost saving of around $349,000. The program will continue over 2020-24.

We also recently completed work to define best practice energy efficiency for our facilities and main energy consuming asset types. The resulting facility and equipment-specific energy efficiency benchmarks set new minimum standards to work towards and informed a new training. We have also taken part in industry rating schemes and the lessons learnt will help drive further improvement.[89]

As the electricity grid transforms to include more distributed renewable energy resources, we are monitoring the need to increase operational flexibility to respond to natural variations in supply of electricity. We have programs of work to develop flexible demand response which can generate revenue to further offset our electricity costs while supporting the electricity grid.

[88] IPART, 2020, *Draft Report: Review of prices for Sydney Water from 1 July 2020*, March p 39.
[89] Including for example, Infrastructure Sustainability Council of Australia's (ISCA) 'Infrastructure Sustainability (IS) ratings' for the Quakers Hill-St Marys upgrade project, where we achieved an Excellent Infrastructure Sustainability Design rating

4.3.6 Prospect South to Macarthur link

In our November Update, we forecast operating expenditure for the Prospect South to Macarthur (ProMac) pipeline to be $38.8 million. IPART has removed all ProMac expenditure following the increase in dam levels in February 2020.

The investment is critical to meet customer demand from growth and to improve system resilience and we request that operating costs are reinstated along with the capital costs. Based on the capital profile, we forecast operating expenditure of $27 million in 2020-24 (see Table 4-10).

Table 4-10 Prospect to Macarthur operating expenditure ($2019-20, millions)

	2020-21	2021-22	2022-23	2023-24	Total
Sydney Water counter proposal	0	7.0	10.0	10.0	27

Further details on the project and our forecast expenditure are presented in Chapter 3.

4.3.7 Water conservation and water wise communication campaigns

In November, we proposed an ongoing level of 'base' expenditure for water conservation activity and water wise behaviours campaigns (referred to as 'water efficiency advertising' in our Update), which would then significantly increase for both areas during drought.

The Atkins Final Report and IPART Draft Report use numerous terms for expenditure relating to water wise behaviours campaigns (including water efficiency advertising, water restrictions advertising, water conservation advertising, or just water conservation). The use of different terms is confusing. We recommend using the consistent term of water wise behaviours campaigns, to avoid confusion with expenditure intended for the delivery of water conservation program activities (eg demand management and leakage) or implementing restrictions. Water wise behaviours campaigns cover more than direct advertising. These campaigns aim to encourage broader behavioural change, not just adherence to water restriction rules.[90]

We proposed $10m a year 'base' expenditure for water wise behaviours campaigns, increasing by an extra $10m a year during drought (to total $20m a year during drought). Instead, IPART's Draft Report adopts Atkins' recommendation of $5m per year base expenditure, increasing by $15m a year during drought (to still total $20m a year during drought). This is a transfer of $5m from our proposed base expenditure to drought cost pass-through. We accept this transfer.

We request levels of approved water conservation *and* water wise behaviours campaign expenditure are clarified in IPART's Final Report, given IPART's proposal to require additional reporting in this area (see Chapter 13).

Our view of approved expenditure for these two areas is:

- Baseline program

[90] Typically, water restriction rules only target outdoor use (for enforceability), whereas communication campaigns encourage behavioural change for both indoor and outdoor use.

- $10m per year for water conservation activities (such as demand management, active leak detection, or new recycling initiatives)
- $5m per year for water wise behaviours campaigns

- Drought increase (in addition to baseline program)
  - around $50m per year additional expenditure for water conservation activities
  - $15m per year additional expenditure for water wise behaviours campaigns.

Additional drought funding will be recovered as part of the proposed increase to water use prices once dam levels fall below 60% until dam levels reach 70%.[91]

4.3.8 Efficiency applied to cost pass through costs

In addition to the cut specifically applied to the water conservation program, Atkins has applied a continuing efficiency to the total operating expenditure used to calculate drought prices. This efficiency increases each year across the four-year period. We question whether it is valid to apply an increasing continuing efficiency to activities that are undertaken from time to time, rather than as business as usual.

[91] The drought price also includes cost recovery for other activities such as implementing restrictions and drought management costs, as well as an adjustment for the expected reduction in demand.

5 Notional revenue requirement

Key messages

- Our revised Notional Revenue Requirement includes revised capital and operating expenditure, and our proposed in-period allowance adjusting for an underfunding of our revenue requirements due to the high inflation forecasts used within IPART model.
- Our Notional Revenue Requirement in non-drought condition is $11.0 billion ($2019-20), this is $937 million higher than IPART's draft decision.
- In drought conditions, the revenue requirement rises to $11.6 billion to cover incremental drought costs. The $0.6 billion increase assumed drought conditions over a 4-year period.
- We have proposed a number of adjustments to IPART's draft Notional Revenue Requirement calculation. We have brought these to IPART's attention.

5.1 Notional revenue requirement under average weather conditions

Compared to our November Update, IPART's draft notional revenue requirement (NRR) is $630 million, or 5.9% lower mainly from a reduction in WACC and allowable expenditure. We have revised the proposed NRR based on our view of appropriate expenditure.[92]

We have also adjusted some other components in the NRR calculation where we hold a different view or consider IPART may have made an inadvertent error.

Figure 5-1 gives an overview of the movements of the NRR and the main elements contributing to the changes.

[92] Our revised revenue calculations reinstate most of the expenditure reductions we oppose in Chapters 3 and 4. There are some small areas that have not been included, such as electricity operating costs, as our position on these areas was not confirmed prior to our modelling.

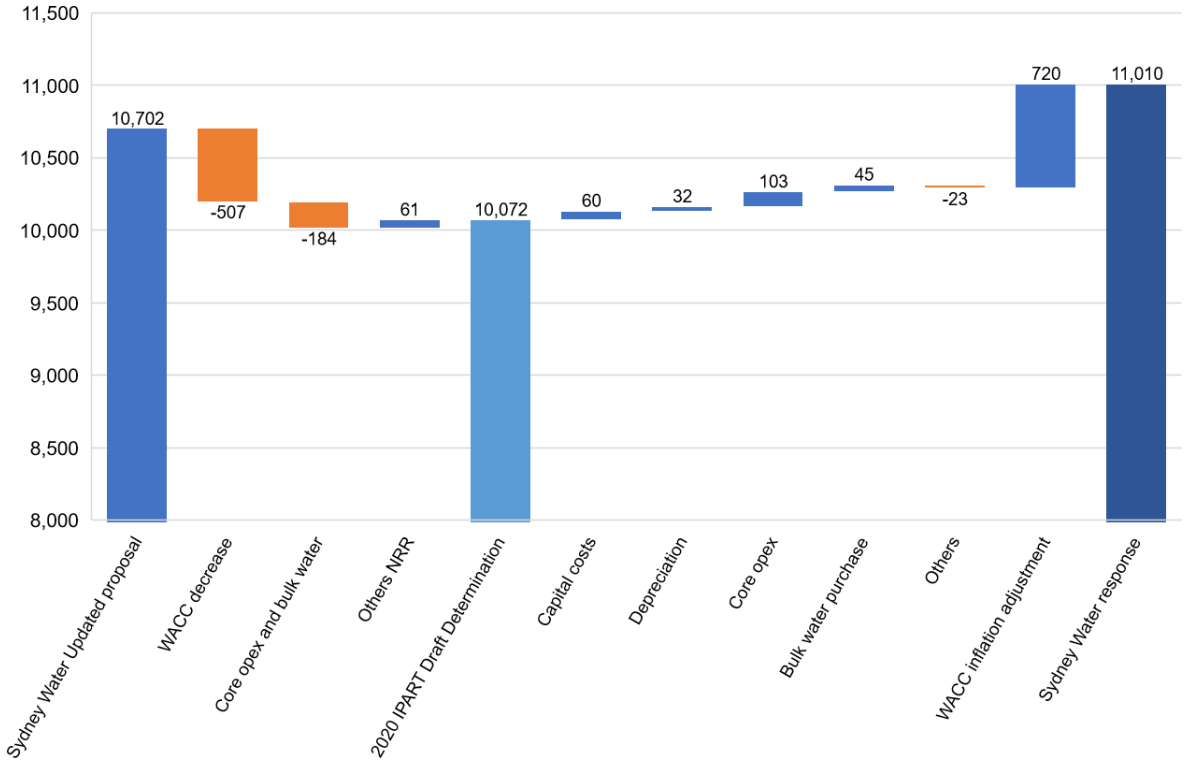

Figure 5-1 Main changes in NRR ($million, 2019-20)

Our proposed changes to IPART's approach include:

- tax allowance, we have included our forecast tax depreciation on our updated capital composition and expenditure forecasts based on our detailed tax calculation model; we have also made an adjustment to the tax allowance for assets free of charge (AFOC).
- working capital allowance, we have included the seven-day grace period for late payment that IPART proposed to remove from the working capital allowance.
- other costs and revenue adjustments, we have included the updated true-up adjustments in 2019-20 that flow through to 2020-21, such as the residual cost adjustment for the Sydney Desalination Plant (SDP), Shoalhaven transfer costs and the demand volatility adjustment. We also have used our proposed approach for a 10:90 sharing ratio with customers on non-regulated rental income, which IPART rejected in its draft report.

Our revised NRR is calculated using a post- tax real WACC of 3.2% adjusted for inflation as outlined in Section 12.2.[93] With the inflation adjustment, the proposed post-tax real WACC is 3.9%.

5.1.1 Our proposed NRR for 2020-24

Our revised NRR in average weather conditions is $11.0 billion (Table 5-1). This is $937 million (9%) higher than IPART's draft decision over 2020-24. $720 million relates to our proposed WACC

[93] That is, we have applied a forecast 'inflation adjusted factor' of 0.68% (2.3%-1.62%) at the outset, with a true-up adjustment between actual and forecast inflation to be made as part of the 2024 Determination.

inflation adjustment, and the rest ($217 million) reflects our revised expenditure and other adjustments.

Table 5-1 Revised "average weather" NRR and comparison to IPART's draft decision ($ million, 2019–20)

	2020–21	2021–22	2022–23	2023–24	Total	IPART's Draft Decision
Operating expenditure	1,394	1,385	1,358	1,348	5,485	
Return on assets	758	796	828	854	3,236	
Depreciation	404	439	470	493	1,806	
Tax allowance	119	105	106	117	446	
Return on working capital	8	9	10	10	37	
Total notional revenue requirement	**2,682**	**2,734**	**2,771**	**2,822**	**11,010**	**10,072**
Difference					937	
Difference (%)					9.3%	

5.2 Notional revenue requirement under drought conditions

Incrementally in drought, the revised NRR will increase by $0.6 billion over four years, to $11.6 billion (if drought conditions were assumed for the whole four years).

The incremental revenue of $0.6 billion required in drought conditions covers additional charges from SDP when operating, a higher charge from WaterNSW, implementing water restrictions and additional water conservation and communications campaigns, and the expected impact of water restrictions on demand. These costs included Shoalhaven Transfer costs, which average about $14 million[94] per year, which were not included in IPART's drought NRR. The estimated contribution of each of these drought-related items is shown in **Error! Reference source not found.** below.

Chapter 6 shows how this increase is reflected in the drought water usage price.

Some drought related contingent costs, such as Sydney Water's costs resulting from an expansion of the SDP, would also be recovered via increases to water service charges. While not included in the drought related NRR estimate, they would also add to customer bills if triggered.

[94] Based on the $3,587,500 per quarter cost estimated by IPART (Table 1.3) in its Draft Determination.

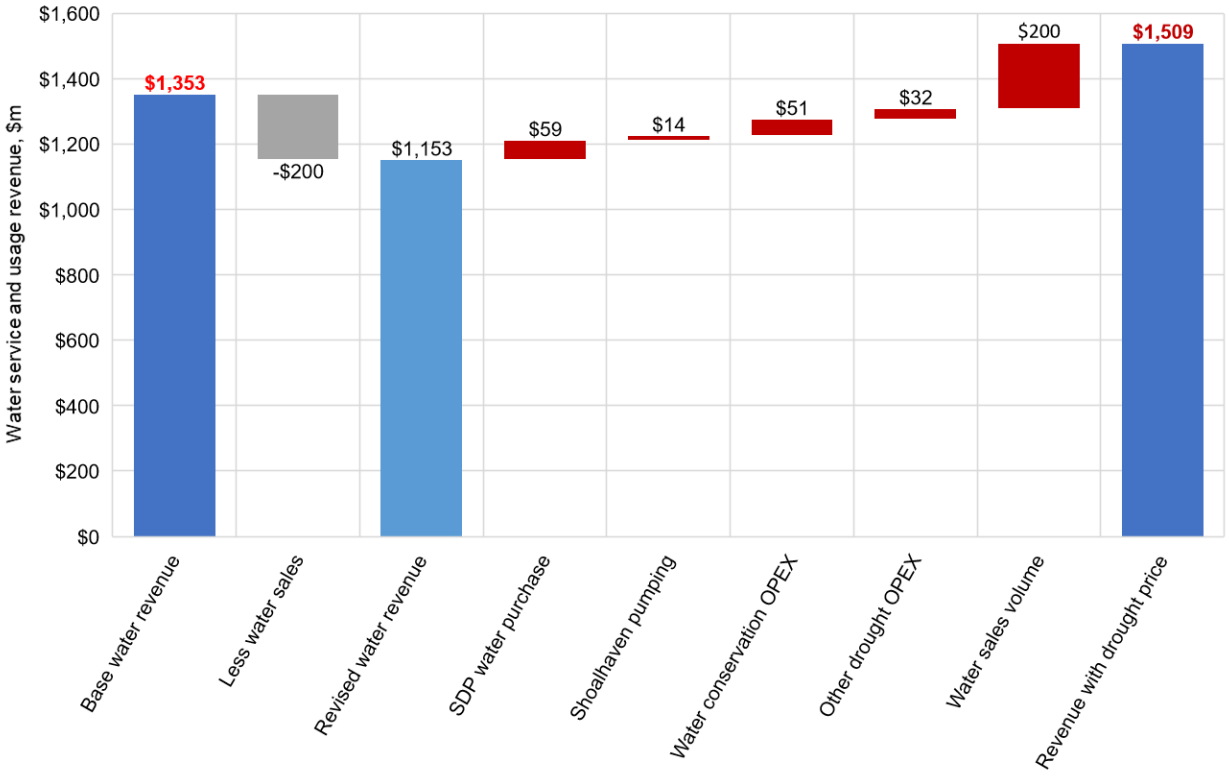

Figure 5-2 Water revenue components under drought conditions (4-year average, $2019-20)

Adjustments to the notional revenue requirement

We explain below the adjustments to our revised NRR that differ from IPART's approach.

5.2.1 Adjustment to tax allowance

Tax Depreciation

IPART has applied a previous Sydney Water tax depreciation forecast, adjusted for IPART's draft decisions on capital expenditure. Based on our revised capital expenditure proposal, we have calculated the revised tax depreciation forecast in Table 5-2[95].

On average, this is $41 million per year higher than IPART's tax depreciation in its draft decision. The higher tax depreciation will have the effect of reducing the tax allowance in NRR.

[95] In our calculation, we have excluded capital expenditure relating to BOO upgrades that are funded through Finance Leases due to fact that Sydney Water is unable to depreciate (for tax purposes) assets that it does not own or control until they are legally transferred over.

Table 5-2 Sydney Water's Revised Proposal on tax depreciation

	2020–21	2021–22	2022–23	2023–24	Total
Capital Expenditure ($ million, real 2019-20)					
Water	531	353	322	259	464
Wastewater	901	836	826	785	3,348
Stormwater	43	56	45	49	192
Total Capital Expenditure	**1,475**	**1,244**	**1,193**	**1,092**	**5,004**
Tax Depreciation ($ million, nominal)					
Water	145	167	182	178	673
Wastewater	342	387	425	432	1,586
Stormwater	9	10	11	12	42
Total Tax Depreciation	**496**	**564**	**618**	**622**	**2,301**

Asset free of charge

In line with the 2016 determination[96], IPART has passed through the holding costs of differences between actual and forecast AFOC in 2016-20 to the 2020-24 determination period. The holding costs were calculated using a real post tax WACC of 4.9% which was the prevailing WACC for the 2016 determination period.

In calculating the holding costs, we note the following in IPART's approach:

- IPART has used forecast AFOC for 2019-20;
- Consistent with other true-up processes, IPART should consider only using actual results from 2016-17 to 2018-19 and exclude the 2019-20 forecast.
- IPART has used a real post tax WACC of 4.9% in its calculation,
- We believe a pre-tax WACC of 5.9% should be used instead.

With these changes factored in, we estimated that the holding costs to pass through to 2020-21 will be around $3m higher than allowed in draft decision.

5.2.2 Adjustment to allowable 'days of delay' of receivables

The number of 'days of delay' between providing a service and receiving payment for that service is a key element in calculating the working capital allowance. We have assumed 36 'days of delay' in the working capital allowance used for our revised NRR.

[96] IPART, Review of Prices for Sydney Water Corporation Final Report, June 2016, p 136

In its draft allowance for working capital, IPART removed a seven-day grace period that we provide to customers before a late payment fee is applied. This was decided on the grounds that on average customers pay before the due date. This reduces the number of 'days of delay' from 36 to 29. We would like IPART to reconsider retaining the seven-day allowance for reasons mentioned in Section 11.3 and the increasing higher collection risks as mentioned below.

IPART also assumes an average six-day delay to account for customers on payment plans or who otherwise pay their bills late due to financial difficulties. Under normal conditions, this applies to about 10% of customers. It is highly likely we will see an increase in the number of customers who will take longer to pay in the coming months or years, depending on the economic impact of the current pandemic.

Our modelling results (see Table 5-3) show that if the number of customers paying late increases to 30% or 50%, the average 6-day delay could potentially increase to 16 or 27 days. This could increase our working capital requirement by up to $155 million per year. We ask IPART to reconsider the allowable 'days of delay' in light of our expanded customer assistance programs in response to the current COVID-19 situation.

Table 5-3 Estimate days of delay with various proportion of customers in financial difficulty

	Sydney Water proposal	Percentage of delayed payments (customers) due to financial difficulty	
Notice period for bill payment	21	21	21
Delay in bank payments being transferred to Sydney Water	2	2	2
Days before late payment fee is applied	7	7	7
Percentage of late payments without late payment penalty	10%	30%	50%
Additional delay due to late payment without late payment penalty	6	16	27
Total days of delay	**36**	**46**	**57**

5.2.3 Adjustment to non-regulated rental income

In calculating the NRR for its draft decision, IPART rejected our proposal to share 10% of non-regulated revenue from rental income with customers, instead retained the existing 50%. We have used a 10:90 sharing rule for non-regulated rental income in line with our Price Proposal. We outline our reasons for this in Section 12.3.2.

5.2.4 Other adjustments for 2019-20

SDP and WaterNSW/Shoalhaven Transfers cost adjustments

IPART's NRR for 2020-21 includes $28.6 million in SDP-related pass-through adjustments from 2019-20, and no adjustment for Shoalhaven transfer payments in 2019-20.

- The SDP adjustment aligns with our November's Update proposal, assuming SDP would not have been in operation. However, the assumption is no longer applicable and additional costs in 2019-20 need to be passed-through to 2020-21 and recovered from water prices.
- In our latest proposed SDP costs, we have used updated SDP costs including updated data and information, and maintained the current pass-through period from 1 July to 30 June.
- We will provide an update of SDP adjustments to IPART in early May.
- In our revised cost for non-drought conditions, we used the same WaterNSW bulk water costs IPART used in its draft NRR calculation, with an adjustment for Shoalhaven Transfer payments made in 2019-20. In this revised cost forecast, we assumed the maintenance of the current pass-through period from 1 July to 30 June for 2019-20 charges.
- Further refinement of this adjustment will be provided to IPART in early May.

  However, as highlighted in Section 5.2, we note that IPART has not included its forecast Shoalhaven costs of $14 million per year ($3,587.5k per quarter[97]) in its draft NRR in drought condition.

We have included in our NRR the SDP and WaterNSW costs as shown in Table 5-4. We ask IPART to note our proposed adjustments and consider including these costs in their final decision.

Table 5-4 Bulk Water costs and adjustments ($million, 2019–20)

	2020–21	2021–22	2022–23	2023–24
Average weather conditions				
WaterNSW	189.1	189.5	189.9	190.5
SDP	188.3	178.8	178.8	178.8
Total bulk water costs in average weather conditions before adjustments	**377.4**	**368.3**	**368.7**	**369.3**
Drought				
WaterNSW	203.1	203.5	203.9	204.5
SDP	248.4	237.9	237.9	238.0
Total bulk water costs in drought before adjustments	**451.5**	**441.4**	**441.8**	**442.5**
Sydney Water's adjustments for				
Shoalhaven Transfer payments 2019–20	+ 5.1			
SDP payments 2019–20	+ 3.3			

The application of the demand volatility adjustment mechanism (DVAM)

In its draft decision, IPART has accepted our proposal to calculate the DVAM based on four years of actual water sales data to account for the timing lag at the end of the determination period. This 'three years plus one' approach improves the effectiveness and accuracy of this mechanism.

[97] As per shown in Table 1.3 of IPART's Draft Determination. We have deflated the cost with 2.5% inflation to $2019–20.

IPART has reduced our NRR by $20.1 million over the 2020 determination period, to address the over-recovery of revenue by Sydney Water over the current period. We would like IPART to reconsider our proposed adjustment of $17.1 million. The main reasons for the variance:

IPART has disallowed the deduction of the incremental water treatment costs incurred by Sydney Water to serve the higher demand experienced.

IPART has calculated higher holding costs for the higher water sales earned.

IPART has included sales of unfiltered water; however, this factor has only a minor effect on the calculation.

5.2.5 Other adjustments

We have noted a few other adjustments that flow from the capital expenditure that will impact on the NRR or allocation of NRR by services.

Finance Lease – Upgrade capital costs for BOOT plants

IPART has allowed a forecast capital allowance for upgrades at Macarthur WFP and Prospect WFP to be included in our RAB. The WFP assets are currently treated as finance lease. Whilst IPART has allowed the full recovery of costs at Macarthur, it has imposed a 15% cut for the Prospect WFP upgrade. The cut for Prospect is based on the notion that efficiencies could be further found in the procurement of the assets as well as design and project management.[98.]

We disagree with IPART's draft decision. Whilst under this complex BOOT arrangement, any plant upgrades are only able to be carried out by the BOOT plant owner, we have to date negotiated and implemented an extensive project efficiency plan that will meet our prudency and efficiency objectives in the procurement and construction of the upgrade work. Refer to Appendix B for our reasons to support our proposed position.

For our revised proposal, we have maintained our proposed capital expenditure for the upgrades at the Macarthur and Prospect BOOT WFPs as below:

[98] IPART's 2020 SWC Pricing Model - Draft Report - for Sydney Water, "Free" tab, rows 378 and 379.

Table 5-5 Sydney Water's proposed capital expenditure on finance lease assets ($ million)

BOOT WFP	2016-17	2017-18	2018-19[99]	2019-20	2020-21	2021-22	2022-23	2023-24
	nominal	nominal	nominal	nominal	$2019-20	$2019-20	$2019-20	$2019-20
Macarthur WFP	-	0.3	4.2	16.7	1.2	-	-	0.1
Prospect WFP	2.3	5.3	3.6	28.2	46.1	76.9	59.5	18.5
Total	**2.3**	**5.6**	**7.7**	**44.8**	**47.4**	**76.9**	**59.5**	**18.5**

Source: Sydney Water Annual Information Return October 2019

Rouse Hill – the treatment of capital expenditure for Rouse Hill

IPART set the Rouse Hill Land Drainage charge in the 2016 determination to recover 50% of the Rouse Hill capital expenditure costs (in line with the impactor pays principle) with the remaining 50% of costs added to the wastewater RAB and recovered through general wastewater prices across Sydney Water's broader customer base.

In its draft decision, IPART has added all Rouse Hill Stormwater capital expenditure to the Stormwater RAB for the years 2019-20 to 2021-22[100]. This treatment is inconsistent with its 2016 determination. We note that the same capital expenditure has also been used in the calculation of the Rouse Hill land Charge that sits outside the NRR building block calculation. This has inadvertently led to the double counting of the Rouse Hill capital expenditure flowing through to prices for those years.

We request IPART to correct the treatment of the capital expenditure for the years 2019-20 to 2021-22, as highlighted above.

Green Square

IPART has incorrectly deducted a total of $7m ($2019-20) across the 2016-17 to 2018-19 years from historical stormwater capital expenditure relating to Green Square HAF cash contributions (net of tax); this amount has already been deducted (i.e. $7m of cash contributions net of tax) in 2014-15[101].

We request IPART to make the appropriate adjustment.

For further details, please refer to Section 3.2 'Historical capital expenditure'.

[99] IPART has used 2018-19 forecast capital expenditure numbers in Table F.6 (Appendix F page 45) of its Draft Determination. Actual 2018-19 capital expenditure numbers have been provided in the October 2019 Sydney Water Annual Information Return.
[100] There is no forecast capital expenditure after 2021-22 as the trunk drainage construction program should be complete in 2020-21.
[101] IPART, Review of Prices for Sydney Water Corporation Final Report June 2016, p 133.

6 Water prices

Key messages

- We accept IPART's proposed approach to drought pricing.
- We recommend retaining a water usage price of $2.11/kL for non-drought conditions. This price better reflects the long-run marginal cost of water and with differences in customer preferences from various segments.
- This will:
  - result in a water service charge of around $108/year for an average residential customer
  - lower the drought water use price to $2.93/kL.
- Using our baseline water use price of $2.11/kL, bill increases experienced by large households and large water using businesses would be reduced in non-drought conditions.
- Customers who use more water will still face higher water use charges during drought, relative to customers who reduce their use.
- We agree with the proposed trigger definitions for moving between base case and drought prices, but note that the draft decision does not allow sufficient time for billing system implementation and communication with customers.
- We support the cost pass through arrangements related to SDP costs and Shoalhaven transfer charges, subject to a number of issues requiring further consideration and clarification.
- We accept IPART's draft decision to adjust the Demand Volatility Adjustment Mechanism for the next regulatory period, but request that IPART clarify the materiality calculation in the Final Report.
- While IPART's drought price is a step in the right direction, we consider that there would be merit in a broader pricing structure review in the future.
- There are a number of accuracy and implementation issues in the Draft Determination. We have brought these to IPART's attention and will continue to engage with IPART on these issues.

6.1 Our revised water prices

We are proposing to retain our current water use price of $2.11/kL instead of adopting IPART's draft decision of $2.30/kL for non-drought conditions. This affects the water service charge, as the service charge is used to recover the remainder of Sydney Water's revenue requirement not covered by usage charges.

We then propose a drought price of $2.93/kL, that is lower than IPART's draft decision of $3.12/kL. This price reflects the increased costs of drought response activities and the expected impact of water restrictions on demand.

Our revised water prices are set out in Table 6-1**Error! Reference source not found.** and reflect the following key differences to IPART's draft decisions:

- maintaining a base water usage price of $2.11/kL
- additional expenditure and other changes made in our revised revenue calculations (see Chapter 5)
- minor cost adjustments to the drought water usage price
- changes to volume related to demand elasticity to reflect differences in our proposed prices.

Table 6-1 Proposed water service and usage charges ($2019–20)

	2019–20	2020–21	2021–22	2022–23	2023–24
Service charges ($/year)					
Residential	96.69	108.06	108.06	108.06	108.06
Non-residential customers with a 20mm meter	96.69	108.06	108.06	108.06	108.06
Usage charges ($/kL)					
Non-drought	2.11	2.11	2.11	2.11	2.11
Drought	2.24	2.93	2.93	2.93	2.93

Note: The drought usage price for 2019-20 includes $0.13/kL SDP uplift charge only.

Table 6-2 summarises our revised water sales forecasts based on proposal to maintain the current base water usage price.

Table 6-2 Water demand forecast for water services pricing (ML)

	2020–21	2021–22	2022–23	2023–24
Sydney Water's demand forecast				
Non-drought				
Metered potable water sales	513,049	519,534	525,946	533,948
Unfiltered water	903	903	903	906
Drought				
Metered potable water sales	420,099	425,415	430,730	437,343
Unfiltered water	789	789	789	792
IPART's demand forecast in the Draft Report				
Non-drought				
Potable water	508,539	515,195	521,473	529,329
Unfiltered water	1,807	1,807	1,807	1,812
Drought				
Potable water	418,848	424,330	429,501	435,972
Unfiltered water	1,807	1,807	1,807	1,812

Note: Sydney Water's metered potable water demand includes potable water top-up for recycled water.

Our views on IPART's draft decisions relating to water prices are outlined in the sections below.

6.2 Different water use prices depending on dam levels

IPART's draft decision sets two separate water usage prices and sales forecasts to apply in either:

a) normal water storage conditions; or

b) a drought scenario.

We accept IPART's approach for 2020-24 and agree that this a simple and practical arrangement.

We agree that the drought price should reflect costs relating to drought response activities and cover the expected impact of water restrictions on demand. This provides a fair and practical approach to dealing with the different cost drivers under restricted and non-restricted demand conditions and gives a signal to customers to help conserve water during drought.

We also agree with the related draft decision to remove the SDP uplift in the usage charge and instead include expected costs from operating the plant to be included in the drought price. This further supports a clear drought pricing signal and is an easier message to communicate to customers.

While IPART's proposed approach is a step in the right direction, we consider that alternative (more efficient and/or equitable) pricing methods could be further considered through a broader price structure review in the future. We look forward to engaging with IPART and stakeholders on these issues.

6.2.1 The base water usage price

We do not accept IPART's draft decision to increase the average weather usage price from $2.11/kL to $2.30/kL. We consider that maintaining the current usage price of $2.11/kL is a better (more efficient and equitable) outcome for our customers because:

- it is consistent with both IPART's estimates and our analysis
- it is more representative of our customer research
- It improves equity considerations, as there are likely high hidden costs to undertaking a material change to $2.30/kL.

We elaborate on these issues below.

$2.11/kL is more consistent with IPART's estimates and our analysis

We consider that IPART's primary reason for adopting a $2.30/kL estimate is inconsistent with its own reported LRMC estimates of between $1.93/kL to $2.09/kL. Further, in a review of Sydney Water's LRMC model, IPART estimated a range of between $2.00/kL to $2.20/kL. Based on these estimated ranges, IPART reported a reasonable range between $1.93/kL to $2.20/kL. We consider a point in the middle of this range would strike a better balance between the efficiency of the pricing structure and impacts on customers. Sydney Water's proposed $2.11/kL is marginally higher than the mid-point of this range of $2.07/kL.

IPART provides some justification for using a higher upper range stating:

> *The LRMC has been estimated based on bottom-up costings, which might underestimate all the future costs of supplying water such as the need for additional treatment or transport infrastructure or the need to prioritise less cost favourable augmentations due to short-term supply factors.*[102]

However, we do not agree that the costs and our modelling are more likely to be an underestimate than an over-estimate. Our modelling included low and high cost scenarios. The bottom-up costings include contingency and — based on the current technologies — might equally overestimate the future costs of supply.

On the contrary, we consider that the arguments for why the LRMC may be too high are more likely for two reasons. First, a benefit of the drought pricing recommended by IPART (discussed below) is that it should improve Sydney's demand response to drought. The responsiveness of demand to drought measures is a key factor in determining system yield, which in turn is a key input in calculating LRMC. In summary, the use of a drought price should lead to a higher system yield and a lower LRMC, all else equal.

Second, a potential future scenario is that the Sydney community becomes accepting of "purified recycled water". Where such recycled water solutions are lower cost, the LRMC of providing potable water will fall.

$2.11/kL is more consistent with customer research

We outlined our customer research in our July 2020 Price Proposal, Attachment 3: Customer Engagement. In that analysis, we noted that results were nuanced and did not necessarily show a simple clear majority of preferences, instead differing based on segments, the type of question being asked (general principle vs actual price options), engagement method used, and occasionally location. However, given the range of responses, we concluded that the overall preference for usage prices was to remain at current levels or somewhat higher, and not simply that "more customers supported higher usage prices".

Our in-depth consultation with customers in forums, discussion groups and interviews also did not involve any specific scenarios with price levels higher than $2.20/kL.

In line with IPART's own customer engagement and willingness to pay guidelines, we consider there is insufficient evidence to draw conclusions about the extent to which customers would support price levels higher than $2.20/kL.

Equity and the costs of changing the usage price

From a customer perspective, an increase in usage charges and reduction in service charges may allow customers more bill control (that is, allow the ability to influence their water charges by modifying their water use). However, we are concerned that the proposed change will have a disproportionate impact on residential customers and small businesses who have high non-

[102] IPART, *Review of Prices for Sydney Water from 1 July 2020 – Draft Report*, March 2020, p 74.

discretionary demand. Invariably, there are always winners and losers from changes to the price structure. For example, a higher usage price and corresponding lower service charge could also penalise renters who pay usage charges as part of their rental agreements.

Examples of customer water (only) bill in Table 6-3 below shows a situation where at $2.30/kL water price

- a low water user will enjoy a bill reduction (1.1% for an apartment with 160kL/year use), whereas
- a large water user (for a large family household) may face a bill increase (5.1% with 500kL/year consumption).

Table 6-3 Estimated water bills with various water usage charges ($/year, $2019–20)

Annual water consumption	Water usage charge at $2.11/kL 2021–22	Water usage charge at $2.30/kL 2020–21	Variance $/year (%)
160 kL/year	446	441	-5 (-1.1%)
500 kL/year	1,163	1,223	60 (5.1%)

Overall, given the uncertainty over the true LRMC of water, we consider there is currently little benefit to significantly increasing the base water usage price, particularly to a price that has not been specifically consulted on with our customers.

6.2.2 The drought water usage price

IPART's proposed triggers are reasonable

We accept the proposed 60/70 threshold for moving between base and drought water use prices. Given current policy settings, 60% is a reasonable proxy for the start of drought, with 70% allowing time for the winding up of drought response activities. In practice, we may need to incur costs for some drought response activities prior to the price change.

We also note that current trigger levels for drought response activities and the operating rules for the SDP may be changed by Government in the future.[103] As the policy framework for drought changes, the 60/70 triggers may need to be reviewed.

Implementation issues

From an implementation point of view, we have raised some issues with IPART about changing prices based on reported dam storage levels a week prior to the end of a quarter. This would not be possible to implement, nor allow enough time to notify customers.

[103] If drought response activities were required by Government before dam levels hit 60%, this would leave Sydney Water at funding risk.

We require a minimum of one month to implement any change in prices into our billing systems and to communicate the price change to our customers.

Allowing for this month lead time, the application of IPART's draft decision would result in the price change not being implemented until the following quarter. For instance, if the drought dam level is triggered less than four weeks before the end of the quarter, the amended price cannot be implemented at the start of the next quarter, but at the start of the quarter after that (for example, instead of 1 October, it will be implemented on 1 January).

As an alternative, we propose to implement the base/drought water usage charge at the start of the second month following the defined trigger being met. For example, if the threshold change in dam levels is triggered on 15 April, the price change would take effect on 1 June.

This is more immediate, but still allows sufficient time to communicate the price change to customers. We request that IPART consider any flow on impacts from any changes to the triggers used for drought pricing to decisions relating to SDP and WaterNSW costs and the Demand Volatility Adjustment Mechanism (DVAM), to ensure the different utility determinations and various mechanisms within each work harmoniously.

We propose a drought water usage price of $2.93/kL

We propose some minor adjustments to IPART's draft drought price of $3.12/kL, including:

- starting from a base water use price of $2.11/kL
- including forecast Shoalhaven transfer costs[104], which results in a marginal increase
- revising the water demand forecasts that are used to set the base and drought water usage price to reflect the lower base water use price of $2.11/kL, which changes the proposed per unit price.

To ensure that the drought pricing arrangement does not over or under recover its efficient costs in periods of drought, IPART is proposing a number of cost true up mechanisms (that is, for SDP and Shoalhaven transfers). No similar true-up process is proposed for other drought costs. In principle, we support these arrangements. We note some other issues raised in Section 6.4 for IPART's consideration.

Regarding the impact of water restrictions on demand that is included in the drought price, IPART is proposing an adjustment to the existing Demand volatility adjustment mechanism to allow a true up of any potential over or under recovery of drought water sales due to material differences between the forecast in the drought price and actual demand over the 4 years from 2019-20. We accept IPART's draft decision, including setting the threshold for material differences between forecast and actual sales at +/-5% (see Section 6.5).

The combination of these costs and demand adjustment mechanisms provide a reasonable level of protection for both customers and Sydney Water.

Our revised drought price of $2.93/kL and its relevant components are shown in Figure 6-1.

[104] This appears to be IPART's intention in the Draft Report but these costs were not included in IPART's proposed drought price.

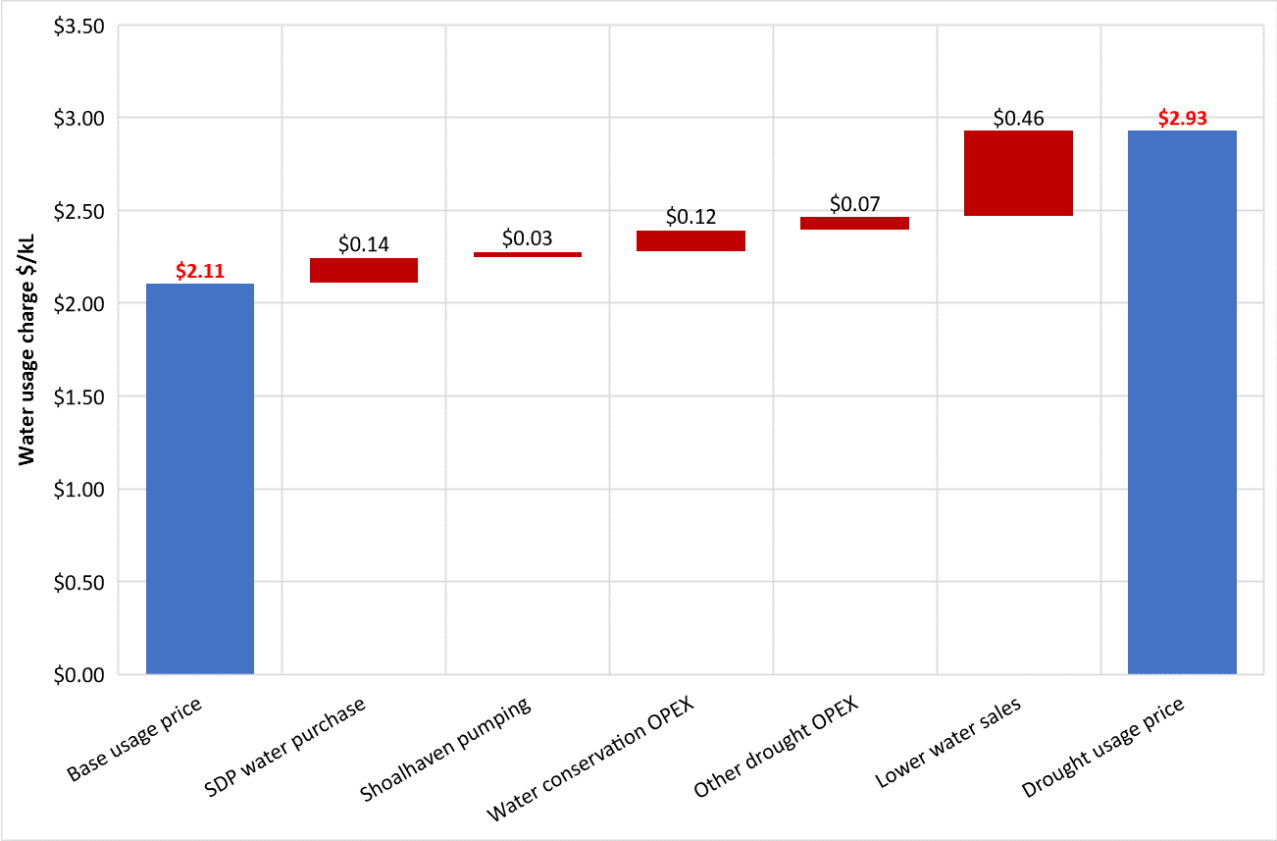

Figure 6-1 A composite of drought water usage price ($2019–20)

6.3 Demand forecasts used to calculate prices

6.3.1 Base water demand forecasts

In its draft decision, IPART:

- accepted Sydney Water forecast of water customer numbers
- accepted Sydney Water's proposed water sales forecasts
- applied a 1.7% reduction to account for the elasticity of demand resulting from the proposed price increase from $2.11/kL to $2.30/kL.

Forecast water sales and customer numbers are very important as they can impact on revenue and levels of cost recovery. If actual water sales and/or customer numbers are less than the forecasts used in setting prices, Sydney Water may under-recover costs and vice-versa.

We welcome Atkins findings that Sydney Water's residential demand forecasts are robust and well-evidenced. We will take on board Atkins recommendation that Sydney Water should work to develop better estimates, especially for non-residential demand, for the next determination.

Under our proposal to set base water usage prices at $2.11/kL and not $2.30/kL we note that there would be no need to apply any price elasticity adjustment to our demand forecasts. If IPART does decide to retain its draft decision on water prices in the final determination, Sydney Water generally

agrees with the approach applied to the elasticity adjustment in the draft report. If this occurs, we recommend that IPART:

1. Apply price elasticity adjustments on a disaggregated sector basis (for example, houses, apartments, non-residential) rather than using a weighted average approach[105]
2. Where unfiltered water is concerned, apply the price elasticity adjustment for unfiltered water only to the proportion that is charged at an unfiltered water price and not to the proportion charged at the recycled water price, as there is no proposed increase to recycled water prices in non-drought conditions.

We provide further detail on demand forecasts in Chapter 15.

6.3.2 Drought demand scenario

In its draft decision, IPART has made two reductions to non-drought demand forecasts to estimate demand in drought conditions:

- a reduction of 15% in water sales as a result of water restrictions
- a further 4.7% reduction to account for the price elasticity of demand during price increases.

We support this approach. We agree that estimating demand under such conditions is very challenging and that IPART has had regard to appropriate evidence and references in developing these estimates.

Under IPART's pricing approach, Sydney Water's revenue and cash-flow in drought are sensitive to the assumptions on demand. Therefore, it is important that the estimates are reasonable and clearly explained. We would appreciate IPART clarifying the following points in its Final Report:

- whether the reduction in water sales because of restrictions is 17% or 15%
- the base used for the price effect (that is, is it base demand minus restrictions savings or base demand).

Our methodology for deriving our drought water sales forecasts is set out in Chapter 15.

6.4 Addressing cost risks

How pricing arrangements help to manage cost risks is a key element in the regulatory framework. IPART is proposing a number of cost pass through arrangements to the water service charge in relation to SDP and Shoalhaven transfers to account for these cost risks.

In principle, we support these arrangements. We note some issues for IPART's consideration below.

[105] IPART, *Review of Prices for Sydney Water from 1 July 2020 – Draft Report*, March 2020, p 73. See in particular: Table J.2.

6.4.1 Recovering costs associated with the existing SDP

We support retaining the existing SDP annual true-up mechanism to ensure that differences between actual payments made to SDP and any SDP costs recovered via water usage prices are trued up at the end of every financial year. This difference is then passed through to customers in service charges the following year.

Misalignment with SDP operating triggers and Sydney Water's drought price triggers

Under the current SDP operating framework, SDP restart is triggered on the day dam levels fall below 60% and shut-down is triggered on the first day dam levels again rise above 70% or 14 months after restart[106], whichever occurs later. As for all drought response activities, there may be some situations where this operating regime does not completely align with the drought use price.

There are two scenarios where the misalignment would significantly delay Sydney Water's ability to recover its SDP costs and that could present significant customer communication challenges:

1. Dam levels remain below 60% for a much shorter period than the minimum SDP operating period.
2. Dams fall below 60% and trigger a restart of SDP, but then rise back above 60% before the drought price has been triggered and remain above 60%. As seen with recent weather events, such a change can happen quickly. The longer the period between the SDP restart trigger and the drought price trigger, the greater this risk.

In both these scenarios, Sydney Water would not be able to recover a significant portion of SDP costs during the year in which the SDP restart was triggered. Rather, most costs, including considerable restart costs, would be recovered via an increase in the service charge in the following year, as per the existing true-up mechanism. This would mean customers would face an increase in their water bills potentially a long time after the risk of a drought was a concern.

Despite these potential issues, under the current SDP operating framework we accept IPART's proposed drought price triggers. The proposed approach is similar to existing arrangements for SDP charges.

Change in SDP operating rules could delay cost recovery for Sydney Water

The operating rules for the SDP are set by the NSW Government. On the back of the recent drought experience, the NSW Government may choose to make changes to SDP operating rules within 2020-24. Such changes could mean Sydney Water would incur additional SDP water supply costs outside drought pricing periods, which would then need to be recovered through the annual true-up mechanism. For example:

1. The triggers for SDP restart and shut-down may be raised to higher dam levels. Prior to 2017 when the current operating rules were introduced, the SDP restart trigger was dam

[106] Under the current SDP Determination, SDP is provided an 8-month start-up period plus a minimum 6 months operating period. This optional 14-month minimum run time was introduced in the 2017 Metropolitan Water Plan but is not part of SDP's licence obligations.

levels at 70%, with subsequent shut-down being triggered when dam levels had increased to 80%. The Government may choose to revert to these or other higher trigger levels.

2. SDP may be requested to maintain operation in a low-flow mode, with the primary objective being to shorten the restart period.

Both of these potential changes to SDP operating rules could delay or reduce the likelihood that Sydney Water's drought price would be triggered, in which case Sydney Water would need to rely on the annual true-up mechanism to recover SDP costs.

Given the uncertainty around whether such changes will occur and their impacts, the appropriate mechanisms for addressing such changes would best be considered in a subsequent review of Sydney Water's prices. While re-opening the Sydney Water determination may be an option, we consider that the existing true-up mechanism would likely suffice until the next price review.

Change to calculation period for true-up amount may confuse customers

In the Draft Determination, IPART has amended the calculation of the SDP end of year true-up to reflect actual figures from the preceding April-March period.[107] This is a change in practice compared with the current Determination, where the true-up calculation uses actual figures for the period July through April, and then a forecast of charges for the reminder of the June quarter.

IPART's proposed change means that when SDP supplies water in a June quarter:

a) it will be up to 15 months before Sydney Water can begin to recover the associated costs

b) SDP supply costs may be recovered from customers up to 24 months after the SDP has ceased supply.

While the proposed change would have a relatively small impact from a cost recovery point of view, the potential delay between a drought period where SDP supplies water and when the costs are reflected in prices would create a confusing message to customers.

We consider the current calculation period is more appropriate because:

- it minimises the delay for Sydney Water between when costs are incurred and the true up
- it ensures prices reflect costs in a more timely manner.

We request IPART reconsider its draft decision and instead maintain current practice.

6.4.2 Recovering costs associated with the potential expansion of SDP

In the recent drought, the NSW Government commenced investigations into a potential expansion of SDP. Sydney Water would face additional costs in the case of such an expansion, from two sources:

1. Costs of augmenting Sydney Water's network to accommodate doubling of SDP capacity.
2. Additional charges from SDP associated with services from the expanded plant.

[107] IPART, SW Draft Determination Sch 8 Cl 1.1, Definition of 'Pass Through Charging Period'.

In its draft decision, IPART allows these costs to be recovered via pass-through mechanisms that increase the water service charges to customers. We discuss these mechanisms below.

Pass through of Sydney Water's costs associated with SDP expansion

IPART's Draft Determination includes a cost pass-through mechanism that would allow Sydney Water to begin recovery of $436 million investment for necessary network upgrades (and associated operating costs) if the Government decides to proceed with the expansion of SDP. The mechanism allows Sydney Water to increase the water service charge for a 20mm meter by $6.83 a year from the time the Government decides to proceed with an expansion of the plant. From 2024, costs would then be included in the regulatory asset base (RAB) used to calculate base water prices. We support this cost pass-through mechanism.

Pass through of new SDP charges associated with SDP expansion

In its Draft Report, IPART explains that retaining the existing SDP true-up mechanism will also allow Sydney Water to recover any additional bulk water costs arising from an expansion of SDP.[108] These additional costs are likely to be substantial. Given the uncertainty of timing and applicable charges associated with an SDP expansion, we agree that using the existing true-up mechanism is appropriate.

The Draft Determination appears to only capture such charges if they were incorporated into a new Determination for the existing SDP.[109] There is a possibility that if the SDP expansion proceeds, associated charges may initially be set out in a separate determination.[110] Given's IPART's stated intention, the lack of reference to a potential separate determination for SDP appears to be an oversight. We recommend IPART address this in the Final Determination.

6.4.3 Recovering costs associated with WaterNSW and Shoalhaven transfer charges

Under the 2017 Metropolitan Water Plan, WaterNSW starts pumping from the Shoalhaven River system when Sydney's dam levels fall to 75% and continue until they rise above 80%.[111] WaterNSW charges Sydney Water for the cost of these transfers.

IPART states in its Draft Report that the proposed drought price includes an estimate of the amount Sydney Water requires to recover expected charges incurred for Shoalhaven transfers during drought pricing periods.[112] IPART has also made a draft decision to retain a cost pass-through mechanism that allows Sydney Water to recover any additional costs incurred for Shoalhaven transfers, or return to customers any excess amount recovered.[113]

We support IPART's intended approach to allow an estimate of Shoalhaven transfer costs in the drought usage price, and to use an annual true-up mechanism to account for any difference in actual and estimated transfer costs. We have calculated that including IPART's estimated

[108] See for example: IPART Draft Report p 60.
[109] IPART Sydney Water Draft Determination, Sch 1 Cl 4 Table 1.2, definition of 'C_{t-1}'.
[110] NSW Government to IPART, *Terms of reference for a one-off pricing investigation regarding the services comprised in the expansion of the Sydney Desalination Plant*, 19 December 2019.
[111] NSW Government, 2017 Metropolitan Water Plan, March 2017 p 28.
[112] IPART, Sydney Water Draft Report, pp 56-57.
[113] IPART, Sydney Water Draft Report p 63.

Shoalhaven transfer costs would add another $0.03/kL to the drought water usage price. Our proposed drought water usage price of $2.93/kL incorporates this additional amount.

6.4.4 Recovering costs associated with a remade WaterNSW Determination prior to 2024

In its draft decision for WaterNSW, IPART rejected WaterNSW's proposal for a cost-pass through for contingent projects. However, IPART emphasised that if the contingent project was sufficiently material, WaterNSW could seek to have its Determination remade ahead of time. We support this approach.

Under Sydney Water's Draft Determination, there is no mechanism that would allow Sydney Water to recover any additional costs incurred as a result of an early remake of the WaterNSW Determination. As such a scenario would meet IPART's criteria for cost pass-throughs, we consider it appropriate that there would be an end-of-period true-up to account for any resultant cost increases to Sydney Water.

6.5 Demand volatility adjustment mechanism (DVAM)

We accept IPART's draft decisions to adjust the current demand volatility adjustment mechanism (DVAM) at the next determination, including

- setting the threshold for material differences between forecast and actual sales at +/-5%
- water sales forecasts for 2019-20 is to be based on forecast in IPART's 2016 final report
- quarterly demand forecasts are to be applied for the 2020-21 to 2022-23 for drought and non-drought periods, depending on which price and demand forecast is relevant for that quarter.

The DVAM continues to provide an appropriate mechanism to manage uncertainty and volatility in demand over the price period, particularly given the proposed introduction of a drought water usage price.

We agree using quarterly sales is sensible to reflect the seasonal nature of demand for water and we accept IPART's seasonality factors. We understand that IPART would use a composite water sales forecast on a pro-rata basis between drought and non-drought quarters to calculate the materiality threshold for the DVAM in the next price determination. However, when making adjustments to revenue, IPART should consider applying the materiality calculation over the entire 4-year applicable period. We request IPART clarify its approach in the Final Report.

6.6 Implementation issues

We have raised some implementation issues with IPART regarding wording used for water prices in the Draft Determination and have requested some changes for the final version.

7 Wastewater prices

Key messages

- We do not agree with IPART's draft decision to retain a $1.17/kL wastewater usage price. Instead we propose setting usage charges with reference to our updated short run marginal cost (SRMC) of $0.61/kL.
- We consider that SRMC retail pricing is likely a better signal than long run marginal cost (LRMC) for wastewater, given the main driver of costs is pollutant load, which is a short run operating cost, and not volumes, which drives LRMC. Our high-level review of system specific LRMC indicates most LRMC estimates are likely below our SRMC estimate. We understand that the current $1.17/kL usage charge is a legacy price not anchored to any specific economic cost.
- We support the potential for a broader price structure review for both water and wastewater services. We look forward to engaging with IPART on this.
- Despite proposed wording and structural changes in the Draft Determination document, we understand IPART's intention is to retain the current pricing approach for residential customers. We support this draft decision.
- We intend to continue to show residential wastewater charges as a single charge on bills, to avoid customer confusion.
- We accept IPART's decision to remove the discharge allowance for non-residential customers. However, we request to delay implementation by 1 year (start 1 July 2021) in order to communicate this change to 38,000 affected customers.
- We recommend IPART reconsider its draft decision on the minimum sewerage service charge that applies to non-residential customers. This will create differences in outcomes for customers who are effectively receiving the same service.

7.1 Our revised prices

Our revised wastewater prices are set out below in Table 7-1. These prices are calculated using updated revenue forecasts outlined in Chapter 5, and our proposed changes to price structures discussed in this chapter.

Table 7-1 Proposed wastewater service and usage charges ($2019–20)

	2019–20	2020–21	2021–22	2022–23	2023–24
Residential					
Residential service charge ($/year)	439.35	497.12	497.12	497.12	497.12
Deemed usage charge ($/year)	176.34	91.50	91.50	91.50	91.50
Discretionary service charge ($/year)	N/A	1.00	1.00	1.00	1.00
Non-residential					
Non-residential service charge for a 20mm meter ($/year)	585.80	662.82	662.82	662.82	662.82
Discharge allowance (kL/year)	150	0	0	0	0
Wastewater usage charge ($/kL)	1.17	0.61	0.61	0.61	0.61
Discretionary service charge for a 20mm meter ($/year)	N/A	1.00	1.00	1.00	1.00

7.2 Issues related to SRMC and LRMC pricing for wastewater

We have progressed our thinking on wastewater pricing. Our current view is that the short run marginal cost (SRMC) may be a better price signal as the main driver of wastewater system costs is ultimately pollutant load, a short-run operating cost, rather than volume (as is the case for the long run marginal cost, LRMC).

We acknowledge there are costs and benefits to adopting either a LRMC or SRMC based usage price for residential wastewater. However, ultimately, these may be negligible for residential customers with deemed usage. Costs and benefits for wholesale customers (ie privately owned utilities) are less clear and require a deeper understanding of location specific needs of each wastewater system. At this point in time, we consider that Operating Licence requirements to publish system specific information on capacity constraints provide a better signal for potential new entry opportunities than a LRMC pricing approach, especially under postage stamp pricing.[114] Accordingly, we maintain that an early, inaccurate LRMC signal could create worse customer outcomes.

There could be substantial customer benefit (both in terms of retail pricing and for competition) from IPART conducting a broad price structure review. This would be beneficial for both water and wastewater and should consider a range of information beyond SRMC vs LRMC pricing.

7.2.1 The complexity of estimating wastewater usage charges

We do not agree with IPART's view that "In some ways, estimating the LRMC for wastewater should be simpler to estimate than for water".[115] Setting LRMC based usage charges for wastewater is more complex than for water. The cost of bulk water supply is largely driven by a

[114] Although these signals also should be treated with caution, for similar reasons to those outlined in section 7.2.1.
[115] IPART, Review of prices for Sydney Water from 1 July 2020, Draft Report, p 72.

single measure of customer water usage that can be accurately measured and, generally, does not vary materially by location or across time.[116]

In contrast, wastewater usage cannot be accurately measured, and system costs are driven by several factors which vary greatly by and within systems and across time. The volume of wastewater discharged by customers can be a driver of some costs, however there are numerous issues in using it as a single driver. In particular:

- **treatment and network costs are driven by the pollutant load** contained in the wastewater, independent of the volume.
- **network assets and treatment processes are sized for peak flows**, which can be many multiples of average flows which is the common measure of the customers' wastewater discharge.
- **network costs are highly localised**, for example, within a system, discharge from only a fraction of properties may contribute to the costs associated with pumping stations
- **asset costs are driven by new developments or changes in regulation**; typically, changes in wastewater volume may change the size of the investment but not the *need*.[117]

Overall, the relevant price signal – SRMC or LRMC – for wastewater is not a simple or clear decision.

7.2.2 Outcomes sought via wastewater usage prices drive the appropriate price signal

There are two main purposes of calculating LRMC and applying to wastewater usage charges:

1. as a basis of allocating costs between customers
2. to provide a signal for:
    a. customers to manage demand
    b. for investments in supply.

As a basis of allocating costs, wastewater volume (more precisely, water volume and property-type) has been a useful measure as the combination of these factors closely correlates with many drivers of wastewater costs, notably pollutant load.[118]

As a price signal for customers, wastewater volume is less useful; it is correlated with costs, but it is not causative. Thus, a usage charge based on wastewater volume could encourage customers to overinvest in volume reduction, which misses a key driver of costs (that is, load).[119] Furthermore, basing wastewater volume discharged on measured water usage will encourage customers to

[116] Due to large storages, the marginal cost of using water hardly varies across time.
[117] Typically, the marginal cost of increasing the capacity of investment will be substantially less than the average cost.
[118] For example, a commercial building discharging double the wastewater volume of a smaller building is likely to be discharging double the pollutant load. Consequently, allocating costs based on wastewater volume (estimated by water usage) can be a fair and simple method of allocating costs.
[119] For example, to invest in appliances and practices to reduce wastewater volume but that do not reduce the pollutant load.

reduce all water use, not just usage that enters the sewer system. This can lead to an inefficient investment in and use of water resources.

In theory, a LRMC based on wastewater volume could provide a signal for firms to invest in recycling to reduce wastewater volumes. However, in practice, as discussed above, the LRMC of wastewater volume is a poor measure for this purpose. In practice, the value of an investment such as a recycled water plant will depend on a number of factors that vary by specific location. A risk with using LRMC based pricing as a signal for investment is that it:

- could encourage inefficient investments (for example, projects that reduce the volume of wastewater but not the pollutant load)
- might fail to encourage efficient investments that help to address the priority cost-drivers in specific locations.

7.2.3 SRMC vs LRMC pricing

We agree with IPART that pricing at LRMC can provide a signal to customers for making long-term decisions to reduce wastewater usage and volumes, in turn reducing the costs of increasing system capacity. However, given the difference in the costs and capacity by system, any signal from an average LRMC used for postage stamp pricing would have little value. A price based on SRMC does not provide optimal incentives to reduce sewage volumes when capacity is constrained; however, it provides a more accurate signal to manage pollutants. Hence, there are important trade-offs in the objectives to evaluate when considering SRMC versus LRMC pricing.

On the whole, the difference in efficiency outcomes between SRMC and LRMC may not be material as:

- the difference between SRMC and LRMC estimates can be very small. This is due to a number of factors discussed in Appendix D
- the demand response to changes in wastewater prices will be limited because:
    - residential customers do not pay wastewater usage charges
    - for non-residential customers who pay wastewater usage charges, the impact on demand is likely to be small due to inelastic demand
- projects undertaken by customers that reduce sewage volumes can be partly funded by the broader customer base via avoided costs.

In the case of sewer mining projects, for example, the 2019 recycled water determination allows proponents to claim for avoided wastewater system costs.[120] The value of avoided costs may be approximated by the difference between the LRMC and the SRMC for the local wastewater system. In such a case, whether SRMC or LRMC is used for retail pricing of sewage volumes would not change the financial incentives to invest in sewage reduction projects.

[120] This may be calculated, for example, as the value of deferring or avoiding altogether a future expansion or avoided network and treatment costs.

An advantage of using SRMC pricing coupled with avoided-cost allowances is that projects could be selected with other considerations in mind. For example, a project might be selected because it helps to address other cost drivers such as peak sewage volumes or very localised capacity constraints in the distribution network and/or provides additional environmental benefits, rather than only average wastewater volumes.

To this end, a risk with pricing sewage volumes based on LRMC is that it could drive inefficient investment if LRMC is not a direct and accurate measure of the driver of cost for a given system or location. For example, a LRMC based on average sewage volume could drive projects or activities that lead to a large reduction in volume but not pollutant load. This is a higher order problem for particular systems, such as those along the Hawkesbury-Nepean River.

We request IPART consider these issues in making its final decision.

7.3 Wastewater price structures

7.3.1 Wastewater usage charge

We maintain that wastewater usage charges should be set with reference to our updated short run marginal cost (SRMC) of $0.61/kL.

As discussed above, we have progressed our assessment on the merits of SRMC and LRMC pricing and consider that, currently, an SRMC approach better aligns with the main cost drivers for wastewater and provides a more effective signal for efficient usage and investment.

7.3.2 Residential charges

We accept IPART's draft decisions to maintain current price structures for residential customers.

We welcome the continued use of deemed usage for all residential customers, based on 150kL/year. As discussed earlier in this review, there are difficulties with implementing implementing the alternate approach of introducing an explicit wastewater usage charge for residential customers given that discharges are not metered.

7.3.3 Non-residential charges

IPART has proposed the following arrangements for non-residential wastewater charges:

- removing the deemed wastewater discharge allowance for non-residential customers to make prices more cost reflective for small non-residential customers
- continuing to apply a sewerage discharge factor when setting the service price for non-residential customers.
- maintaining a minimum charge for non-residential customers.

We agree with removing the150kL deemed discharge allowance.

However, we request to delay implementation by one year (to start 1 July 2020) as this will impact around 38,000 non-residential customers, who will start to receive an explicit wastewater usage

charge on their bill for the first time. This delay will allow us to communicate this pricing change to affected customers.

We do not support IPART's draft decision on the minimum charge for non-residential customers. Under IPART's draft decisions, the minimum wastewater charge for non-residential customers is now equivalent to the residential service charge only, rather than the current approach of being no less than the standard residential charge as a whole (that is, 75% of the 20mm service charge **plus** the deemed discharge allowance). This means that non-residential customers could be paying less than residential customers for effectively the same service.

We note that this draft decision would also lead to different pricing outcomes for:

- non-residential customers depending on whether or not they have a meter.
- non-residential customers whether or not they are joined with a residential property. For example, non-residential properties within mixed multi premises are deemed to have a single 20 mm meter and are liable for sewerage charges that is equivalent to the residential sewerage service charge (that is, 75% of the 20mm service charge **plus** the deemed discharge allowance). This applies to approximately 50,000-70,000 customers.

We do not consider this draft decision is equitable or practical. We request IPART reconsider this draft decision.

7.3.4 Discharge factors when setting wastewater charges

We support IPART's draft decision to continue to use discharge factors to set wastewater charges. We agree that removing these factors would lead to substantial price impacts without any clear rationale or explanation for customers.

7.4 Customer supported project – Vaucluse Diamond Bay

IPART has made a draft decision to allow Sydney Water to recover expenditure for diverting untreated wastewater discharges from Vaucluse-Diamond Bay by adding a new "discretionary services charge" that would be paid by all wastewater customers. This project was supported by customers in our customer engagement program. We accept this draft decision.

We note that we do not intend to show this charge separately on bills. Our proposed method to communicate progress of discretionary expenditure projects is outlined in Chapter 9.

7.5 Implementation issues

We have raised some implementation issues with IPART and have requested some changes to wording used for the Final Determination. IPART has requested we provide further information (see below).

Implementation of discretionary service charges for non-residential customers

IPART's draft decision in respect of the Vaucluse-Diamond Bay expenditure is to recover this from all wastewater customers as a meter based, rather than a property-based, charge.

We accept IPART's draft decision to apply the discretionary services charge as a meter-based charge. However, this presents an implementation issue for non-residential properties that will require changes to our billing system. We consider the cost of amending our billing system is disproportionate to the discretionary services charge which ranges from $1.02 ($2020-21, 20mm meter) to $25.50 (100 mm meter) for 2020-21.

We suggest the following changes to the formula for ease of implementation.

The formula on page 13 of IPART's Draft Determination is noted below:

□□□□□ = (□□□ × □□□) + □□□□□

Where:

MSC$_{SS}$ means the adjusted sewerage service charge applicable to the Meter in the Period;

USC means the unadjusted sewerage service charge in Table 2.1 for the applicable Meter size in the Period;

DF$_S$ means:

(1) in the case of a Property deemed to have a single 20mm Meter under clause 2.2—75%;

(2) in any other case—the percentage of water supplied via that Meter that Sydney Water estimates is discharged into the Sewerage System; and

DSC$_{SS}$ means the discretionary services charge applicable to the Property in the Period, specified in clause 3.

We propose the following formula is used:

M□□□□ = (□□□ + □□□□□) × □□□

If IPART retains the formula in the Draft Determination, we request a delay in implementation by one year (that is, start applying the charge from 1 July 2021) for non-residential customers.

8 Stormwater prices

Key messages

- We accept IPART's draft decisions on stormwater pricing structures.
- Our proposed stormwater prices are slightly higher than current prices, mainly due to the impact of our proposed inflation adjustments to the weighted average cost of capital (WACC).
- We support IPART's draft decision to accept our proposed price reductions for stormwater drainage and land drainage charges in Rouse Hill.
- We agree with IPART's draft decision to maintain the existing arrangements for Kellyville Villages properties to be subject to the standard stormwater charge and not the Rouse Hill stormwater drainage charge until the start of the 2024 period. This will help to mitigate bill impacts for the customers affected.

We provide stormwater services to around 600,000 customers in declared stormwater catchment areas. We also provide stormwater services in the Rouse Hill stormwater catchment area.

8.1 Our revised prices

Our revised stormwater prices are set out below in Table 8-1. These prices are calculated using updated revenue forecasts outlined in Chapter 5.[121] We have not proposed any structural changes to stormwater prices.

Table 8-1 Sydney Water's proposed stormwater drainage charges ($2019-20)

$ per annum	2019–20	2020–21	2021–22	2022–23	2023–24
Residential					
Unit/Low impact	24.62	25.99	25.99	25.99	25.99
Stand-alone house	78.88	83.26	83.26	83.26	83.26
Non-Residential					
Multi-premise/Small (<200 m^2)	24.62	25.99	25.99	25.99	25.99
Low impact/Medium (201-1,000 m^2)	78.88	83.26	83.26	83.26	83.26
Large (1,001 - 10,000 m^2)	459.67	485.18	485.18	485.18	485.18
Very Large (10,001 - 45,000 m^2)	2,043.03	2,156.39	2,156.39	2,156.39	2,156.39

[121] Note the proposed adjustment made to Stormwater revenue requirement (in Section 5.3.5) resulting from incorrect treatment of capital expenditure for Rouse Hill.

Largest (>45,000 m^2)	5,107.59	5,390.99	5,390.99	5,390.99	5,390.99
Vacant Land					
Vacant Land	78.88	83.26	83.26	83.26	83.26
Low Impact assessed Vacant Land	24.62	25.99	25.99	25.99	25.99
Discretionary Charge					
Waterways Health Improvement Program	-	0.85	0.85	0.85	0.85

Our revised prices ($2019-20) are 5.5% higher than current prices (in $2019-20), then flat in real terms over 2020-24.

8.2 Constrained area pricing approach

IPART has proposed to maintain the constrained area based approach for non-residential stormwater prices. Under this approach, larger properties pay higher stormwater charges overall, but the charge per m^2 is relatively lower compared to smaller properties, which pay proportionally more per m^2 than larger properties.

We have previously noted concerns around the use of a constrained area approach for setting non-residential stormwater prices. However, we accept IPART's draft decision for this review, which is in line with our Proposal, as it recognises that property size is not the sole determinant for demand on stormwater services.

8.3 Low impact stormwater charge

We support IPART's draft decision to retain residential and non-residential low impact stormwater charges. To be eligible, properties must demonstrate retention of a large proportion of average annual stormwater run-off from their property.

8.4 Rouse Hill stormwater charges

We agree with IPART's draft decisions concerning the reductions to the Rouse Hill stormwater drainage charge and the land drainage charge. The Rouse Hill stormwater system is an example of an integrated stormwater management approach that removes pollutants and provides flow management for creek health, stability and flood management. This is done for the dual purposes of wastewater and stormwater management.[122] Most of the costs are recovered through the Rouse Hill stormwater charges in line with impactor pays principle with the remaining costs (50% of Rouse Hill capital expenditure) recovered through wastewater prices.

[122] The integrated approach in the Rouse Hill stormwater catchment area is a condition of approval for the Rouse Hill wastewater treatment plant. The stormwater system is designed to both reduce flooding and to remove nutrients to offset those discharged by the wastewater treatment plant.

8.4.1 Continuing to exempt Kellyville Village properties

There are 974 Kellyville Village properties that were originally excluded from Rouse Hill charges as they existed prior to the Rouse Hill development that occurred in the 1990s. These Kellyville Village properties are now connected to the Rouse Hill integrated water system, but they do not receive recycled water. In accordance with long-standing practice, these Kellyville Village properties are subject to the standard stormwater charge until they are redeveloped.

In our Price Proposal, we recommended maintaining the current arrangements until 2024 which IPART has agreed on in its draft decision. We propose to reconsider shifting the remaining Kellyville Village properties to the Rouse Hill stormwater drainage charge in the 2024 Determination, when it is likely that this charge will be closer to the standard drainage charge applied in other stormwater catchment areas. This will help to avoid large bill impacts to these properties.

8.5 Customer supported project – Waterway Health Improvement Program

IPART has made a draft decision to allow Sydney Water to recover expenditure for the Waterway Health Improvement Program (WHIP) by adding a new "discretionary services charge" that would be paid by stormwater customers. This project was supported by stormwater customers in our customer engagement program. We accept this draft decision.

8.5.1 Applying the charge to Rouse Hill non-residential properties

IPART's proposed approach to use property based discretionary charges presents an implementation issue for a small number of non-residential properties in the Rouse Hill area (approximately 200 customers). This approach will require changes to our billing system. We consider this cost is disproportionate to the WHIP discretionary services charge (DSC) which is set at $0.87 per property for 2020-21.

We suggest the following changes to the formula, for ease of implementation.

IPART's Draft determination formula:

> *Rouse Hill Non-residential property with property area >1000m2 = [145.91 x (land area m^2/1000)] + DSC*

Sydney Water proposed formula:

> *Rouse Hill Non-residential property with property area >1000m2 = [145.91+ DSC]x (land area m^2/1000)*

The adoption of the proposed formula will result in a proportionate higher discretionary charge (ie higher than the proposed $0.87) to Rouse Hill non-residential customer with more than 1000m2, as compared to other customers where the discretionary charge will be applied on a per property basis.

9 Discretionary expenditure

Key messages

- We support IPART's draft decision to allow expenditure to enable delivery of the diversion of untreated wastewater from the outfalls at Vaucluse-Diamond Bay and the Waterway Health Improvement Program that customers have told us they want.
- We are pleased IPART has recognised the improvement in our customer engagement since the last price review and we are committed to further improvement.
- We support IPART's intention to make the regulatory approach more responsive to customer preferences.
- Some aspects of IPART's draft framework for discretionary expenditure need to be amended to ensure it serves customer interests and other aspects require clarification.
- There would be merit in developing the framework as part of the review of the overall regulatory approach that IPART has indicated it will undertake after July 2020.

9.1 The role of customer engagement

We strongly support customer input having a larger role in future price reviews. We are committed to putting customers at the heart of everything we do.

We are pleased that IPART has recognised the improvement in our customer engagement since the last price review. We have learned a number of valuable lessons from the process of expanding our engagement with customers over the past three years. We are keen to engage more with IPART, other water utilities and stakeholders to share learnings and discuss opportunities to evolve and further strengthen our approach.

9.2 IPART's proposed framework for discretionary expenditure

We agree the regulatory framework should encourage responsiveness to customer preferences. Given the current approach under which IPART conducts separate Operating Licence and price reviews, it will be important to allow for service outcomes not already addressed in the Operating Licence to be considered as part of the price review process.

In our view, the most suitable process for clarifying these expectations would be the review of the overall regulatory approach that IPART has indicated will be conducted after the price review.[123] The development of a framework for discretionary expenditure warrants focused consultation with

[123] IPART 2020, *Draft Report*, p 12.

stakeholders, which is challenging to provide as part of this review, as many stakeholders are preoccupied with responses to matters affecting prices in the short term.

We are concerned that some aspects of the draft framework are not in customers' interests. Other aspects of the framework require clarification. Our main concerns are outlined below, with further detail provided in Appendix E.

9.2.1 The framework should incentivise investment in customer driven outcomes

There is a legitimate role for a framework in regulating discretionary service outcomes. Its primary functions could include:

- providing guidance on the evidence needed to justify expenditure on a new or changed service outcome
- ensuring the outcomes that Sydney Water needs to deliver are specified
- ensuring a process of reporting on those outcomes is established, and
- clarifying the consequences of under or over-performance relative to target service outcomes.

The framework proposed by IPART covers these matters, but also goes beyond the regulation of service outcomes to the regulation of expenditure. IPART has an established approach to regulating expenditure, which has been designed to serve customer interests taking account of the incentives it provides to Sydney Water to invest and limit costs. The draft framework departs from this established approach.

There could be a disincentive for us to respond to customer preferences and undertake discretionary projects under the lop-sided risk sharing arrangement created by:

- an ex-post adjustment mechanism that would "ensure any underspend is returned to customers, and any overspend is not recovered from customers"[124], and
- a cap on the notional bill component at a measure of willingness to pay, so that Sydney Water bears additional interest rate risk in future regulatory periods.[125]

This disincentive could be compounded by the additional complexity and administrative cost of maintaining separate regulatory accounts and charges over the life of any capital assets. This complexity could increase in future proposals, as the mapping of projects to outcomes could be significantly more complex than for the two projects considered by IPART in the present review. As a result, the framework would fail to achieve its objective "to allow and encourage utilities to be responsive to their customers".[126] The roles of different sources of evidence need to be clarified.

[124] IPART 2020, *Draft Report*, Appendix P, p 106.
[125] IPART 2020, *Draft Report*, Appendix P, p 104.
[126] IPART 2020, *Draft Report*, p 85.

Phase 2 of the draft framework currently focuses on issues of survey design and implementation. There may be merit in addressing the evidence required for expenditure justification more broadly and the extent to which IPART would consider evidence from multiple sources.[127]

The framework should clearly recognise the distinction between:

a) economic WTP surveys, which use a range of hypothetical bill impacts to elicit maximum WTP for the purpose of quantifying benefits in economic cost-benefit analysis, and

b) surveys that assess the proportion of customers that support a proposal at its estimated bill impact.

Requirements for the design of one type of survey can not necessarily be applied to the other. For example, IPART's draft report states (emphasis added):

> *The dollar values that respondents are asked to vote on should correspond with the **actual estimated cost** of the project or outcomes and should be expressed in terms of the ongoing bill impact for the customer*[128]

But elsewhere refers to:

> *…payment levels need to cover the **likely range** of amounts that customers **might be willing to pay**…*[129]

The former statement should apply only to surveys of customer support, while the latter statement should apply only to economic WTP surveys.

Our approach for this price review involved both types of survey:

- economic WTP studies to inform cost-benefit analysis, followed by
- surveys of customer support at estimated bill impacts, in the context of bill impacts from other service options and external factors, to triangulate and validate the results of the cost-benefit analysis.

Using multiple sources of evidence to inform decision making accords with the guidance provided by regulators and customer advocates in the United Kingdom.[130] Making decisions on the basis of multiple sources of evidence requires judgement, particularly in cases where the findings from those sources differ. While we appreciate specific guidance from IPART with respect to its expectations, it would be reasonable for the framework to leave room for balancing evidence from multiple sources and the judgement that would entail.

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[127] For example, while surveys are often needed to assess WTP in the water sector, IPART may wish to remain open to considering evidence of WTP for environmental outcomes derived from revealed preference studies, such as hedonic property price studies.
[128] IPART 2020, *Draft Report*, Appendix P, p 101.
[129] IPART 2020, *Draft Report*, Appendix P, p 102.
[130] ICF Consulting Limited, 2017. *Improving willingness-to-pay research in the water sector. A report for the Consumer Council for Water*.

9.2.2 The potential limit on future bill impacts needs to be clarified

It is not clear whether IPART's proposed limit on future bill impacts[131] is to be based on the bill impact used in surveys of customer support or on average WTP estimates. Under the former approach, we may need to survey at a bill impact higher than the expected level, resulting in some projects with expected net benefits to customers not going ahead. This is not in customers' interests.

We oppose IPART retrospectively applying a limit to the two projects approved as discretionary expenditure in this price review, since the approach had not been flagged at the time we needed to survey customers.

9.2.3 Other matters require clarification

Other aspects of the framework that require clarification include:

- the treatment of discretionary expenditure that is primarily opex, including the application of the efficiency carryover mechanism
- whether IPART would apply a different WACC for discretionary expenditure to the measure of WTP and how these parameters would be adjusted over time
- the consequences from partial delivery of outcomes
- the practicality of some elements that may be reasonable in theory but challenging to achieve in practice (for example, requiring that costs should be recovered only from categories of customers with demonstrated WTP).

Further detail is provided in Appendix E.

9.3 Sydney Water's proposed discretionary expenditure

IPART has included expenditure for the Waterway Health Improvement Program and the diversion of untreated wastewater from the outfalls at Vaucluse and Diamond Bay to the existing ocean outfalls treatment plant at Bondi in the Draft Determination.[132] We agree these projects would be worthwhile for our customers.

We propose to report annually to customers on the progress of customer supported projects and their related bill impacts via:

- an insert sent out with bills, which could take the form of an article in the Water Wrap newsletter or a separate leaflet, as well as
- a webpage on the Sydney Water website
- a line on bills directing customers to the webpage.

[131] IPART 2020, *Draft Report*, Appendix P, p 104.
[132] Sydney Water 2019. *Response to IPART's Issues Paper*, 21 October, pp 23-25. As discussed in our response to the Issues Paper, we do not consider the Waterway Health Improvement Program to be discretionary but are happy to see it has been accepted by IPART.

We note our response to IPART's proposed output measures for these projects in Chapter 13. These measures will be used to inform our communications to customers.

We consider including a separate charge on bills would not be in customers' interests. It would involve an administrative cost and is likely to confuse many customers, who tend to not make a distinction between government corporations and agencies or between different types of regulatory processes used to produce particular outcomes. There are more meaningful, lower-cost ways of communicating with and remaining accountable to customers. We include comments on implementation issues regarding IPART's proposed discretionary charge for Vaulcluse-Diamond Bay in Chapter 7.

9.4 Future application of the framework

We support IPART's request that future discretionary expenditure proposals include a business case, proposed output measures and customer engagement strategies. We note that business cases for the two projects noted within this chapter were provided to IPART's efficiency reviewer as part of this review.

As discussed above, some clarification is required with respect to the specific evidence required to support business cases and how those requirements may vary with the scale of the proposal. We look forward to working with IPART on these issues as part of the review of the broader regulatory approach after July 2020.

10 Recycled water prices

Key messages

- We request clarity of IPART's decision to continue to defer setting prices for Sydney Water's recycled water schemes, while also suggesting a specific price of $1.90/kL should be applied at our mandatory schemes.
- Our preference would be to continue to charge recycled water use at 90% of the non-drought potable usage price at each of our existing mandated schemes, unless IPART considers this does not meet their pricing principles.
- While we consider our proposed usage price is currently appropriate, we will regularly assess each scheme and adjust prices if needed to achieve a balance between demand and supply.
- We are currently evaluating a number of new schemes. In each case we will ensure the prices we apply are consistent with IPART's pricing principles.
- We welcome IPART's draft decision to allow us to retain the revenue from least cost recycled water schemes which displace potable water sales but seek clarification on the scope of revenue that can be retained.
- We do not accept IPART's decision that revenue from least cost recycled water schemes which do not save drinking water should be shared 50:50 with customers. The proposed sharing rule weakens incentives to pursue value-adding opportunities that leverage existing assets.
- We continue to investigate opportunities for new recycled water schemes, and it is now likely that some of these schemes will move into the delivery phase during 2020-24. While some schemes are dependent on final agreements with developers, our response to the Draft Determination includes an overview of the proposed usage price at some of these schemes.
- We are also investigating opportunities where providing purified recycled water for drinking could be the least cost, acceptable risk option to increase the drinking water yield for Sydney.

Recycled water, and the community's growing acceptance of this product, is emerging as a game-changer to the way we deliver the services our city needs. Our 23 recycled water schemes already deliver over 43 gigalitres of recycled water each year. We also enable a further 1,300 megalitres to be delivered each year by private sewer mining schemes. While these projects play a vital role in securing the water supply of Sydney now, we must further increase our long-term resilience to drought.

Since submitting our Price Proposal, we have significantly progressed investigation of several large-scale integrated water solutions that include a recycled water component. These schemes have the potential to benefit our customers and the community at large through the economic opportunities and benefits they create. We are also investigating opportunities where providing purified recycled water for drinking could be the least cost, acceptable risk option to increase the drinking water yield for Sydney as part of our strategic planning.

10.1 IPART's recycled water framework

We strongly support the changes IPART made to its recycled water pricing framework in 2019 (the recycled water determination). These changes removed significant barriers we faced when implementing new recycled water projects including:

- removing anomalies to allow full cost recovery going forward (although our existing projects continue to suffer a funding shortfall as a result of the previous framework)
- explicit support for recycled water projects that form part of the least cost method of delivering the services our city needs.

We also welcome the improvements IPART has made to clarify how avoided costs and external benefits may be claimed for recycled water schemes. Given the recycled water determination was not finalised until July 2019, our Price Proposal was unable to reflect these revised aspects of the pricing framework. We are however in the process of investigating the potential for a number of these claims, for both our existing and future recycled water projects.

10.2 Section 16A recycled water schemes

We disagree with several statements about our 16A recycled water schemes made by IPART's efficiency review consultant, Atkins, in their final report.

We also query the intended role and use of the draft output measures for recycled water production at St Mary's and Rosehill-Camellia, as we already report on the volume of water recycled at all of our schemes as part of our annual Water Conservation Report. Increasing volumes for the Rosehill-Camellia scheme is subject to factors beyond Sydney Water's control (as the plant is operated by an external party) and different uses for the scheme are subject to Government decisions. We comment on proposed output measures in Chapter 13.

10.2.1 Rosehill-Camellia Recycled Water Scheme

While we acknowledge the Rosehill-Camellia scheme has been operating at reduced scale due to the departure of some customers, it does not automatically follow that the lost demand could have easily been cost-effectively replaced with new uses.

Since the 2016 determination, Sydney Water has assessed a range of options for improving the effectiveness of this scheme. However, the outcome of this assessment cannot yet be finalised because the option most likely to significantly improve efficiency of the scheme is dependent on future events.

IPART's efficiency review consultant, Atkins, considered that the costs incurred for the Rosehill Camellia Recycled Water Scheme were inefficient, particularly in the context of drought, because:

- the lack of customers means the scheme is not delivering to its full potential, and greater use of the plant should be made during drought
- there has been an apparent lack of action by Sydney Water management to find alternative uses of the recycled water.

Atkins also question whether the broader customer base should continue to bear the costs of the scheme. We address these issues below.

Only efficient new recycled water use options should be pursued

Atkins stated that more should have been done to increase the use of recycled water, particularly during the recent drought. While the scheme has not been operating at the scale originally anticipated, this reflects commercial decisions of some of the scheme customers which have resulted in a significant reduction in water use.

In the case of the former Shell oil refinery, for example, part of the site was converted to a fuel import and distribution facility from 2012. This change in use not only significantly reduced demand for recycled water, but continued occupation of the site prevents the introduction of a replacement source of recycled water demand. Remediation of the unused parts of the site is likely to continue for at least the next six years. It is also impossible to predict whether potential future customers at this site will have a significant demand for recycled water.

While it is important to conserve water during drought, we must also have regard to the cost. Not all options for expanding the scheme may be prudent or efficient. However, we continue to work with the scheme owners to assess options for making it more cost effective.

We have taken action to seek to improve the scheme's efficiency

We strongly disagree with Atkins' claim that we appear to have taken little action over the last three years to resolve the issue of low recycled water demand. We provided Atkins a description of additional options considered in detail during the first half of 2017-18, including an assessment of which options are most likely to improve the scheme's cost-effectiveness (not all options considered would improve the cost effectiveness). There is no reference to this more recent review in the Atkins report, and their findings do not appear to have taken into consideration all the evidence that we provided.

We will continue to review options as new information becomes available, including the outcomes of any government review of the infrastructure strategy for the Greater Parramatta and Olympic Peninsula (GPOP) and/or any updates to the Government's Metropolitan Water Plan. We continue to work closely with the owner of the scheme to explore opportunities.

It is also important to note that the owner of the scheme has always had the right to expand the scheme to serve additional customers. We understand that no new customers have been added to the scheme in this way.

The decision to continue the scheme is a matter for Government

Atkins questions whether the broader customer base should continue to bear the costs of the scheme. We consider operation of the scheme, and inclusion of costs in regulated charges, is subject to a Government direction. Therefore, any decision about the ongoing case for the scheme is a matter for Government.

We also note that while the scheme is not producing recycled water at the volumes originally anticipated, this does not mean we have been inefficient in complying with the Government's direction. For example, the forecast demand for the scheme has been deemed reasonable in successive IPART retail determinations.

In addition, there is evidence that the private sector would not have invested in this project in the absence of Sydney Water taking on demand risk in the form of a take-or-pay arrangement for part of the anticipated volumes. It was anticipated that the project would provide an important contribution to improved water security in Sydney, and was a key initiative supporting the NSW Government's objectives for greater wastewater recycling.

We note IPART's recycled water determination allows a one-off determination of the efficient pass-through costs for recycled water. We consider any ex-post adjustment of the efficient costs of the s16a direction for the scheme would be at odds with the principles behind IPART's recycled water determination.

10.2.2 St Marys Advanced Water Treatment Plant (Replacement Flows)

Atkins also raised concerns about the efficiency of the St Marys Advanced Water Treatment Plant (AWTP), noting that:

- the plant has not been running to design output, with a significant loss of production
- the full benefits of the project are not being achieved, which is of a concern at a time when significant costs are proposed on other water conservation measures
- despite the variation in volumes, fixed costs are largely unchanged.

We address these issues below.

Managing production at the AWTP

The St Marys AWTP takes treated effluent from three different wastewater treatment plants to produce high quality water for release to the Hawkesbury-Nepean River. Changes in the output of any one of the three plants supplying the AWTP will directly affect the level of production that can be achieved.

In the short-term, flows to the AWTP will be affected by construction and commissioning works of the Lower South Creek upgrade project. This project is affecting assets and processes of two of the three plants supplying the AWTP and will result in lower flows at times due to shutdowns, commissioning and process proving activities. Once this work is complete, we expect the plant will operate closer to its design of 43.3 ML a day on average over a year.

In order to maximise production, we are monitoring the flows to the AWTP carefully and actively exploring initiatives with the operator of the AWTP, our own plant production teams, the project

manager for upstream capital works projects, and the process engineering support teams to optimise flows to the AWTP.

Some of these initiatives include ongoing optimisation of the flow transfers and balancing storage, process optimisation of the supplying plants, investigation of possible process changes to increase production, as well as coordination of the Lower South Creek upgrade activities to minimise disruptions.

Performance in 2016-2020

Operating costs were lower than the regulated allowance in 2016-20 due primarily to two factors:

- reduced treatment volumes while the plant was offline for rectification of construction defects and unanticipated maintenance, and
- efficiency savings resulting from a revised maintenance strategy initiated by Sydney Water.

The reduction in volumes was largely due to the ongoing resolution of defects from the original construction works. The defects took longer than expected to resolve, mainly due to delays caused by adverse weather in the first half of the current price determination.

In 2015 Sydney Water negotiated a change to the maintenance clauses of the contract. The essence of this change was to shift from a time-based renewals programme to a condition-based overhaul and renewals programme. This resulted in lower costs during the period.

Forecast costs for 2020-24

Our forecast costs for 2020-24 assume average production of around 35 ML a day, or 12.8 GL a year. The estimate is based on our current understanding of the impact of the capital works program for the Lower South Creek upgrade project and other operational and maintenance activities.

We do not consider that temporary adjustments to full capacity output show the scheme are evidence of inefficiency. Rather they represent unavoidable reductions to volume, for example, to carry out essential maintenance. Including lower forecast costs for 2020-24 also represents a well-considered forecast of the plant's likely capacity being affected by essential but temporary growth-related construction projects. Sydney Water's intention is to ultimately have the plant operating to its full design capacity of 43.3 ML a day on average over a year, once these temporary factors have passed.

10.3 Sydney Water's proposed prices for mandatory schemes

Our proposal was to retain the current link between potable water and recycled water usage prices for existing mandatory schemes, such that the recycled water price would be set at 90% of the normal (non-drought) potable water price. This resulted in a recycled water usage charge of $1.90/kL, based on our proposed potable water usage price of $2.11/kL.

While IPART appears to have accepted that a recycled water usage price of $1.90/kL is consistent with their pricing principles, it considers an underlying link to potable water usage prices is arbitrary and no longer required. As such, even though IPART has proposed a higher non-drought potable

water usage price of $2.30/kL, it has only ‘endorsed’ a recycled water price of $1.90/kL. At the same time, however, IPART has decided to continue to defer the regulation of recycled water prices. We seek clarification in the final report regarding our ability to vary recycled water usage prices in 2020-24, particularly as most existing Development Servicing Plans are due to be updated during this period.

10.3.1 Relationship between standard water and recycled water usage prices

IPART have stated there is no direct relationship between standard water usage and recycled water usage prices because our mandatory schemes are ring-fenced. We do not think the fact that our schemes are ring-fenced is a strong argument for a lack of relationship. There are a number of reasons which, when considered together, demonstrate standard and recycled water usage prices are best kept in-step with each other wherever possible and practicable.

Customers receiving similar products should face similar charges where possible

Recycled water provides a virtually identical service to potable water. That is, we consider that the amenity or value customers receive from most uses of recycled water is the same as the amenity or value customers receive from connection to potable water. Maintaining a link to the potable water price reinforces the message to customers that recycled water is a safe and suitable substitute for the uses to which it is connected. Although we recognise that in certain circumstances, it may be preferable to de-link recycled and potable water usage prices, we see no reason to do so for our current mandatory schemes.

Potable and recycled water use should attract a similar LRMC signal

Each of our mandatory schemes relies on top-up from the potable water system to varying extents. Ultimately, increasing demand for recycled water can result in an increasing need for top up. This is particularly so during periods of high demand when overall water supplies may be strained. It is important for all water users to receive a price signal which is proportionate the impact their use has on costs. We consider a usage price of up to 90% of the potable water price strikes a balance between rewarding customers for the day to day contribution their recycled water connection makes to the overall demand supply balance, while dis-incentivising overuse during peak water use periods.

A large price differential may incentivise overuse

Currently the customers at our mandatory schemes receive a 10% discount on their recycled water use compared to their potable water use (outside times of drought). This differential has been in place for many years and has generally resulted in well-balanced supply and demand. A larger differential may encourage customers to use recycled water in preference to potable water for a wider range of uses. It may also create a misleading price signal during drought, encouraging users to greatly increase their use of recycled water at a time when supply may be constrained.

10.3.2 IPART’s decision to defer setting prices - further clarity required

We request greater clarity from IPART of their decision to continue to defer setting prices for Sydney Water’s recycled water schemes. IPART’s position on a firm usage price of $1.90/kL creates some doubt as to whether they would step in and determine recycled water prices if we

were we to adopt a price of, say, $2.07 per kilolitre for recycled water use at our existing schemes (that is, at 90% of IPART's proposed standard potable price) or any other price.

We consider that a usage price of up to 90% of the non-drought potable usage price would also still meet IPART's pricing principles. Our preference would be to charge recycled water use at 90% of the non-drought potable price at each of our existing mandated schemes unless IPART considers this does not meet their principles.

If IPART considers a usage price $2.07 per kilolitre does not meet their pricing principles, we could accept setting the usage price at $1.90 per kilolitre initially. Our strong preference is to retain the ability to set and adjust recycled water prices if and when it is necessary to achieve a balance between demand and supply.

10.4 Sharing of revenue from least-cost recycled water schemes

We welcome IPART's draft decision to allow us to fully retain all revenue at least cost schemes that displace potable water but seek confirmation if this includes revenue from unregulated products or services. Allowing us to retain all revenue provides incentives for us to invest in least cost schemes for the benefit of customers, ensures customers and developers are no worse off from the inclusion of recycled water, and encourages us to look for value-adding opportunities from our investments.

We do not accept IPART's draft decision of a 50:50 sharing rule for schemes which do not replace standard water sales. We consider that IPART's 50:50 sharing rule does not follow sound economic principles and weakens incentives for Sydney Water to pursue economic efficiencies that make customers better-off going forward.

10.4.1 Schemes which do not replace potable water

For least cost schemes that would not reduce drinking water use, IPART's draft decision is that all revenue should be shared 50:50 between ourselves and the broader customer base, even if some of that revenue is derived from recycled water charges. This treats recycled water akin to an unregulated product that leverages off the regulated wastewater service, at least for schemes that don't reduce potable water use.

The proposed sharing rule weakens incentives to pursue value-adding opportunities that leverage existing assets, and is at odds with the decisions it has made for land sales and bio-banking. We acknowledge, however, that the sharing rule does provide an incentive to seek out opportunities that will displace potable water demand. We welcome IPART's draft decision to not apply a strict threshold for assessing the degree of displacement of potable water demand by a scheme.

That said, we have some residual concerns regarding the revenue sharing rule. It is important to understand how IPART's draft 50:50 decision plays out in practice once tax is considered. Once tax is taken into consideration, it changes the risk to return (or efficient risk sharing) ratio substantially. For every $1.00 of revenue earnt we must pay the full $0.30 tax. That is, we must pay both our share and the customers' share of this tax. This means the true benefit to be gained from the revenue is only $0.70 in total. However, IPART's draft decision is that customers must be provided 50% of revenue received, which equates to $0.50 of every $1.00 in revenue. Therefore,

in a cashflow consideration, customers will receive 72% of the post-tax revenue, and the utility would receive only $0.20 in every dollar. This equates to only a 20% return to Sydney Water for every dollar despite bearing 100% of the revenue risk.

In the case of our two least cost schemes at Picton and Gerringong, the impact of IPART's draft decision would not be large, as we do not incur significant incremental costs in order to generate the revenue. Our chief concern is that this may not always be the case for future recycled water schemes. There could be future schemes where the incremental costs are significantly higher. In such cases, IPART's draft 50:50 decision might cause us to adopt servicing strategies which are less economically or productively efficient.

10.5 Recycled water servicing strategies - progress since our proposal

The budgets and forecasts used to develop our Price Proposal were largely developed in late 2018. Since that time, we have continued to refine and progress our strategies to service growth. It is increasingly likely that recycled water will be part of the least cost servicing strategy in a number of locations. In some cases, our planning is well progressed so we now know that some recycled water infrastructure will be needed within the next price period. For others, the inclusion of recycled water is still dependent on the outcome of other decisions.

It is important to note that we do not expect the progress on these servicing strategies to result in a material change from our forecast OPEX, CAPEX nor regulated revenue over 2020-24. In part, this is because the developments may be accelerated under a commercial agreement, with initial funding provided by the developer.

We are continuing to progress a number of potential mandatory and voluntary schemes through planning including:

- projects with high volume water users, and
- long-term integrated water cycle management projects considering various sources and uses of recycled water.

We will keep IPART informed of our progress, particularly for cases where a future avoided cost claim and/or least cost recycled servicing strategy is likely.

10.5.1 Wilton New Town – a new recycled water scheme

Planning for the services at Wilton New Town has progressed significantly since we developed our pricing proposal last year. This raises two issues we seek IPART's guidance on.

Non-binding assessment of recycled water servicing strategies

In IPART's recent 2019 recycled water determination, IPART allowed utilities to apply for non-binding assessments for future avoided or deferred cost claims and claims for willingness to pay for external benefits. This was intended to alleviate some of the uncertainty and risk for public water utilities when considering investments in recycled water schemes outside a price review. However, IPART did not note whether their offer included preliminary assessment of schemes that may not involve an avoided cost claim (ie, least cost schemes).

We currently expect to begin building some of the infrastructure for this growth area during 2020-24. Under current plans, some of the infrastructure will be for recycled water. We would like to further discuss this scheme with IPART to clarify how it would be treated under the 2019 determination. As this is the first recycled water scheme to be progressed since the updated determination, we would appreciate IPART providing this additional guidance and support.

Our preferred recycled water usage price for Wilton

Depending on the outcome of current negotiations, some customers may begin being charged in 2020-24. We would appreciate IPART providing further clarity on their decision to defer setting recycled water prices as this may affect our preferred recycled water usage price strategy.

Our preference at Wilton would be to charge customers for the water they are using through their recycled water connection at a rate which reflects the type of water they are using. That is, in the early stages of development, while the recycled water network must be fully charged with potable water, we propose to charge the standard drinking water price.

Once the network is delivering recycled water, which may not occur until the end of 2020-24, we would seek to adjust the recycled water price in a way that balances demand and supply while also managing compliance risks. The adjusted price would likely be set below the non-drought potable water usage price, but we will confirm our proposal in the next retail price review.

Given the uncertainty around IPART's draft decision to defer setting recycled water prices (see section 10.3 for more details), we request IPART provide further detail in the final determination on their view of the above proposal for potential future recycled water usage charges at Wilton.

10.5.2 Potential expansion of recycling at our Picton scheme

Our Price Proposal included capital expenditure for improved effluent management at Picton, as part of our growth business case for wastewater treatment. Our planning for this scheme seeks to achieve a balance between cost-effective servicing, Environment Protection Licence (EPL) compliance, and stakeholder expectations in a region that presents ongoing servicing risks with significant growth in the catchment and tightening environmental standards for discharge into the Hawkesbury Nepean River.

While our effluent management strategy is still being finalised, the likely preferred option will be to apply for an EPL variation that features new off-site reuse opportunities as part of a least-cost, acceptable-risk approach to servicing.

The additional reuse opportunities we have identified are largely agricultural applications and would be progressed via voluntary recycled agreements with individual landowners using an unregulated price.

11 Other prices

Key messages

- We accept IPART's draft decision on prices for trade waste, miscellaneous and ancillary services.
- We welcome IPART's agreement to our proposal to make a number of charges more cost reflective thereby providing a better signal to encourage compliance (for example, for WasteSafe customers).
- We request IPART re-publish the terms and conditions for late payment fees established in 2016 in its Final Report.
- We request IPART to reconsider its draft decision on the approach to charging "temporarily unmetered" properties and joint services arrangements.

Sydney Water levies trade waste as well as miscellaneous and ancillary service charges for a variety of services which account for a small proportion (around 1.3%) of total revenue.

11.1 Non-residential trade waste charges

We accept IPART's draft decisions for trade waste charges, which are largely aligned with our price proposal. On the whole, these decisions set trade waste charges for most customers that are lower than current prices, except for customers with non-compliant waste traps. The new WasteSafe pricing method will better encourage compliance and is more cost reflective. We accept the change to the BOD charge.

We accept IPART's suggestion that the modelling for corrosion charges could be improved. Our pollutant and agreement models have been enhanced compared with the previous 2012 models, and we have a forward development path planned for continuing improvement. We will consider IPART's recommendations in future improvements to our models.

11.2 Miscellaneous and ancillary charges

We accept IPART's draft decisions on miscellaneous and ancillary charges, which are aligned with our Price Proposal.

11.3 Dishonoured or declined payment and late payment fees

In its draft decisions, IPART accepted our proposals for dishonoured or declined payment and late payment fees, except for applying an uplift to allocate corporate costs to these fees. We accept this amendment.

Under our Customer Contract, we can only charge late payment fees in accordance with any terms and conditions specified by IPART. We note that IPART did not include the terms and conditions for late payment fees in the Draft Report. We request that IPART re-publish the terms and conditions for late payment fees in the Final Report, to avoid the need for us or customers to reference the 2016 Final Report to understand these terms and conditions.

A copy of the late payment fee terms and conditions set in 2016 is shown below.

Box 1.2 Sydney Water late payment fee terms and conditions

Sydney Water will not charge a late payment fee where:

- there is a billing matter being considered by the Energy and Water Ombudsman NSW (EWON)
- the customer has made an arrangement with Sydney Water to pay by instalments or another payment plan
- part of the bill is being paid using Sydney Water's payment assistance scheme
- Sydney Water is aware that the customer has sought assistance from a community welfare organisation that is part of the payment assistance scheme
- the customer is registered with Sydney Water's BillAssist program
- the customer has been identified as being in hardship
- the customer pays by Direct debit, or
- EWON has asked Sydney Water to waive the fee.

The fee will only be levied:

- if the customer has been notified in advance of the late payment fee and the circumstances in which it may be levied, and
- at least 7 days after the due date.

Figure 11-1 Late payment fee terms and conditions in 2016

We did not propose any changes to these terms and conditions in the recent review of our Customer Contract (which occurred as part of the 2019 Operating Licence review).

We note that IPART references the seven-day grace period for late payment fees in its working capital assessment. Our response on the working capital allowance is included in Chapter 5.

The current terms and conditions require that the late payment fee can only be levied at least seven days after the due date. IPART added the seven-day grace period to our proposed terms and conditions in the 2016 review, to ensure consistency with regulation of late payment fees in electricity.[133] As we did not consult with customers or stakeholders on a potential change to this condition, we request IPART retain the seven-day grace period in the terms and conditions for late payment fees.

11.4 Unfiltered water charges

As noted in the Draft Report, we currently only sell a small amount of unfiltered water to BlueScope Steel in Wollongong. We welcome IPART's acceptance of our proposed discount of $0.30/kL to the potable water usage price in its Draft Report.

[133] IPART 2016, *Review of prices for Sydney Water Corporation Final Report*, p 210.

11.5 Unmetered water charges

We support IPART's draft decisions to maintain the deemed water usage charge for unmetered properties at 180kL/year. This is consistent with our Price Proposal. We intend to continue our current practice in terms of service and usage charges that are shown as a combined unmetered charge on bills. We consider this will avoid confusion for customers.

11.5.1 "Temporarily unmetered" properties

In its draft determination, IPART has newly proposed for Sydney Water to calculate water prices for "temporarily unmetered" properties based on their historical average water usage over the past twelve months. The term is not defined, and there are real practical issues for Sydney Water to distinguish between properties that may be temporarily unmetered vs permanently unmetered, before the proposed calculation can be adopted. We also note that the proposed approach is data intensive and overly complicated, given the low possibility of this situation occurring (see below).

Our current billing approach for properties that become unmetered is to read the meter on removal and charge the property for usage to that date. After this, the unmetered daily rate is applied until a new meter is fitted. Once a new meter is fitted, the property is then charged usage as per the meter read consumption.

The length of time a property may be unmetered varies due to the reason it is unmetered. In our experience, the majority of instances where a property becomes temporarily unmetered occurs when the property is being re-developed. This involves around 15,000-20,000 new homes in our area of operation each year. For these cases, using past usage as proposed would be inappropriate.

On average, the properties are unmetered for 8-16 weeks during the development cycle until a new meter is fitted to the property. During this time, the property is levied the unmetered service charge for the period it is unmetered and charged the meter service and usage charge from the date a new meter is connected. We believe our approach to billing these temporarily unmetered properties is sound and appropriate.

Based on the nature and the short timeframes that a property is typically temporarily unmetered in our areas, we propose continuing with our current practice. For other miscellaneous unmetered properties, we also propose continuing with the current practice of applying the unmetered daily rate (pro rata deemed usage component of 180kL/year) for unmetered properties.

11.6 Joint services arrangements

IPART's draft determination has proposed to change the way we charge two types of joint services arrangements, these are:

- single non-residential parent property with a single non-residential child property
- single non-residential parent property with a multi premise non-residential child property

The draft decision will result in these properties being charged on a common meter basis. In the 2016 determination, these child properties received the equivalent of the residential service charge (20mm meter).

We welcome that charges for other joint services arrangements are unchanged from the 2016 determination.

Joint services are private water and or wastewater service connections from a parent property that serves a number of additional (dependent) but unrelated child properties.

IPART's draft decision affects charges for around 1,870 properties with the joint services arrangements noted above. Applying IPART's draft decision presents a high level of complexity as new rules will need to be built into our billing system to differentiate between the various combinations of joint services arrangements and apply the charge accordingly. Other factors such as sewerage usage charges, discharge factors and the minimum sewerage service charge for non-residential customers also add to the complexity. We estimate that the significant changes required to our billing system will cost around $225,000 and a lead time of at least 6 months.

It's important to note that the number of properties in these joint arrangements have remained steady since 2016. These are legacy arrangements.

As such, we do not support IPART's draft decision to alters charges for the identified joint services arrangements above. We believe that the complexity and cost of implementing this into our billing system outweighs the benefit, especially noting the low customer numbers affected. We propose to monitor these joint service arrangements and review at the 2024 pricing submission.

We ask IPART to reconsider its draft decision.

12 Form of regulation

Key messages

- IPART's WACC methodology has limitations that are compounded in the current unprecedented market circumstances, even before COVID-19 emerged.
- IPART has proposed an implausibly high inflation forecast to underpin the proposed WACC, creating significant and uncontrollable financial risks for Sydney Water. We recommend IPART allow for adjustment to the revenue allowance to deal with this issue, split between the 2020-24 and 2024-28 regulatory periods.
- We do not agree with IPART's application of the frontier company method. We consider that the approach has not followed establish regulatory principles and undermines the regulatory model by diminishing our incentives to reveal information.
- IPART's justification for adopting a frontier shift at the upper end of its proposed range is internally inconsistent with the fundamental operating of the frontier company method. Despite the evidence pointing to a true frontier shift of about 0.3% per annum, we acknowledge current market uncertainties and propose that the frontier shift ought to be set at the lower end of IPART's estimated range or 0.6% per annum. Incorrectly applying the frontier company method underfunds our business by over $650 million for 2020-24.
- We will be adopting the recommendations on Sydney Water Developer Direct (SWDD) in our annual application fee review. However, we disagree that SWDD has not earned a commercial rate of return given its recent performance and how young the business is.
- We disagree with IPART's decision on revenue-sharing for non-regulated services. We consider the decision does not follow the appropriate regulatory principles, substantially weakening our incentives to innovate and seek non-regulated opportunities that are win-win outcome for us and our customers. We propose that an incremental cost-based approach is the right incentive principle.
- We accept IPART's draft decision to retain a 4-year determination, price cap regulation and unregulated pricing agreements.

12.1 Frontier shift and method

The current regulatory model sets Sydney Water's maximum prices and incentives via a CPI – X% price cap. The 'X' is an industry specific efficiency target[134] set by IPART. If Sydney Water can beat the efficiency target, it can temporarily retain efficiencies before they are handed back to

[134] Embedded within this approach are two types of efficiencies; catch-up efficiency and continuing efficiency.

customers. In this way, Sydney Water is incentivised to reveal its true costs by pursuing efficiency gains, and customers also benefit in the long run.

It is critical that the frontier methodology and corresponding efficiency targets follow best practice regulatory principles, such as being clear and transparent, reproducible, predictable, and achievable. Without these pillars, the regulatory model is undermined – Sydney Water ultimately has a weakened incentive to reveal true information, customer prices may be higher than necessary, service quality improvements may be slower to develop, and so on – a vicious cycle.

For the avoidance of doubt this is not a situation that we want for our customers today or in the future, and we have summarised our concerns with IPART's draft decisions below. These issues are elaborated on in our expert report in Attachment 1. In summary our concerns are:

- The frontier approach applied is not transparent and fails to follow best practice regulation
- There are crucial errors in the application of the frontier method, casting doubt as to the legitimacy of conclusions.

Overall, we consider that an appropriate outcome of the frontier method as supported by best practice frontier methods and Australian multi-factor productivity (MFP) estimates includes:

- Individual capital enhancements ought not to be subjected to specific cuts without specific evidence
- A continuing efficiency factor of between 0.6% to 0.7% per year.

Our expert report calculates that incorrectly applying the frontier method underfunds our business by over $650 million for the 2020-24 period.[135] In doing so, the report also provides a list of constructive suggestions for improving the process for IPART's final decision and for future price determinations.

12.1.1 The frontier approach is not transparent, failing to follow best practice regulation

The frontier approach followed by Atkins is never made explicit, other than loose references to Ofwat's cost models. In contrast, best practice is to outline the theoretical framework and evidence to support proposed expenditures.[136]

Most crucially, there is a lack of transparency surrounding Atkins' application of Ofwat's PR19 cost models. The models are central to Atkins concluding that our $104.5 million of our proposed efficiency saving ought to be considered as catch-up efficiency. Without providing details of their modelling, we are unable to verify if $104.5 million is an amount that places Sydney Water on or beyond the frontier. Being beyond the frontier will influence any proposed continuing efficiency recommendations.

Below we make more detailed comments on the frontier method.

[135] See Attachment 1.
[136] NERA (2020), *Review of IPART/Atkins Efficiency Assessment in Sydney Water* (2020). *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, Appendix 2.

IPART's estimate of continuing efficiency fails to apply the correct theoretical background

IPART's continuing efficiency analysis relies on estimating a long-term average annual sustained improvement for the water industry, by averaging Australian economy wide MFP estimates over various lengths of time. Results ranging between 0.6% to 0.8% per annum.[137]

We consider the analysis makes two incorrect assumptions, resulting in incorrect conclusions. These include equivalency of:

1. continuing efficiency for the water sector and whole economy
2. input price inflation for the water sector and whole economy.

Recognising these factors, the frontier shift adjustment in real terms is represented and approximated by regulators such as Ofwat as:[138]

$$\text{Frontier Shift}_{t+n(real)} = \text{Inflation}_{I,t+n} - \text{MFP}_{I,t+n} - \text{Inflation}_{C,t+n}$$

Where:

- $\text{Inflation}_{I,t+n}$ = forecast industry input inflation over the regulatory period
- $\text{MFP}_{I,t+n}$ = forecast growth in industry specific MFP over the regulatory period
- $\text{Inflation}_{C,t+n}$ = forecast general consumer inflation over the regulatory period

We make the following specific comments regarding MFP estimates.

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

Substituting water sector MFP with economy-wide MFP will overestimate expected MFP for water utilities. Economy-wide MFP estimates are driven by the highest performing sectors in Australia, whose technical and innovative frontier is not likely to be relevant to the frontier of water utilities.

Furthermore, IPART's reasoning is insufficient to justify deviating from industry MFP. Historically economy-wide MFP has been a less accurate measure of water sector productivity. From 1990-2010, the water supply, sewerage and drainage services subdivision (WSSD) has performed much more consistently with the broader utilities division,[139] than it has with economy-wide MFP.[140] IPART does not provide any robust evidence that there has been a structural break in this pattern.

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[137] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report Appendix* E, p 25.
[138] This is the approach applied by Ofwat in 2009 and endorsed by the UK Competition Commission in its 2010 decision on the Bristol Water plc Price Limits appeal; see Competition Commission (2010), *Bristol Water plc, A reference under section 12(3)(a) of the Water Industry Act 1991*; Competition and Markets Authority (2015), *Bristol Water plc, A reference under section 12(3)(a) of the Water Industry Act 1991*; Ofgem (2012), *RIIO-T1/GD1: Real Price effects and ongoing efficiency appendix* and as applied in Ofgem (2014), *RIIO-ED1: Final determinations for the slow-track electricity distribution companies*.
[139] Productivity Commission Staff Working Paper (2012), *Productivity in Electricity, Gas and Water: Measurement and Interpretation*.
[140] Sydney Water (2020), *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, Figure 2-3; Productivity Commission Staff Working Paper (2012). *Productivity in Electricity, Gas and Water: Measurement and Interpretation*, Figure 3.1.

This has a material effect where there is a persistent difference between utilities and economy-wide MFP estimates – in the order of 1.8 percentage points on average, each year from 2000-19.[141] This suggests that IPART's use of an economy-wide MFP measure, particularly since 1974/75, is likely to overstate the frontier shift for the water sector.

MFP measures average productivity growth of frontier and inefficient firms, meaning that IPART's use of MFP for frontier shift is diluted with a percentage of catch-up efficiency

The inclusion of both frontier and inefficient firms in MFP estimates means they will include the impact of continuing efficiencies experienced by frontier and inefficient firms, as well as catch-up efficiency being experienced by inefficient firms. To avoid a situation where a frontier is perpetually accelerating away from inefficient firms, catch-up efficiency must be greater than zero and/or frontier efficiency. Therefore, it is more likely that the frontier shift is 0.6%, the lower end of IPART's proposed range.

IPART's lower bound selectively ignores recent trends of low productivity growth

IPART's approach of determining frontier shift by estimating a long-term average annual sustained improvement for utilities is theoretically inconsistent with a four-year regulatory period. The continuing efficiency applied to Sydney Water should reflect the frontier shift the water sector is expected to experience over the determination period. While forecasting using recent averages can yield appropriate results, it is important to not selectively ignore recent periods of low average MFP growth. Taking low MFP-growth periods into account yields a range that has a much smaller lower bound than what IPART proposes: 0.4% instead of 0.6%.

Atkins fails to assess the scope of input price inflation

IPART's draft determination makes no assessment of input price inflation, a factor that typically justifies adjustment to the frontier shift where there exists a wedge between productivity and general inflation.[142] Additionally, Atkins appears to not understand the issue, noting that we have not made a robust case for any real price effects,[143] despite our evidence to the contrary.[144]

Following a similar analysis to the Productivity Commission,[145] producer and consumer inflation has differed in Australia, with the annual percentage change in GDPI and the Consumer Price Index (CPI) averaging 2.91% and 2.59% respectively from 1998.[146] This equates to a long-run average difference of 0.31 percentage points per annum, all else equal. Since 2012 changes in the two inflation measures have trended in opposite directions,[147] suggesting a widening of the annual long-run 0.31 percentage point difference is likely for the 2020-24 period. Ultimately, this

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[141] Sydney Water (2020), *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, Figure 2-3.
[142] See, eg in PR19, Ofwat accepted Europe Economics' findings of a labour real price effect. Europe Economics (2020). *Real Price Effects and Frontier Shift – Updated Assessment*, pp 12-51.
[143] Atkins (2020), *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report*, p 19.
[144] Sydney Water (2020). *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, pp 17-25.
[145] Productivity Commission (2019), *PC Productivity Bulletin*, May 2019, p 30.
[146] Sydney Water (2020), *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, Figure 2-1.
[147] Reserve Bank of Australia (2020), *Statement on Monetary Policy*, February 2020, Appendix: Forecasts.

demonstrates that growth of producer price inflation has, and is likely to continue to, exceed the growth of general inflation. This requires an adjustment to frontier shift equivalent to the expected wedge between the two over the regulatory period.

These results are consistent with other evidence of the effects of industry-specific inflationary factors. For example, consistent with Ofwat's regulatory framework for inflationary adjustments,[148] we analyse labour input costs through the real producer wage,[149] and capital costs through the gross fixed capital formation price deflators (GFCF).[150] Between 1999-2019, growth in real wage has averaged 3.38% p.a. and growth in capital costs has averaged 2.38% p.a..[151] In contrast, general inflation has grown by an average of 2.59% p.a.. This suggests that our regulatory framework has not adequately compensated us for real wage growth in Australia, although growth in plant and capital costs most likely have been.

While the growth rate in real producer wages has been trending downward, we note it will likely still be above CPI for the foreseeable future.[152] Because general wage growth is an uncontrollable cost to Sydney Water, and it is not entirely accounted for by CPI indexation alone, this justifies adjustment of the frontier shift percentage target.

The size of this adjustment should be the annual percentage difference expected over the 2020 determination times the proportion of our opex that is labour-related – we estimate this to be roughly 0.3% per annum.

Final frontier shift estimate for the water sector should not be any higher than IPART's bottom range of 0.6% but is likely to be 0.3%

We summarise the evidence in Table 12-1, applying adjustments for input cost inflation and capital substitution to arrive at a range of possible frontier shifts applicable to water utilities.[153]

[148] For simplicity, we restrict our analysis to the most prominent inputs, 'labour' and 'materials, plant and equipment'. These were assessed by Ofwat to constitute more than 33% and 20% respectively of totex for E&W companies. Labour (including contractors) alone makes up over 66% of core regulatory opex for Sydney Water: Europe Economics (2019). *Real Price Effects and Frontier Shift – Updated Assessment*, p 3; Sydney Water (2019), *Price Proposal 2020-24*, Attachment 10, Operating Expenditure, Table 4-4, p 57.
[149] Productivity Commission (2019), *PC Productivity Bulletin*, May 2019.
[150] Australian Bureau of Statistics (2020), *5206.0 Australian National Accounts: National Income, Expenditure and Product, Dec 2019*, Table 5. Expenditure on Gross Domestic Product (GDP), Implicit price deflators.
[151] Sydney Water (2020), *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review*, Figure 2-2.
[152] Sydney Water (2020), *Response to Atkins' Draft Report – Sydney Water Corporation Expenditure and Demand Forecast Review,* Figure 2-2.
[153] For all sources, we propose a lower bound of 0% frontier shift. We adopt this based on an incentive compatibility perspective; a negative continuing efficiency adjustment would imply rewarding a utility for a decrease in efficiency over the period.

Table 12-1 Range of frontier shift after adjustments

Source	Value	Factor: inflation, capital substitution	Adjustment	Final range
Economy MFP (2000-19)	0.26%	0.3%	0.1% to 0.2%	0.1% to 0.2%
Market sector MFP (2000-19)	0.9%	0.3%	0.1% to 0.2%	0.7% to 0.8%
Electricity, gas, water and waste services MFP (2000-19)	-1.63%	0.3%	0.1% to 0.2%	0%
Ofwat frontier shift (2020-25)	0.7%	0.3%, 0.2%	0.3% to 0.4%	0.33% to 0.4%
Average (Australia)				0.27% to 0.33%
Average (Australia + E&W)				0.28% to 0.35%

Note: Inflation adjustment range is calculated assuming 33% to 66% weightings of labour costs. E.g. 0.1% = 0.3% x 33%
Estimates for Ofwat are based on labour inflation adjustments *plus* adjustments for capital substitution. E.g. 0.3% = 0.1% + 0.2%

We find that a plausible range for Australia is between 0.27% to 0.33% (we do not discount a 0% lower range rather but place less weight on it). When considering Ofwat's figures, based on the assumption that E&W results are applicable to Australia the range is between 0.28% to 0.35%.

However, we appreciate that these are forecasts with a degree of uncertainty, and there needs to be a balance between future customer bills and our incentives. As a result, we consider on balance that a continuing efficiency / frontier shift at the lower end of IPART's estimated range of 0.6% ought to apply.

12.1.2 Double-counting: Sydney Water is on the frontier, but remains subject to program-specific cuts

In addition to top-down continuing and catch-up efficiency assessments Atkins recommends two types of bottom-up cost program reductions that were accepted by IPART:

- Unit cost reductions, where Atkins determines that Sydney Water should be able to deliver the same amount of output at a lower cost;
- Scope reductions, where Atkins determines that Sydney Water does not need to deliver the amount of proposed outputs, justifying a decrease in cost.

By definition, it is inconsistent to apply *unit cost reductions* to a utility on the efficient frontier – to be on the frontier, the utility is already cost efficient.

Atkins' top-down benchmarking determined that our self-imposed July efficiency challenge places us on the efficient frontier.[154] Despite this, Atkins recommends unit cost reductions to critical sewer

[154] Atkins (2020), *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report*, pp 117-18, 159.

mains and WWOA programs. IPART has accepted these program cuts.[155] By applying additional unit cost reductions, Atkins is demanding Sydney Water to perform at a level beyond the efficient frontier. In effect, this is double counting.

Because Atkins provides very few details about its benchmarking process and how expenditure reductions are assessed, we are unable to determine whether other bottom-up cuts (portrayed as scope reductions) are actually unit cost reductions that would represent a double-counting. This may be relevant to cuts to reservoir renewals and water pumping station renewals.

12.1.3 Frontier shift should only be applied after catch-up efficiencies

Atkins have applied frontier shift to total core opex, less scope adjustments, but including July efficiencies.[156] This results in frontier shift being applied to a portion of costs which are already designated as efficiencies. A graphical representation of our frontier shift correction is shown in Figure 12-1 below. This issue alone overestimates frontier shift by $2.52 million. We correct this issue in IPART's tables together with the following efficiency factor correction in Table 12-2 and Table 12-3.

Frontier shift uses a diminishing compounding factor

IPART policy is to use the following geometric progression to determine the efficiency factor in year 'N' of the regulatory period:[157]

$$\text{Continuing efficiency \%}_{N} = ((1 - 0.008)^{N} - 1) \times 100\%$$

This differs to the continuing efficiency factors applied in Atkins' recommendations:

$$\text{Continuing efficiency \%}_{N} = 0.008 \times N \times 100\%$$

We note that IPART's adoption of Atkins' figures for continuing efficiencies[158] overstates efficiency targets by $0.64 million and $0.63 million for capex and for opex respectively. We correct these below. We would be pleased to share this with IPART or to discuss this further.

[155] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report,* Appendix E, Appendix F.
[156] Atkins (2020), *Sydney Water Corporation Expenditure and Demand Review*, Addendum to Final Report.
[157] Email correspondence between IPART and Hunter Water, 10 March 2020.
[158] See IPART's draft decision Table 3.2 and Table F.1 and opex Table 4.2 and Table 4.6. This issue also applies in figures listed in Table F.2, Table F.3 and Table F.4 of IPART's Draft Report.

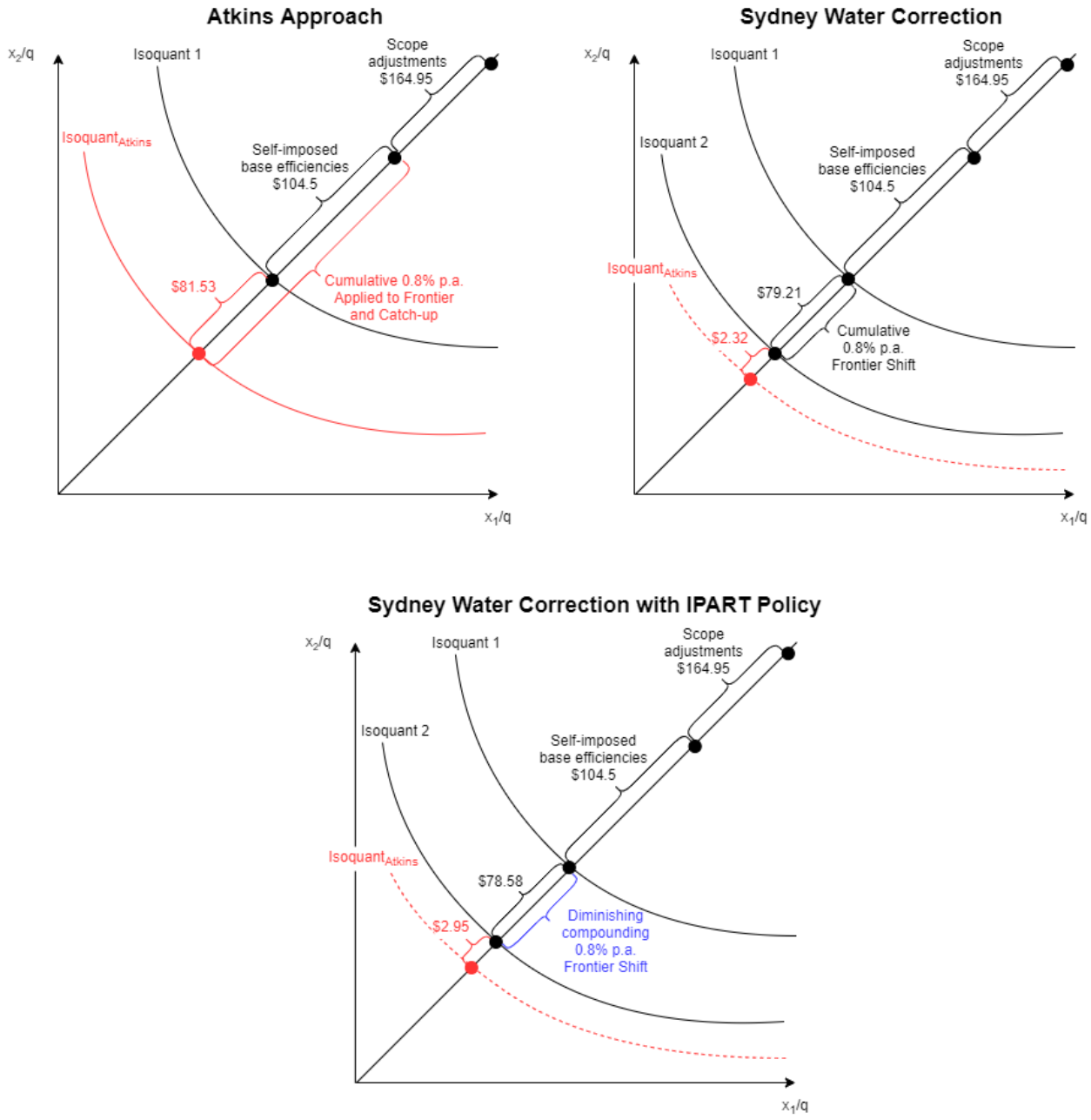
Table 12-2 Corrected figures in Table 3-2 / Table F-1 in the Draft Report

IPART Draft Report: Table 3.2 / Table F.1 ($m 2019/20)	2020-21	2021-22	2022-23	2023-24	Total
Sydney Water's base proposal	1532.7	1200.9	1204.7	1148.9	5087.2
Adjustments by service					
Water	-417.0	-52.0	-86.0	-22.0	-577.0
Wastewater	6.0	-57.0	-75.0	-140.0	-266.0
Stormwater	2.0	-4.0	-3.0	-4.0	-9.0
Corporate	-	-	-	-	0.0
Total adjustments	-409.7	-112.7	-163.8	-166.3	-852.5
Efficiency					
Cumulative continuing efficiency (%)	-0.80%	-1.60%	-2.40%	-3.20%	-
Continuing efficiency	-8.98	-17.41	-24.98	-31.44	-82.82
Diminishing compounding efficiency factor (%)	-0.80%	-1.59%	-2.38%	-3.16%	-
Continuing efficiency	-8.98	-17.34	-24.78	-31.07	-82.18
Difference	**0.00**	**-0.07**	**-0.20**	**-0.38**	**-0.64**

Table 12-3 Corrected figures in Table 4.2 / Table 4.6 in the Draft Report

IPART Draft Report: Table 4.2 / Table 4.6 ($m 2019/20)	2020-21	2021-22	2022-23	2023-24	Total
Sydney Water July Forecasts	**992.3**	**994.6**	**1011.0**	**1018.1**	**4015.9**
July efficiency challenge	-20.0	-18.2	-31.5	-34.8	-104.5
Sydney Water July proposal	**972.3**	**976.4**	**979.5**	**983.3**	**3911.4**
Additional drought opex, IT forecast update, BOO plant changes	51.5	65.6	56.3	50.8	224.2
Business-wide efficiency challenge	-5.1	-15.7	-26.1	-42.0	-88.9
Sydney Water November update	**1018.7**	**1026.3**	**1009.7**	**992.1**	**4046.8**
Scope adjustments	-28.0	-38.6	-48.7	-49.7	-165.0
Add Sydney Water's proposed business-wide efficiency challenge	5.1	15.7	26.1	42.0	88.9
IPART draft decision net of scope adjustments and self-imposed efficiency	**995.8**	**1003.4**	**987.2**	**984.4**	**3970.8**
Atkins' inclusion of July efficiencies	1015.8	1021.6	1018.7	1019.2	4075.3
Efficiency					
Cumulative continuing efficiency (%)	-0.80%	-1.60%	-2.40%	-3.20%	-
(Atkins numbers adopted by IPART in Draft Determination) Continuing efficiency[1]	-8.13	-16.35	-24.45	-32.62	-81.53
(IPART Draft Determination methodology) Continuing efficiency	-7.97	-16.05	-23.69	-31.50	-79.21

Difference	-0.16	-0.29	-0.76	-1.11	-2.32
Diminishing compounding efficiency factor (%)	-0.80%	-1.59%	-2.38%	-3.16%	-
Continuing efficiency	-7.97	-15.99	-23.50	-31.13	-78.58
Difference (after both corrections)	-0.16	-0.36	-0.95	-1.49	-2.95



Source: Sydney Water analysis.

Figure 12-1 Graphical representation of frontier shift correction to opex

12.1.4 Incorrectly applying frontier shift to capital enhancement expenditure

Atkins incorrectly argues its approach to capital enhancements is consistent with Ofwat's.[159] For base costs, Ofwat conducts a top-down assessment of frontier shift and econometric benchmarking. For capital enhancement expenditure, Ofwat only conducts a bottom-up assessment, or 'deep dive', if it considers benchmarking is not appropriate.[160] Therefore, IPART is mistaken in allowing frontier shift to be applied to all capital expenditure.[161]

12.1.5 Arbitrary assumption that self-imposed July efficiency of $104 million is catch-up

Atkins claims that, despite evidence to the contrary, it is reasonable to assume our July efficiency self-challenge is attributable entirely to catch-up efficiency.[162] Similarly, they assume our proposed November efficiency challenge is continuing efficiency but replace it with their own assessment.

These assumptions are unfounded. Our efficiency challenges are a combination of catch-up and continuing efficiencies,[163] and it is wrong to characterise it entirely as one or the other. Atkins therefore double counts since it applies the full scope of frontier shift without accounting for the portion contained in our self-imposed efficiencies.

12.1.6 Continuing and catch-up efficiency is already embedded in forecast costs

Where a utility's expenditures are based on forecast costs (rather than projected based on historical costs), frontier shift may already be accounted for in ex ante assessments of productivity growth and real price effects.[164]

Atkins appears to misunderstand the issue and considers there is no double-counting.[165] However, Atkins only recognises the efficiencies contained in the self-imposed efficiency challenge, not the forecast costs themselves.

We consider this, and the previous issue of continuing efficiency also embedded in our self-imposed efficiency challenges, as justification the lower end of IPART's frontier shift range should be adopted.

12.2 Weighted Average Cost of Capital

IPART should exercise discretion when selecting a weighted average cost of capital (WACC) for the final determination. We are concerned that IPART will apply its 2018 WACC method without exercising discretion, resulting in a WACC that is inefficiently low. Our view is that this:

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[159] Atkins (2020), *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report*, pp 26-27.
[160] Ofwat (2019), *PR19 final determinations: Securing cost efficiency technical appendix*, p 50.
[161] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report Appendix*, p 13.
[162] Atkins (2020), *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report,* pp 17-18, 27.
[163] Sydney Water (2020), *Price Proposal 2020-24*, Attachment 9, p 53.
[164] Ofgem required utilities to present their frontier shift assumptions as part of their proposals to the most recent price control decision. Ofgem decided that companies' forecasts already included sufficient frontier shift and did not apply an additional frontier shift adjustment: Ofgem (2014). *RIIO-ED1: Final determinations for the slow-track electricity distribution companies, Business plan expenditure assessment, Final decision*, p 158.
[165] Furthermore, they misrepresent Ofwat's approach once again since Ofwat does not apply frontier shift to capital enhancement expenditures (where cost proposals are derived from forecasts): Atkins (2020). *Sydney Water Corporation Expenditure and Demand Forecast Review Final Report*, p 27.

- would undermine our ability to generate a reasonable return on the capital invested in the business and pose a material challenge to our ability to remain financeable over the next four years
- disregards flaws and biases in the IPART WACC method, which have been exacerbated by the current extraordinary market conditions
- gives inadequate attention to certain matters under section 15(a) of the IPART Act.

We discuss these issues in more detail below and provide our expert report on inflation forecasting in Attachment 2, which expands on some points in a more technical manner.

12.2.1 IPART's inflation forecast in the WACC method embeds windfall gains and losses

In determining allowed revenues prior to a regulatory period, IPART permits the recovery of a real cost of debt and equity. Prior to a regulatory period, both values depend on a forecast of inflation. However, when IPART rolls forward the regulatory asset base (RAB) for the next regulatory period, the inflation forecasts are replaced with values for outturn inflation. This exposes Sydney Water and our customers are inefficiently to an inflation forecast risk, despite having no ability to influence or manage the risk.

Divergences between IPART's forecast inflation and outturn inflation will result in Sydney Water permanently under- or over-recovering nominal debt and equity costs, resulting in windfall losses or gains, which no reasonable regulator or utility could perfectly foresee. This situation is exacerbated in the current market circumstances, which have also exposed flaws in various aspects of IPARTs method.

For example, markets are expecting actual inflation to remain at about 0.65% for 2020-24, well below IPART's forecast inflation of 2.3%. If this expectation proves correct, Sydney Water will suffer a loss of over $1.3 billion for 2020-24, a shortfall which equity holders must bear. We are unable to hedge against this risk since IPART's inflation forecast is disconnected from the market. More specifically, IPART calculates an average-over-the-period inflation forecast using the geometric mean of four data points, three of which are 2.5% (the midpoint of the RBA's target inflation band). This method strongly weights the resulting forecast towards 2.5%, giving very little weight to actual market conditions. Our expert report in Attachment 2 discusses inflation forecasting.

Therefore, without a mechanism to address the problem (or an improved inflation forecast), the outcome is inconsistent with the regulatory objective of setting revenues and prices to the efficient level in *every* regulatory period.

Our position on contemporary inflation expectations is in Appendix F and summarised below.

To illustrate the issue, we provide two worked examples with the following assumptions:

- opening RAB of $1000, indexed for inflation and depreciated via a straight-line approach over an 8 year asset life
- nominal WACC of 5.5%
- outturn and IPART's WACC inflation forecast are 1%.

Table 12-4 Internally consistent inflation estimates using IPART's approach ($,2019-20)

	NPV	Regulatory Period 2020-24				Regulatory Period 2024-28			
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 1	Yr 2	Yr 3	Yr 4
Opening RAB (nominal)		1000	884	765	644	520	394	265	134
Depreciation (real)		125	125	125	125	125	125	125	125
Depreciation (nominal)		126	128	129	130	131	133	134	135
Indexation (nominal)		10	9	8	6	5	4	3	1
Closing RAB (nominal)		884	765	644	520	394	265	134	0
Depreciation allowance		126	128	129	130	131	133	134	135
Real WACC allowance		45	40	34	29	23	18	12	6
Indexation		10	9	8	6	5	4	3	1
Total return on capital ($)		55	49	42	35	29	22	15	7
Total return on capital (%)		5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Allowed cash flows	$1,000	171	167	163	159	155	150	146	141

The first panel of Table 12-4 illustrates the operation of RAB depreciation ($1000 ÷ 8 years x 1.01) and indexation ($1000 x 1%). The second panel illustrates the return on capital that shareholders receive ($1000 x (5.5% - 1%)) via the real WACC and a RAB indexation component (a capital gain for shareholders of $10 = $1000 x 1%). In total the return on capital provides investors with the required 5.5% return in every year. In addition, the NPV of total cash flows to investors is exactly equal to the current value of the RAB ($1,000).

Using this model we can illustrate the financial impact on Sydney Water and customers when IPART's WACC inflation forecast is 2.3% and outturn inflation is 1% for 2020-24, but IPART updates the inflation forecast to perfectly match outturn inflation for 2024-28. All other assumptions are the same.

Table 12-5 Internally inconsistent inflation estimates using IPART's approach ($,2019-20)

	NPV	Regulatory Period 2020-24				Regulatory Period 2024-28			
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 1	Yr 2	Yr 3	Yr 4
Depreciation allowance		126	128	129	130	131	133	134	135
Real WACC allowance		32	28	24	21	23	18	12	6
Indexation		10	9	8	6	5	4	3	1

Total return on capital ($)		42	37	32	27	29	22	15	7
Total return on capital (%)		4.2%	4.2%	4.2%	4.2%	5.5%	5.5%	5.5%	5.5%
Allowed cash flows	$962	158	156	153	151	155	150	146	141

The inflation forecasting error generates a lower real WACC allowance during the first regulatory period (5.5% - 2.3%) x opening RAB), with a return on assets of 4.2% p.a. (Table 12-5). Importantly, this shortfall is never recovered. This 1.3 percentage point *permanent* under-funding for 2020-24 of $42[166] is borne by the shareholder, as nominal debt is unchanged, and payment of debt takes preference to shareholder returns. This ultimately dilutes shareholder returns even though there were no inefficient actions by either Sydney Water or shareholders. See Attachment 2 for a discussion of the impact on shareholders and an appropriate return to shareholders in such circumstance.

Understanding and selecting an improved inflation forecast is key to the issue

Key to addressing the issue is selecting an appropriate inflation forecast. Our expert report in Attachment 2 outlines the strengths and weaknesses of existing approaches to inflation forecasting. In summary:

- IPART's measure of inflation (2.3%) is upward biased relative to the majority of alternative inflation expectations for the next four years, as it gives very little weight to market conditions
- survey evidence may provide the best theoretical indicator of outturn inflation. However, there is little survey evidence corresponding to the 2020-24 period
- we consider market measures of swap-implied inflation and break-even inflation are better performing indicators of outturn inflation[167]
- market based inflation expectations are likely to remain persistently low, between 0.65% to 0.89% for bond breakeven and inflation swaps (4-year term, 40-day average) respectively.[168]

We acknowledge IPART has historically sought to improve its method of forecasting inflation and has reviewed alternatives.[169] These have included market measures such as swap-implied inflation and break-even inflation.[170] However, IPART concluded that they were less accurate than the current approach.[171]

[166] $42 = ($171+$167+$163+$159) - ($158+$156+$153+$151)
[167] While both measures appear to systematically overstate outturn inflation, a wealth of evidence suggests this overstatement is consistent and can be adjusted for to estimate an accurate ex-ante inflation forecast.
[168] See Appendix F and Attachment 2.
[169] IPART (2014), *New approach to forecasting the WACC inflation adjustment*.
[170] IPART (2009), *Adjusting for expected inflation in deriving the cost of capital*.
[171] IPART (2014), *New approach to forecasting the WACC inflation adjustment*, p 3.

Table 12-6 Current estimates of expected inflation over four years

Inflation forecast source	Current estimate
Bond breakeven (4-year term, 40-day average)	0.65%
Inflation swaps (4-year term, 40-day average)	0.89%
Average of market estimates (Breakeven and swaps)	0.77%

Source: RBA, Bloomberg, IPART draft decision

Given the current low inflationary environment, it is unlikely that inflation will converge to 2.5% within the next year, as assumed in the current IPART method.[172] That is, the low inflation that we are experiencing is likely to be structural, rather than cyclical, and will likely undershoot IPART's 2.3% forecast throughout the determination period.

We have assessed the impact of persistently low inflation using a breakeven inflation rate of 0.65%, and the results are discussed below.

IPART's inflation forecast will likely cause a material under-recovery of up to $1.35 billion

We adopt a breakeven inflation of 0.65% to assess the financial impact on our business, along with IPART's 2.3% inflation forecast, a nominal 5.5% (3.2% real, 5.5%-2.3%) WACC and our proposed average RAB values for 2020-24. However, for simplicity we exclude any depreciation allowance and concentrate on the inconsistency between real WACC allowance and RAB indexation.

Table 12-7 summarises the financial impact.

[172] Statement by Philip Lowe, Governor, Address to Anika Foundation Luncheon, Sydney, 25 July 2019 (emphasis added); RBA, Opening Statement to Economics Committee, 9 August 2019; Statement by Philip Lowe, Governor, Monetary Policy Decision, 5 November 2019 (emphasis added).

Table 12-7 Financial impact of inflation forecasting risk for 2020-24 ($2019-20).

($2019-20m)	2020-21	2021-22	2022-23	2023-24	Total
Opening RAB (nominal)	$19,049	$20,147	$21,010	$21,778	
Real WACC Allowance	$610	$645	$672	$697	
Expected Indexation	$124	$131	$137	$142	
Total Return on Capital	$733	$776	$809	$838	
Nominal WACC return	$1,048	$1,108	$1,156	$1,198	
In period cashflow allowance	-$314	-$332	-$347	-$359	**-$1,353**
In period cashflow allowance *plus* tax	-$409	-$432	-$451	-$467	**-$1,759**

Based on an expected BEI of 0.65%, there is potential for underfunding of up to $1.35 billion over the 2020-24 before taxation. We consider this to be a significant uncontrollable risk that warrants further consideration by IPART.

We have also assessed the likely financeability impact of a $1.35 billion cashflow shortfall (see Appendix G for details). In summary, we fail to meet to retain our minimum credit rating of Baa2, remaining at a Baa3 rating until at least FY2026-27.

More crucially, there is no mechanism to recover the capital under-funding. Consistent failure to recover nominal debt costs will require us to rely on retained earnings to maintain our financial metrics while meeting our capital investment needs. This undermines our ability to meet legitimate dividend payments to our shareholders.[173] On the other hand, substituting the shortfall with higher levels of debt financing will risk deteriorating our financial metrics. This presents us with an untenable situation, which would likely need to be addressed within period. To this end we outline below our proposed approach to addressing the issue.

An interim solution to forecast inflation risk – balance between within-period allowance and ex post true-up

The inflation issue is not unique to Sydney Water or other water businesses and affects a range of stakeholders. Consequently, a permanent solution to the inflation forecasting issue requires a comprehensive review process that provides an opportunity for all affected parties to make informed submissions.

[173] This is required under Section 15a of the IPART Act: *IPART Act 1992* (NSW), s. 15(g).

We recommend that IPART conduct a formal review of its approach to inflation forecasting as soon as is feasible.[174] As there is not enough time to complete such a review before the final determination, we propose that an interim solution should be adopted for the current review process

We consider there are two possible solutions:

- **Pure ex post true-up,** quantified at the completion of the 2020-24 regulatory period, by comparing allowed revenues in each year over the 2020-24 period based on IPART's 2.3% inflation forecast against allowed revenues based on observed inflation.
- **Hybrid approach**, an ex post true-up with some cashflows brought forward into the current regulatory period.

Under a pure ex post true-up solution, Sydney Water and customers are ultimately kept whole in present value terms, with an adjustment to prices in 2024-28 to account for differences between forecast and actual inflation during 2020-24. However, this does not provide any additional cash flows during the 2020-24 period, meaning it:

- can't address any financeability concerns that are likely to arise in the 2020-24 period. Appendix G illustrates persistent financeability issues under a pure ex post true-up.
- fails the regulatory principle of inter-generational equity
- could generate a price shock in 2020-24.

We consider these issues can be mitigated by bringing forward, in an NPV neutral manner, some of the ex post true up under a hybrid method. In summary, the hybrid approach would be set as the sum of:

- 'base case' allowed revenues based on the current IPART inflation forecast of 2.3% plus
- an 'additional' per annum constant amount of the ex-post true-up payment brought forward.

Any under/over amount would then be trued-up at the beginning of the 2024-28 regulatory period by comparing:

- the sum of the 'base case' and 'additional' revenues with
- allowed revenues in each year of the regulatory period, computed using observed outturn inflation.

In principle we see merit in adopting a hybrid approach, and summarise in Table 12-8 the benefits of all approaches considered.

[174] We consider the review ought, at a minimum, consider (a) IPART's approach to forecasting future inflation and (b) IPART's approach of deriving the real WACC using its forecast of inflation while indexing the RAB using observed outturn inflation.

Table 12-8 Summary of solutions for inflation forecast risk

	Status-quo: inflation forecast	Option 1: Improve ex-ante forecast	Option 2: True-up	
			a) Hybrid within period cashflow + ex post	b) Pure ex post
Allow cost-recovery / NPV=0 Principle	✗	✓/✗	✓	✓
Promote inter-temporal equity	✗	✓/✗	✓	✓/✗
Minimise customer bill volatility	✓	✓	✓	✓
Minimise regulatory costs	✓	✓	✓	✓
Address financeability within period	✗	✓	✓	✗

Source: NERA Analysis and Sydney Water analysis

To implement the hybrid approach, a decision would be needed on how much revenue must be brought forward into the 2020-24 period. A simple method would be to calculate the allowed revenues that would be consistent with a more reasonable inflation forecast and deducting allowed revenues based on IPART's 2.3% inflation forecast. This is identical to our assessment of the financial impact (capital-underfunding) on our business in Table 12-7.

We propose that a reasonable inflation estimate is a value of 1.62%, an average of "Mid-point between IPART and breakeven figures (2.30% and 0.65%)" and "Current RBA 1-year forecast". Table 12-9 summarises expected inflation estimates.

Table 12-9 Current estimates of expected inflation over four years

Method	Current estimate
Bond breakeven (4-year term, 40-day average)	0.65%
Inflation swaps (4-year term, 40-day average)	0.89%
Mid-point between IPART and breakeven figures (2.30% and 0.65%)	1.48%
Current RBA 1-year forecast (Most recent RBA forecast)	1.75%
Average of Mid-point between IPART and breakeven figures and Current RBA 1-year forecast (Most recent RBA forecast)	1.62%

Source: RBA, Bloomberg, IPART draft decision.

We consider the 1.62% average is reasonable as it gives weight to a better performing market based estimate (see Attachment 2 and Appendix F), and recognises IPART's previous use of the BEI. Further, incorporating the RBA 1-year ahead forecast retains a role for an RBA-derived forecast in IPART's method. The hybrid approach shares inflation risk between Sydney Water and customers by bringing forward to 2020-24 about half of any expected capital under-funding. The remaining portion is reserved for the ex post true-up.

The estimated impact of the hybrid approach ie 1.62% is presented in Table 12-10.

Table 12-10 Financial impact of inflation forecasting risk for 2020-24 ($2019-20).

($2019-20m)	2020-21	2021-22	2022-23	2023-24	Total
Opening RAB (nominal)	$19,049	$20,147	$21,010	$21,778	
Real WACC Allowance	$610	$645	$672	$697	
Expected Indexation	$124	$131	$137	$142	
Total Return on Capital	$918	$971	$1,013	$1,050	
Nominal WACC return	$1,048	$1,108	$1,156	$1,198	
In period cashflow allowance	-$130	-$137	-$143	-$148	**-$557**
In period cashflow allowance *plus* tax	-$168	-$178	-$186	-$193	**-$725**

Table 12-10 illustrates that with expected inflation at 1.62%, an appropriate in period cashflow allowance is around $557 million before tax, or $725 million including tax. Further, the hybrid approach also contributes to alleviating any broader financeability issues cause by the inflation issue (as outlined in Table 12-7 and Appendix G).

Finally, customer bill impacts for the 2020-24 period are approximately $81 greater per typical customer per year. See chapter 5 for greater detail on bill impacts.

12.2.2 IPART's approach to determining the long-term historical average cost of equity has resulted in a historically low allowance for return on equity

Under IPART's WACC method, the allowed return on equity is obtained by giving equal weight to a measure of the 'current' cost of equity and the 'long-term' cost of equity.

While recent market conditions have seen IPART's estimate of the current cost of equity remain relatively constant,[175] IPART's estimate of the long-term cost of equity has declined materially. This

[175] See Appendix F.

is the result of the steady decline in 10-year government bond yields,[176] which have been driven to artificially low levels because of unprecedented monetary policy actions by the RBA.[177]

We are concerned that returns to equity have not fallen to the full extent implied by the decline in government bond yields, which is driven by extreme circumstances. IPART's method has no ability to adjust for these factors.

This outcome is the result of an internal inconsistency in IPART's estimation of the long-run market risk premium

The long-term cost of equity estimate is the combination of two independent inputs – a historical average MRP measured over 50 or 100 years and a risk-free rate measured over 10 years. Internal consistency requires that the MRP and risk-free rate be measured over a comparable period. The extreme current market conditions are illustrative of this problem. Indeed, the last 10 years have characterised the uniquely low level of government bond yields. These low rates are entirely captured in IPART's estimate of the risk-free rate, but only partially reflected in the MRP. This problem has also been recognised by IPART.[178]

This issue is accentuated in times of market stress. For example, government bond yields fell to extreme levels at the peak of the GFC and again more recently due to the current viral pandemic.[179] The approach of simply adding a fixed 6% MRP to the prevailing government bond yield implies that the cost of equity capital declines during such crises, which is clearly implausible.

We consider that IPART's estimate of the long-term cost of equity does not properly reflect long-run average market conditions.

By construction, the cost of equity in long-run market conditions should be very slow to move. However, the IPART estimate was 30% higher prior to the GFC than it is now. It seems unreasonable the long-run cost of equity could have changed so materially in such a short time even with the unique market conditions we are currently experiencing. We therefore consider IPART's estimate is not performing its required role as an anchoring point for the cost of equity allowance.

We consider this matter ought to be consulted on during IPART's next WACC review. As an interim measure we discuss our proposed solution below.

12.2.3 IPART's method allows discretion

The current WACC framework allows IPART to exercise discretion in selecting the WACC. These mechanisms are:

[176] See RBA (2020), *Statistical Tables*, Capital Market Yields – Government Bonds.
[177] In particular, the RBA is now targeting government bond yields directly, seeking to drive the yield on 3-year government bonds down to a target of 0.25% p.a.: Lowe, P., October 2019, "Some echoes of Melville," Sir Leslie Melville Lecture, Canberra, pp 11-12; https://www.rba.gov.au/speeches/2020/sp-gov-2020-03-19.html.
[178] IPART (2018), *Final Report: Review of our WACC method*, p 51.
[179] See RBA (2020), *Statistical Tables*, Capital Market Yields – Government Bonds.

- The uncertainty index — 'out of range' as of March 2020[180] — explicitly allows IPART to apply its discretion to set the allowed cost of equity and cost of debt.[181]
- If financial market information suggests that the midpoint WACC does not reflect market expectations for the cost of capital.[182]

The use of judgment when selecting a WACC point estimate is an appropriate transitional arrangement to address the limitations of IPART's WACC model. We are concerned that applying the WACC method without exercising judgment would place inadequate weight on certain matters in section 15 of the IPART Act, namely:

- the appropriate rate of return on public sector assets, including appropriate payment of dividends to the government for the benefit of the people of New South Wales
- the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets.[183]

The allowed return on debt in the WACC model is intended to be consistent with the ex-ante cost of a prudent and efficient approach to debt management by a regulated business. We consider the current WACC method achieves this, and therefore find no reason to deviate from IPART's approach for the cost of debt.

In contrast, the cost of equity is a forward-looking estimate of the return that investors would require to hold equity capital (not the ex-ante costs that the allowed cost of debt is intended to reflect).[184] Consequently, the principles that restrict changes in the allowed cost of debt do not apply to the allowed cost of equity.

As discussed in Chapter 16 and above, IPART's long-term estimate implies that the COVID-19 crisis has had the effect of reducing the cost of equity. This implausible result exposes flaws in the cost of equity method, casting significant doubt on the estimates. This provides a basis for, at minimum, maintaining the WACC adopted in the draft decision and not reducing it further by applying an inappropriate cost of equity in the final determination. We propose assigning more weight to the WACC method's short-term estimate, thereby increasing the cost of equity to more accurately reflect the market. This will permit sufficient revenue allowance for a legitimate return to our shareholders.

12.2.4 Consultation on the approach to estimating the debt margin

We accept IPART's proposed approach to estimating the debt margin. The debt margin is only one of four components of one of six methods used to estimate the current MRP, and only has a minor influence on the calculation.

[180] IPART (2020), *Consultation on Debt Margin*, pp 5-6.
[181] IPART (2018), *Final Report: Review of our WACC method*, Final Decisions 5 and 17, pp 9-10.
[182] IPART 2018, *Review of our WACC method – Final report*, p 70.
[183] *IPART Act 1992* (NSW), s. 15(g).
[184] IPART (2018), *Final Report: Review of our WACC method*, pp 50-51.

IPART's 2018 WACC Review concluded that the cost of debt for a particular year would be determined by using a two-month observation window for the debt risk premium. At times, however, RBA data is not available or delayed. Thus, it is possible that the two-month window utility may fall within a period that data is unavailable to IPART and unable to be reflected in the WACC calculations. In this situation, IPART's 2018 WACC Review left open the option to apply annual price adjustments or a true-up.[185]

We consider that annual price adjustments should be the subject of a true-up at the end of each regulatory period. This is primarily because return on debt calculations are only required at a price determination. The amount to be trued-up from the previous period depends on the difference between the regulatory allowance set by IPART for each year, and the regulatory allowance that would have been made using actual data.

By the time of the next regulatory review, it is almost certain that the RBA will have resumed publication of corporate debt spreads and will likely have 'back-filled' missing data to ensure that a complete series is available. This would enable an NPV-neutral true-up using standard RBA figures at the next regulatory review.

12.2.5 The consequences to Sydney Water and our shareholder are material

Between 2016 and IPART's draft decision, the WACC has reduced by 170 (4.9% - 3.2%) basis points. All else equal, this reduction would reduce our revenue allowance by an average of $375 million each year over the 2020-24 period. Changes of this magnitude require careful consideration.

We expect that IPART's 2018 WACC method could produce a WACC as low as 3.2% when IPART makes a final decision on our prices. As outlined in our July and November pricing submissions we expect this will put pressure on our investment grade credit rating, particularly when including underfunding associated with inflation forecasting used in the WACC.

If IPART applies the current method in a mechanical approach in the review of Sydney Water's, Hunter Water's and WaterNSW's prices, it would be using a biased and flawed method to set a rate of return for three asset bases with a combined value of over $25 billion.

12.3 Other issues

12.3.1 Sydney Water Developer Direct

We accept IPART's draft recommendations regarding Sydney Water Developer Direct (SWDD). However, we do not agree with several comments made by IPART's consultant on the commercial rate of return for SWDD. Specifically, we consider the view that *"SWDD is not currently earning a commercial rate of return…"*,[186] to be based on an incomplete analysis of margins.

This conclusion is incorrect and misleading for three reasons:

[185] IPART (2018). *Final Report: Review of our WACC method*, p 38.
[186] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report*, p 115.

1. After accounting for all relevant costs and revenues. SWDD has generated a positive rate of return for the 2018-19 and 2019-20 financial years (to date)
2. IPART's consultant's assessment uses current actual labour allocation rates and costs, even though these have varied since SWDD began, while retaining SWDD's remaining costs at their original forecast values. This is internally inconsistent and holds Sydney Water to an improbable standard of perfect forecasting.
3. Rate of return inferences are typically made over the entire lifecycle of a service or product, taking into account a forward-looking business strategy.[187] That is, the early financial success of a competitive product or service can be a function of many legitimate competitive factors that do not persist in the longer term. This view is supported by the NSW Government policy on competitive neutrality,[188] making clear that conclusions of competitive neutrality based on rates of returns are only relevant when medium to long term costs exceed revenues.

12.3.2 Non-regulated services

We accept IPART's draft decisions on non-regulated services expect for retaining a 50:50 sharing rule for non-regulated revenues generated from using shared assets.[189] We maintain our preferred proposal that customers should receive compensation from the use of shared assets to provide non-regulated services in the form of the incremental costs of the non-regulated service, accelerated depreciation of regulated assets, and 10% post tax profits for underwriting the assets.[190]

IPART's draft decision places insufficient weight on efficiency outcomes and is inconsistent with its position on other non-regulated services and land sales.[191] Embedded within IPART's earlier decisions on non-regulated services are the following regulatory principles:

- promoting the efficient use of assets
- appropriate allocation of risks, costs and benefits between Sydney Water and customers
- minimising regulatory burden
- providing certainty and stability to Sydney Water and customers over time.[192]

These principles are designed to ensure that Sydney Water retains its incentive to pursue dynamic efficiencies and customers are made no worse-off, and in most cases are made better off. These outcomes are best achieved through either:

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[187] NSW Treasury (2002), *Policy statement on the application of competitive neutrality*, p 16; Commonwealth Competitive Neutrality Complaints Office (1998), *Cost Allocation and Pricing*, pp vii, 2, 21.
[188] NSW Treasury (2002), *Policy statement on the application of competitive neutrality*, p 16.
[189] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report*, p 47.
[190] Sydney Water (2019), *Price proposal 2020-24*, Attachment 7, pp 17-18.
[191] IPART (2018), *Asset Disposals Policy Paper*, p 1; Sydney Water submission to IPART's Issues Paper on Asset disposal policy consultation, November 2017; Sydney Water (2018), *Proposed Regulatory Treatment of Participation in the Biodiversity Offset Scheme*.
[192] IPART (2018), *Asset Disposals Policy Paper*, p 1; Sydney Water submission to IPART's Issues Paper on Asset disposal policy consultation, November 2017; Sydney Water (2018), *Proposed Regulatory Treatment of Participation in the Biodiversity Offset Scheme*.

- Sydney Water funding any incremental costs from its non-regulated revenues
- where incremental costs are not known or able to be easily measured, a 10% sharing of revenues ought to apply.

We consider that IPART's draft decision on the 50:50 sharing rule is a legacy based decision, that sought to protect customers given a lack of information on underlying costs at the time. From first principles, we agree with IPART that customers do have a right of compensation from our use of shared assets to generated non-regulated revenues. However, it is incorrect to suggest this right arises from customers having paid for assets.[193] Under the current regulatory model, customers pay for the use of the asset, not for asset *ownership*. This allocation of rights and risks implies a different sharing regime than what IPART has decided in their draft report. Since asset ownership is retained by Sydney Water, there is no risk to customers so long as they are compensated for the incremental costs of each project. In some cases, this may be zero or limited to the costs of underwriting assets.

We consider that IPART is concerned with protecting customers from any costs or asset depreciation arising from non-regulated activities that may be inadvertently recovered from our future costs (cross-subsidisation).[194] However, so long as these rules on incremental cost-based compensation are followed and costs of non-regulated services are ring-fenced, customers will bear no risk in relation to this concern. Furthermore, our proposed approach better incentivises water utilities to pursue all financially efficient opportunities to use shared assets (up to zero net financial benefit).

While both a 50:50 and 90:10 sharing rule could compensate customers, Sydney Water bears all the risk under the 50:50 approach if incremental costs are more than incremental revenues.[195] This is likely to be the case when incremental costs are at least 20%. That is for every $1 of non-regulated revenues earnt, Sydney Water bears the entire 30% taxation burden and our customers' 50% share of pre-tax revenue is considered a cost to the business. Such a scenario disincentivises the pursuit of dynamic efficiencies or non-regulated services with small margins.

We also consider additional exemptions ought to apply for least cost recycled water schemes. We discuss this further in Chapter 10.

12.3.3 Other issues

A 4-year determination period

We accept IPART's draft decision to maintain a four-year determination period from 1 July 2020.

Maintaining a price cap

We accept IPART's draft decision to maintain a price cap approach.

[193] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report,* p 47.
[194] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report*, Appendix G, p 62.
[195] IPART (2020), *Review of Prices for Sydney Water from 1 July 2020 Draft Report,* Appendix G, p 60.

Efficiency Carry-over Mechanism

We accept IPART's draft decision to maintain an efficiency carryover mechanism (ECM). We also maintain that the ECM on opex is complementary to a capital expenditure ECM. We consider this is worth exploring in future reviews.

Unregulated pricing agreements

We accept IPART's draft decisions to:

- retain the option for Sydney Water and large customers to enter into unregulated pricing agreements
- update the definition of large non-residential customers to those that consume 7.3ML of water per year.

We see no increased risks or administrative costs to Sydney Water or customers from this updated definition, as uptake will continue to be explored on a case-by-case basis ring-fenced from the broader business. However, expansion of the definition ought to also consider accommodating customers who discharge significant volumes of wastewater, but do not demand 7.3ML of water a year.

For greater flexibility, we consider that the definition could incorporate three separate thresholds. A water use only threshold (currently 7.3ML) for customers across one or more properties, a wastewater discharge threshold, and a hybrid threshold for both water and wastewater. We propose to continue working with IPART to maximise the opportunity to explore efficient unregulated pricing agreements, while minimising the risk to customers.

13 Output measures

Key messages

- We support IPART's decision to transition away from 'input' focused output measures, which may not provide correct incentives, to more outcomes focused measures.
- We have proposed some changes to IPART's recommended measures to make reporting more meaningful and less burdensome.
- In particular, quarterly reporting for water conservation may be excessive, especially when not in drought, given the size of the baseline program and the lag between interventions and being able to accurately measure their impact.
- Our strong preference is to report on volume rather than percentage reductions for water savings from water conservation activities. Percentage based reporting for water conservation is complex and can be misleading.
- More frequent reporting of lag indicators is unlikely to lead to improved performance. We plan to address performance issues through improved internal reporting of lead indicators and more effective governance.
- We propose to communicate progress on customer supported projects through a combination of methods, including information in bills and on our website.
- Sydney Water has applied the approved Economic Level of Water Conservation (ELWC) methodology, and we consider we have not been under-stating the value of water. However, we are open to using alternative methods that may achieve a better outcome.

13.1 IPART's draft decision

We support a transition to outcomes-based measures in the future. It is important that this is done in consultation with Sydney Water and other utilities over a reasonable period of time. This should include testing of potential new measures (that is, that they can be practically reported against) before they are adopted.

We envisage that this would be done as part of the broader regulatory reform project noted by IPART. We welcome the opportunity to work with IPART on this in the future.

13.1.1 Output measures on discretionary and drought-related capital projects

We provide a summary in Table 13-1 and comments below on specific measures.

Table 13-1 Output measures on discretionary and drought-related capital projects

No.	Project description	IPART draft measure	IPART draft target	Recommended changes
1	A discretionary project to divert untreated wastewater ocean outfalls at Vaucluse-Diamond Bay	The amount of wastewater released from the three outfalls (Vaucluse, Diamond Bay 1, and Diamond Bay 2) during dry weather.	Zero wastewater released from the three outfalls during dry weather, by 30 June 2024.	No proposed changes
2	A discretionary project – Waterway Health Improvement Program (WHIP)	The kilometres of waterway restored to good health and area of native vegetation planting, due to the WHIP.	Report on the kilometres of waterway restored each year to good health and area of native vegetation planting under the WHIP.	Alternative measure: The • tonnes of gross pollutants removed every year • tonnes of sediment removed every year • tonnes of nutrients removed every year • the area of native vegetation planted due to the WHIP.
3	Informing customers of its delivery of discretionary expenditure, and the bill impact of discretionary expenditure	Evidence of how Sydney Water has provided this information to its customers.	Sydney Water to propose in our response to the Draft Report.	Proposed target: Report to customers at least annually on progress and bill impacts of customer supported projects.
4	A drought related capital project to upgrade the network to enable the expansion of SDP (subject to the Government's decision to expand SDP)	Network upgrades to accommodate SDP expansion.	Project completion within 24 months of Government decision to expand SDP.	Amended measure: A network upgrade to distribute the additional 250ML/day or such other volume as determined by Government from an expanded SDP to the wider Prospect network. Amended target: Project completed and commissioned prior to the SDP expansion being operational.

Output measure 1 – Vaucluse-Diamond Bay

We have no recommended changes to the proposed measures for this project.

Output measure 2 – Waterway Health Improvement Program

We support the proposed increase in capital expenditure for the Waterway Health Improvement Program (WHIP). We recognise the additional customer value this will generate.

As noted by IPART, we consider this program to be in line with best-practice delivery of stormwater services, rather than discretionary. We acknowledge that IPART holds a different view on this matter and we are happy to report on program outcomes subject to our proposed amendments.

While the core objective of the WHIP is to improve the health of Sydney's river systems, our engagement with customers acknowledged this would be a long-term goal (over 30 years). As improvements in river system health will be incremental over time, an annual metric of km of waterway restored is unlikely to yield meaningful information over the short to medium term.

We have developed intermediate and end benefits to measure and quantify the ongoing success of the program, both annually and over the lifecycle of each program (five years). Work to establish and track these benefits has already commenced.

The following measures provide more practical and effective short-term indicators of WHIP performance towards the longer-term goal of improving waterway health:

The:

- *tonnes of gross pollutants removed every year*
- *tonnes of sediment removed every year*
- *tonnes of nutrients removed every year*
- *the area of native vegetation planted*

due to the WHIP.[196]

Output measure 3 – informing customers of progress of discretionary expenditure

As noted in Chapter 9, we propose to communicate progress and bill impacts of customer supported projects through a combination of methods, including information in bills and on our website. We propose providing information annually.

Output measure 4 – upgrading our network to cater for expansion of SDP

The potential future expansion of the Sydney Desalination Plant (SDP) is currently expected to double the plant's capacity from 250ML/day to 500ML/day. If the NSW Government decides that the expansion should proceed, our network will need to be upgraded to distribute the additional water supply.

[196] We note that these measures will address the benefits provided by the WHIP, not the overall benefits provided through the delivery of general stormwater services.

To align with project scope while allowing for any changes arising from future government decisions, we request IPART allow flexibility in the delivery of appropriate network modifications. For example:

- *A network upgrade to distribute the additional 250ML/day or such other volume as determined by Government of water from an expanded SDP to the wider Prospect network.*

The original program had planned delivery activities commencing in the current price path and continuing into the next. We suggest an appropriate target for delivery, following any future government decision to expand the plant, is for the upgraded network to be built and commissioned prior to the completion of the expanded SDP.

We recommend amending the target as follows:

- *Project completed and commissioned prior to the SDP expansion being operational.*

13.1.2 Output measures on water conservation

We provide a summary in Table 13-2 and comments below on specific measures.

Table 13-2 Output measures on water conservation

No.	Project description	IPART draft measure	IPART draft target	Recommended changes
1	Water demand management	Report the percentage reduction in demand from a defined base which Sydney Water currently uses, compared with target reductions during periods of water restrictions.	While in drought, meet the demand reduction and water conservation targets as agreed with the NSW Government.	Alternative measures: Report the volumetric savings from demand management programs. During drought, also report % reduction in demand compared with target reductions for demand for different levels of restrictions.
2	Water demand management	Report on expenditure for advertising campaigns and water use enforcement.	That Sydney Water invests in water demand management activities to a level that is consistent with the value of water.	Clarification requested Minimum amendment to wording: Refer to “water wise behaviours campaigns” rather than advertising.
3	Leakage	The rolling annual average leakage in ML/day at the end of the quarter compared with the Economic Level of Leakage (ELL).	Rolling annual average leakage is at the ELL, within an allowance to reflect the ‘band of uncertainty’.	No proposed changes.
4	Leakage	The quarterly average leakage value in ML/d compared with target for the last five years.	Leakage is consistent with the ELL	No proposed changes.
5	Water recycling	The volume of recycled water produced (ML/d) against capacity from each of the S16a plants at Rosehill-Camelia and the St Mary’s plant.	Increase the utilisation of recycled water at the Rosehill-Camelia plant and achieve average environmental flows at the St Mary’s plant of 43.3ML/day.	Remove target measure for Rosehill-Camellia. We note that target measure for St Marys is not aligned with proposed operating expenditure, due to expected reductions explained during review.

We consider quarterly reporting for water conservation is an excessive administrative burden, especially considering the size of the baseline program ($10 million per year, plus $5 million for ongoing water wise behaviours campaigns).[197] This was would require additional staff to complete reporting.[198]

In addition, an increase to quarterly reporting will provide limited assistance to give visibility of short-term performance against targets. There is typically a lag of at least 12 months between water conservation and leak management activities and being able to accurately measure their impact. Changes quarter to quarter are likely to be limited. We note that the audience of existing reporting is limited.

We consider more robust monitoring of progress, particularly through drought, could be better managed internally and through governance processes between Sydney Water and government.

Output measure 2 – water demand management

It is unclear whether this measure is intending to report expenditure on water conservation programs or the implementation and enforcement of water restrictions. We request IPART clarify the intention and provide us with an opportunity for comment.

Output measure 5 – water recycling

We disagree with several statements about our 16A recycled water schemes made in Atkins' Final Report. We note that the continuation of these schemes remains a decision for Government. Further comments are provided in Chapter 10.

While we are supportive of aiming to maximise cost-effective utilisation of our recycled water schemes, production volumes are sometimes subject to factors beyond our control or affected by the need for maintenance.

We do not support a target measure for the Rosehill-Camellia plant, which is operated by an external party. In our view, a target on Sydney Water to increase the utilisation of a public private joint venture under a government direction is not appropriate.

The target measure for the St Marys plant is less concerning, as it aligns with the maximum annual average volume in the Water Sharing Plan. However, we note this is a maximum annual average not a minimum required volume. This is because there are valid reasons why we may not achieve maximum production in any year. The operating costs included in our Price Proposal were based on an average output of 35ML/day over 2020-24, due to several factors that will limit full output.[199]

Wording changes and clarification required

We request some wording changes in the final report to avoid confusion:

- The term water use enforcement is confusing. It is unclear what the intention of this term is. If referring to water conservation activities, we suggest "water efficiency" or "demand management" would be clearer for both Sydney Water and customers. If referring to the

[197] The term advertising could be narrowly interpreted. Waterwise behaviours campaigns is more accurate.
[198] It is anticipated that additional reporting would require an additional 0.5 FTE to meet this requirement. This has not been allowed in our Price Proposal.
[199] It would cost an additional $0.8M per year to operate the plant at 43.3ML/day capacity ($0.3M for additional operating and maintenance costs and $0.5M for additional electricity).

implementation and enforcement of water restrictions, we suggest “water restriction implementation”.

- As noted in Chapter 4, the term advertising does not fully capture all activities in our campaigns and could be narrowly interpreted. We suggest using” “water wise behaviour campaigns”.

13.1.3 Comments on leakage performance

Our Operating Licence requires us to use the Economic Level of Water Conservation (ELWC) methodology to manage leakage, as part of our broader water conservation program. Under this methodology we calculate our annual Economic Level of Leakage (ELL) based on the value of water. This approach aims to incentivise greater effort when water is scarce and avoid over-investment at other times. After maintaining leakage levels within the ELL upper limit for many years, we exceeded the ELL band in 2017-18 and 2018-19. This correlated with the onset of drought.[200]

We are committed to improving our leakage performance. We have already:

- improved the speed of repairs – we have substantially increased crews to ensure we can keep job backlogs within manageable levels. We are now seeking to continue these higher staffing levels in 2020-24
- increased our Active Leak Detection program – we have doubled active leak detection to 18,000 km/year.[201]

In addition, we are considering new initiatives including:

- expanded pressure reduction – we are planning to optimise existing schemes and introduce pressure reduction in new areas. This takes time as other customer impacts need to be carefully managed (for example, impact on fire protection systems)
- opportunities to use district metering and sensing technologies – this will help identify leaks earlier
- pressure calming – reducing fluctuations in the network can help reduce breaks
- enhanced data analytics – this will help identify unauthorised consumption and leaks and predict asset failures.

While we are committed to returning leakage to the ELL as soon as possible, this will take time. As noted above, there is a lag between leak reduction measures and their impact.

We disagree with some statements regarding leakage performance in the Draft Report. IPART repeats Atkins’ view that a contributing factor to high levels of leakage is that Sydney Water does not have the flow monitoring and leakage detection systems that “most other frontier companies

[200] We are seeking to confirm if we need to update assumptions used in leakage calculations to account for increased operational water used for wastewater incidents.
[201] This does not mean that 18,000km of the network is surveyed once in a year. Rather, the program is targeted to problematic parts of the network (i.e. 1,000 km may be surveyed 18 times).

normally use".[202] This reflects a view of UK practice but does not accurately reflect the Australian context. Due to our higher level of individual metering, different system configuration and past leakage performance, investing in high-cost leak detection technology that is more common in the UK was not justified in the past.

IPART also repeats Atkins' statement that "Customers are asked to pay for both the water lost from the system and the cost of repairs."[203] This is inaccurate. Leakage paid for by customers over 2016-20 has been limited to the efficient level determined by IPART in the bulk water costs used in the 2016 Price Determination. The cost of any water lost above this level of leakage is borne by Sydney Water as a financial loss. This provides a financial incentive for Sydney Water to return to the target level as quickly as possible.

13.2 Calculating the value of water under ELWC

IPART has requested further information on how we estimate the short-run value of water using our ELWC methodology, to clarify whether we may be under-estimating the value of water when considering potential water conservation investments.

13.2.1 An overview of the ELWC method

Our ELWC methodology was approved by IPART in December 2016 and we have applied the approved method since that time.

Before December 2016, we had fixed targets for reducing drinking water use. While the targets were successful, they were not flexible. For example, we had to invest in water conservation even if the dams were full and there was plenty of water. The ELWC was proposed as a new way of deciding how much water to save.

The ELWC method says we should invest to save water if the benefits are more than the costs. An important underlying principle of the method is that the benefits of saving water change depending on dam levels. For example, if dam levels are very low the benefits will be greater, and we should invest more to save water.

The use of dam levels to guide ELWC decisions is consistent with the 2017 Metropolitan Water Plan (MWP), which also activates demand and supply measures based on dam levels. In general, lower cost actions are used when dams are high, and higher cost actions are only used if dams fall to low levels.

The goal of ELWC is to invest before higher cost measures are triggered, in the hope those measures can be avoided. If we gave no consideration to future dam levels, the value of water would resemble the curve shown in the following graph. This would likely result in negligible levels of spending on water conservation until dam levels dropped below 60%. We consider this would not be a prudent approach to investment decision-making.

[202] IPART (2020), Draft Report, p 129.
[203] IPART (2020), Draft Report, p 129.

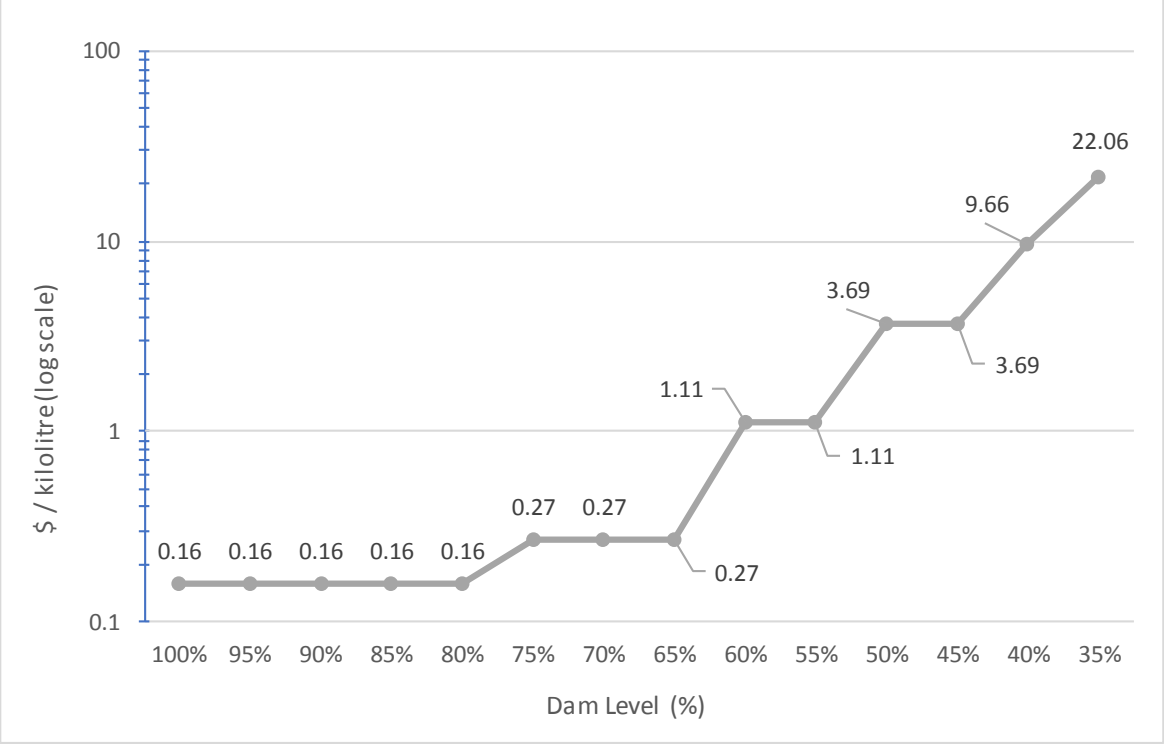


Figure 13-1 Short-run value of water if we ignored future dam levels

To plan our investments over, say, a price determination period, our ELWC method needs to account for future dam levels. However, the future is uncertain. The ELWC method deals with this uncertainty by estimating how likely it is we will reach different dam levels from a given starting point. We currently do this by looking at past dam levels, to see how they have changed over time. Using that information, we can estimate a probability of reaching future dam levels.

An example is shown in the following graph, which assumes that dam levels start at close to 100% full. History tells us that, after five years, dams are still likely (~47% probability) to be almost full. However, there have also been times when dams have fallen significantly, with about a 10% chance they will fall to 70% or lower. This demonstrates that even when dams are very high, there is value in considering the additional future costs that might be avoided if dam levels were to fall during the planning horizon.

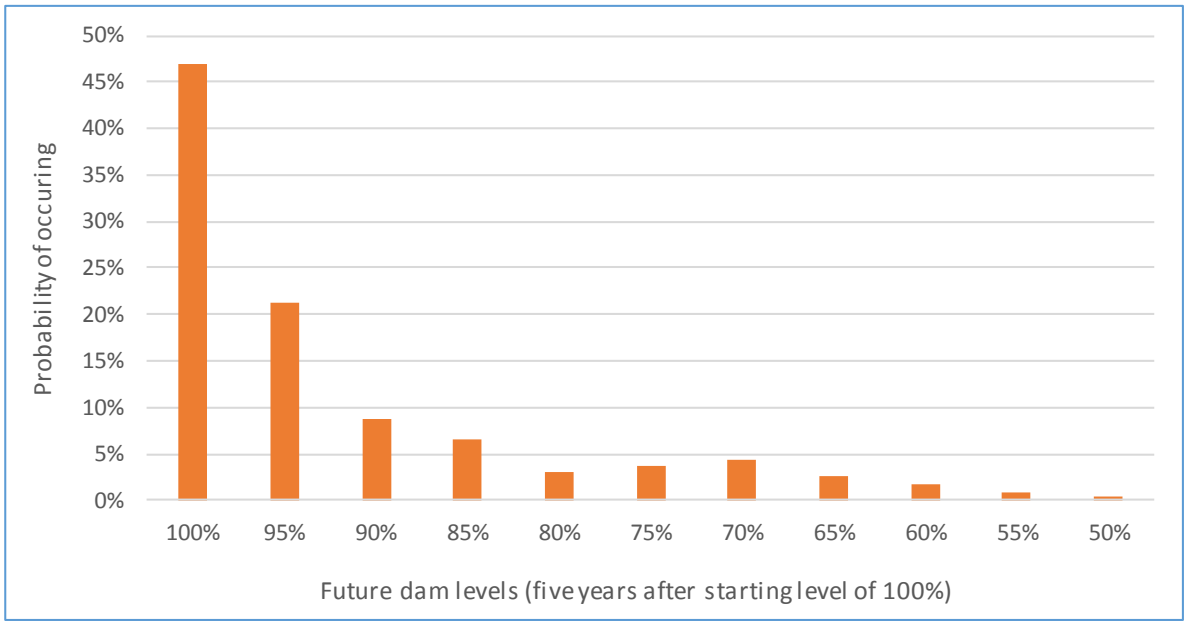


Figure 13-2 Will dams rise, fall or stay the same?

Multiplying the value of water by the probability of different future dam levels results in an *expected value of water*. ELWC says we should invest in a water saving program if the levelised cost is less than (or equal to) the expected value of water.

This approach is clearly described in the approved ELWC methodology, and our November 2019 Plain English summary of that method, but was not referenced by IPART in Box 13.2 of the Draft Report which incorrectly explained the value of water calculation that we use. Our summary of the ELWC methodology is available on the Sydney Water website[204].

13.2.2 Applying the ELWC method

It is this probabilistic approach, supported by IPART[205], which explains why we reported a short-run value of water of $1.85/kL in July 2019, a time when level 1 water use restrictions applied, even though we had previously estimated the social cost of level 1 restrictions as being equivalent to $2.31/kL.

At the beginning of July 2019, with dam levels at 52.1%, the actual (or unweighted) cost of water was $3.64/kL. This includes the social cost of restrictions ($2.39/kL in $2019-20), plus other costs such as operation of the desalination plant ($0.69/kL).

As outlined above, however, we need to consider how dam levels might change over the planning horizon. Dams could fall further, triggering additional costs, or they could rise and prompt some measures to be turned off. The ELWC method seeks to anticipate these changes, giving appropriate weight to potential future outcomes so that we make efficient investment decisions.

Based on historical dam levels, in July 2019 there was a 72% probability that dam levels would rise within the planning horizon (which would reduce costs), a 28% probability that dams would fall

[204] http://www.sydneywater.com.au/SW/about-us/our-organisation/what-we-do/operating-licence/index.htm
[205] IPART correspondence dated 25 October 2016.

(which would increase costs), and zero probability dams would stay at the same level. The net result of applying these probabilities was an expected short-run value of water of $1.85/kL.

The difference in the short-run value of water between the ELWC method and an alternative approach that ignores future dam levels is shown in the following graph. As can be seen in the graph, the forward-looking approach used in the ELWC method should result in significantly higher levels of water conservation investment until dam levels drop to around 50%. Below that level, the very high probability that dams will return to higher levels (>85%) means the additional costs are still counted but are significantly discounted. We consider an alternative method in Appendix H.

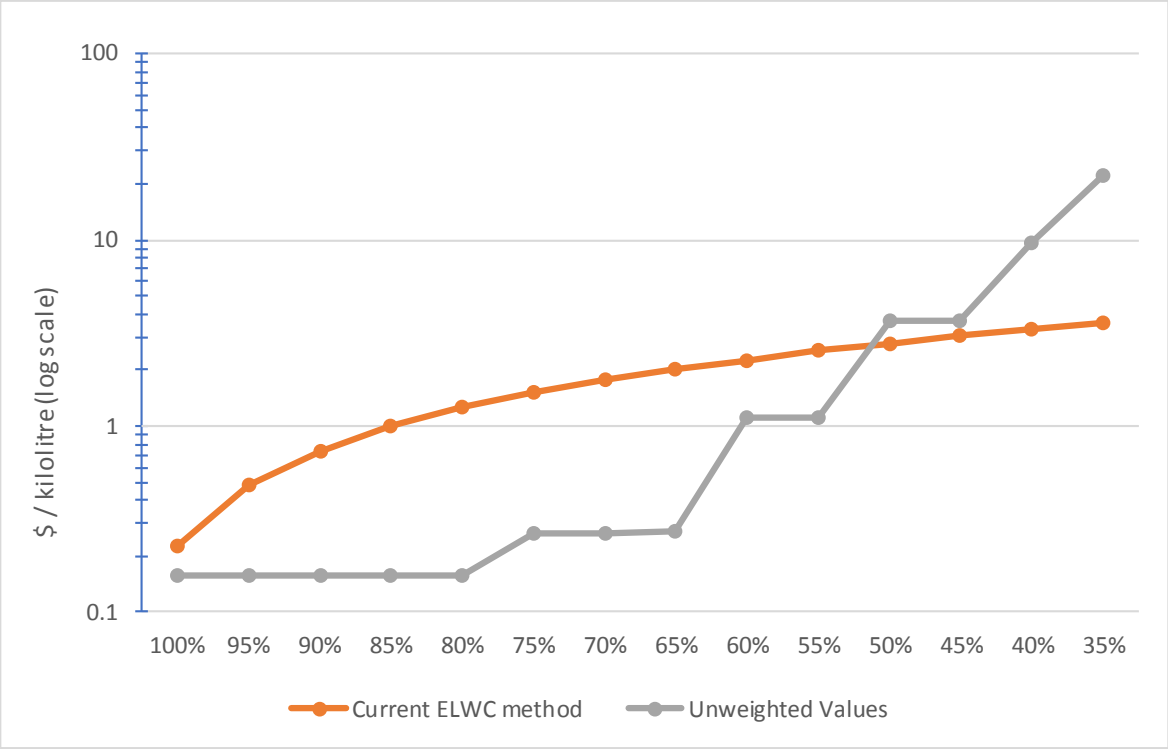


Figure 13-3 Short-run value of water under different methods

13.2.3 We have correctly applied the ELWC method but are open to review

We have consistently applied the ELWC method approved by IPART in December 2016, including the value of water as estimated by that method. However, as with any decision-making method, it is important to occasionally step-back and evaluate the outcomes that result from applying it.

As flagged in our November 2019 Update, we intend to review the ELWC method to assess whether there are opportunities for improvement. For example, Appendix H considers an option for changing the way we calculate the short-run value of water to better reflect the high social costs that occur at very low dam levels.

Our review of ELWC will take into account our experience to date, as well as important changes to the policy environment that IPART has proposed in the Draft Determination (e.g., a drought price). We look forward to working with stakeholders to consider potential improvements to the ELWC method, noting that any changes are ultimately subject to approval by the Minister for Water, Property and Housing under our 2019-2023 Operating Licence.

14 Impacts of draft prices

Key messages

- Under our revised prices, bills would remain steady for an average residential customer in average weather but rise in drought conditions.
- All residential customers will see a lower bill (in real terms) in 2020-21 when compared to current bills. A bill for a typical residential customer will decrease by around 1% to $1,120 ($2019-20) in 2020-21.
- In average weather, non-residential customers will experience a range of bill impacts, from a 1% to 10% decrease for small and medium customers, to a more significant bill reduction for larger customers.
- When drought returns, an average residential customer bill will increase by $164 a year ($2019-20). During drought, residential bill impacts will be higher for larger water users, and lower for lower water users.
- Under drought conditions, all non-residential customers will see bill increases, ranging from 12% for lower users to more than 25% for more intensive users.
- We have extensive customer assistance programs to support customers who experience payment difficulties. We will continue to work with government to assist customers experiencing financial hardship and pensioners.

This chapter focuses on impacts on customers. We discuss impacts on Sydney Water's financeability in Chapter 12 and Appendix G.

14.1 Bill impacts of our revised prices

This section shows bill impacts that would result from the changes proposed in this submission to expenditure, revenue calculations, the WACC methodology and price structures. For ease of comparison, where appropriate, we have shown the residential bill impacts in real terms – that is, bill impacts excluding the impact of forecast inflation. Bill impacts over four-year determination period are also presented in nominal terms – that is, inclusive of the impact of forecast inflation.[206] IPART uses both presentation forms in its Draft Report.

As can be seen in Chapters 5 and 6, under IPART's proposed approach, revenue and prices for water will vary depending on whether we are in drought (as measured by dam levels). Based on our revised revenue and prices, we show bill impacts for both average weather and drought conditions.

[206] We have used an inflation of 2.5% per year as per the rate assumed by IPART.

14.1.1 Residential customers

Figures 14-1 and 14-2 show bill impacts for an average household consuming 200kL/year, under average weather (non-drought) and drought conditions.

Bill impacts in average weather

In average weather conditions, our proposed prices (in $2019-20) will result in a 1.2% ($14) decrease in average household bills in 2020-21, compared to current bills.

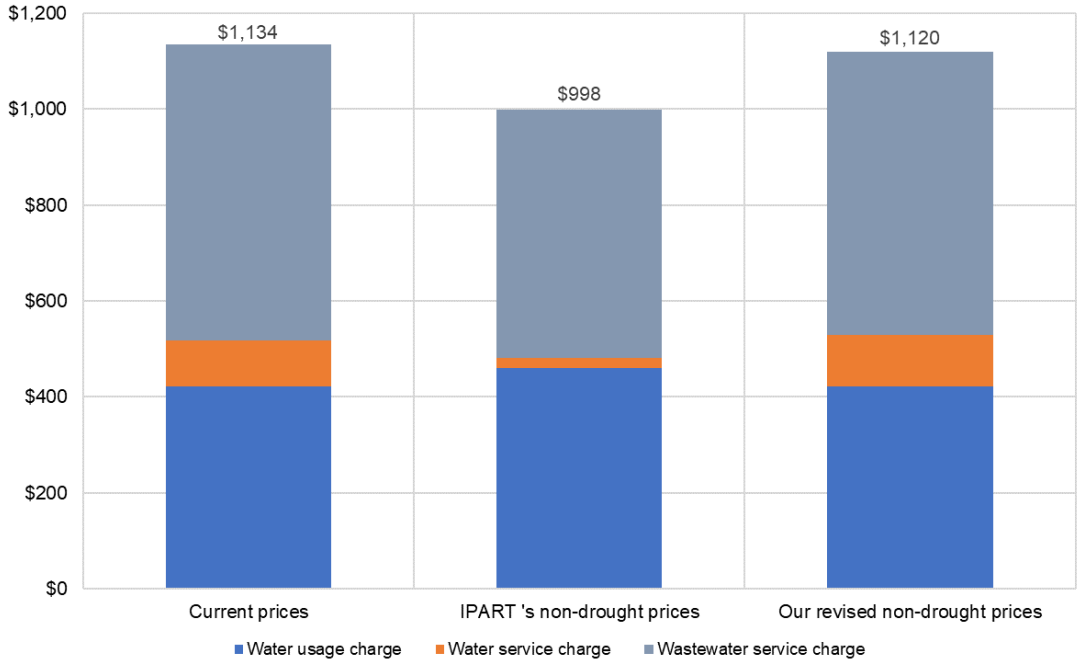


Figure 14-1 Estimated water and wastewater bills for average residential customers using 200kL/year under average weather conditions ($/year, $2019–20)

Our proposed bill for an average household is 12% ($122) higher than IPART's due to two main factors:

- around $42 relates to the higher expenditure we have proposed, to continue providing high quality services to customers, maintain our assets and meet regulatory requirements
- around $80 relates to our proposed correction to the way IPART sets our rate of return on capital. This results from IPART applying two materially different measures of inflation to its cost of capital allowance compared to what we can recover through prices. This inconsistency is heightened at times of very low inflation.[207]

A full adjustment for likely inflation in 2020-24 would have resulted in an even higher bill impact (well over $120 including tax). We have not sought the value of the entire difference between market-based expectations and IPART's inflation forecast. In this way we are sharing

[207] We have proposed IPART apply an interim solution for 2020-24, allowing for a portion of the needed cashflows in 2020-24, with any residual to be trued-up ex post in an NPV neutral manner in 2024-28.

(uncontrollable) inflation risk equitably with our customers, while minimising bill impacts on future customers.

Bill impacts in drought

In drought, our proposed prices will see bills for an average residential customer rise by another $164 a year (as compared to non-drought bills) to cover forecast drought costs, assuming no reduction in water use compared to normal conditions (see Figure 14-2). This incremental increase is largely the same as that proposed by IPART. Customers who reduce their water use during drought will experience a lower bill increase. This is discussed further in the sections below.

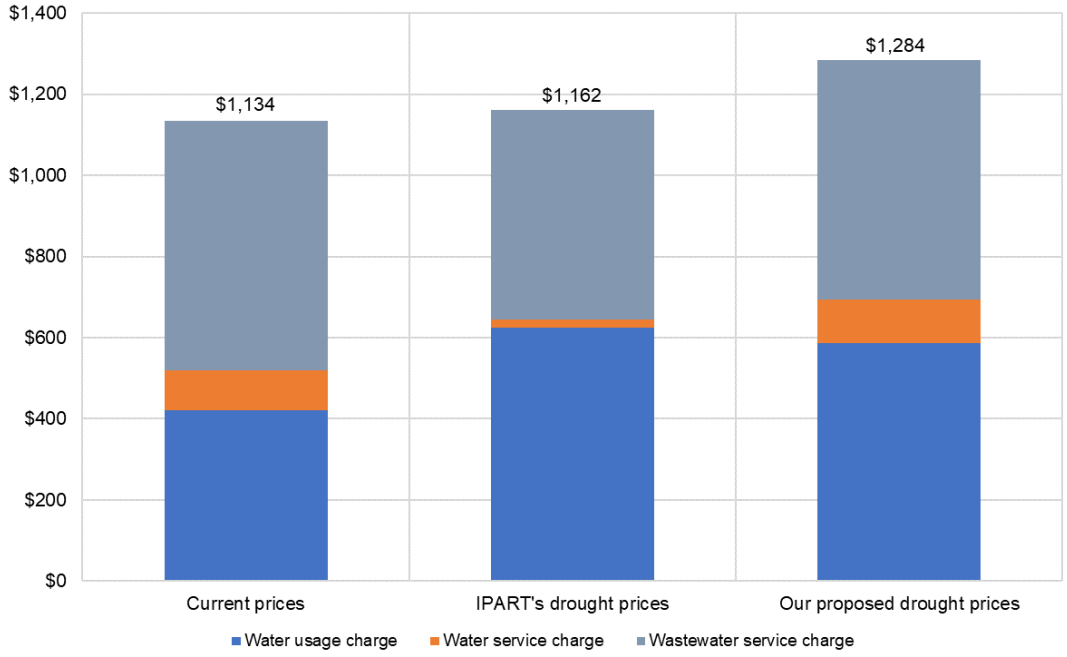


Figure 14-2 Estimated water and wastewater bills for average residential customers using 200kL/year in drought ($/year $2019–20)

Bill impacts in average weather depending on water use

In real terms, households of all types (including larger water using households) will see a lower bill in 2020-21, assuming dam levels remain above 60%.

In nominal terms, bills for customers with annual water use ranging from 160kL to 350k will slightly increase by $11 to $21 a year (1.1% to 1.5% higher) in 2020-21, and then increase with inflation each year to 2023-24 (see Table 14-1 below).

Table 14-1 Estimated water and wastewater bills for residential customers with various water consumption in average weather ($/year, nominal)

	2019–20	2020–21	2021–22	2022–23	2023–24
160 kL/year (typical apartment)	1,050	1,061	1,088	1,115	1,143
Annual change		1.1%	2.5%	2.5%	2.5%
200 kL/year	1,134	1,148	1,176	1,206	1,236
Annual change		1.2%	2.5%	2.5%	2.5%
220 kL/year (typical house)	1,177	1,191	1,221	1,251	1,282
Annual change		1.2%	2.5%	2.5%	2.5%
350 kL/year	1,451	1,472	1,509	1,547	1,585
Annual change		1.5%	2.5%	2.5%	2.5%

Bill impacts in drought depending on water use

Households can reduce bill impacts in all conditions by reducing the amount of water they use (see Table 14-2).

In drought conditions, water usage charges will rise more for larger users. This provides an increased financial incentive for larger users to reduce water use in drought. For example, during drought, a household with current water use of 350kL per year:

- will have an annual bill increase of $272 (19%), if it continues to use the same level of water, but
- will have a much smaller annual bill increase of $67 (4.6%), if it reduces water use by 20%.

Similarly, an average household that continues to consume 200 kL of water per year in drought:

- will have an annual bill increase of $150 (13.2%), if it continues to use the same level of water, and
- face a more moderate annual bill increase of $32 (2.8%) if it reduces water use 20%.

Table 14-2 Estimated water and wastewater bills for residential customers with high water consumption ($/year, $2019-20)

	Current bill	Non-drought	Drought	Drought with water savings		
Water consumption (kL/year)	350	350	350	333	315	280
Water saving %			0%	5%	10%	20%
Water usage charge	739	739	1,026	974	923	820
Water service charge	97	108	108	108	108	108
Total water bill	**835**	**847**	**1,134**	**1,082**	**1,031**	**928**
% change vs non-drought			33.9%	27.8%	21.8%	9.7%
Wastewater service charge	616	590	590	590	590	590

Total water and wastewater bill	**1,451**	**1,436**	**1,723**	**1,672**	**1,621**	**1,518**
Bill impact ($) compared to non-drought			**287**	**236**	**184**	**82**
% change vs non-drought			20.0%	16.4%	12.8%	5.7%
Bill impact ($) compared to current bill		**-15**	**272**	**221**	**170**	**67**
% change vs current bill		-1.0%	18.8%	15.2%	11.7%	4.6%

Pensioner households

Table 14-3 compares bills for a typical pensioner household[208] consuming 100kL/year using our proposed prices, under both non-drought and drought conditions, compared to current prices.

After applying current pensioner concessions to our revised service charges, an average pensioner bill will be no better or worse off than an average household bill. That is, it will drop by $5 (1.6%) in average weather conditions and increase by $42 (12.4%) in drought conditions.

We will discuss any required adjustments to pensioner concessions with Government to account for IPART's final decisions (see section 14.2.2).

Table 14-3 Estimated water and wastewater bills with pensioner concession ($ 2019-20)

		Non-drought	Drought
	2019–20	**2020–24**	**2020–24**
Annual consumption (kL)	100	100	100
Water usage charge ($)	211	211	293
Water service charge rebate (%)	100%	100%	100%
Water service charge ($)	0	0	0
Wastewater service charge rebate (%)	80%	80%	86%
Wastewater service charge	123	118	83
Total water and wastewater bills ($)	**334**	**329**	**376**
% change vs current bill		-1.6%	12.4%

14.1.2 Non-residential customers

Bill impacts for non-residential customers vary widely as a function of meter-size, discharge factors, usage patterns and the applicable usage charge. Price structure decisions also have an impact on bills for non-residential customers.

Bill impacts in average weather

In average weather conditions, our proposed prices (in $2019-20) will result in the following general impacts:

- non-residential customers with low and medium water use will see a reduction in their bills ranging from -1.3% to -10%. This covers around 70% of Sydney Water's non-residential customers

[208] As per assumed by IPART in its Draft Report.

- a higher reduction of more than 10% will be experienced by non-residential customers with larger water use.

Bill impacts in drought

Under drought conditions, non-residential customers will then see bill increases (compared to bills in average weather) ranging from about 12% to 15% for low to medium water users to more than 25% for larger users.

Bill impacts for different types of non-residential customers

We have modelled the impact of our revised prices on six significant non-residential customer segments (under non-drought conditions) over 2020-24, and the results (in nominal terms) are shown in Table 14-4.

Table 14-4 Estimated water and wastewater bills for non-residential customers in non-drought conditions ($/year, nominal)

Customer type	Water consumption	2019–20	2020–21	2021–22	2022–23	2023–24
Industrial	Low	$1,192	$1,204	$1,234	$1,265	$1,297
	Annual change		1.0%	2.5%	2.5%	2.5%
	Medium	$19,655	$17,876	$18,323	$18,781	$19,250
	Annual change		-9.1%	2.5%	2.5%	2.5%
	High	$83,865	$76,738	$78,656	$80,622	$82,638
	Annual change		-8.5%	2.5%	2.5%	2.5%
Commercial	Low	$1,539	$1,507	$1,545	$1,583	$1,623
	Annual change		-2.1%	2.5%	2.5%	2.5%
	Medium	$24,172	$22,106	$22,659	$23,225	$23,806
	Annual change		-8.5%	2.5%	2.5%	2.5%
	High	$73,691	$66,887	$68,559	$70,273	$72,030
	Annual change		-9.2%	2.5%	2.5%	2.5%
Public hospital	Medium	$72,916	$65,848	$67,494	$69,181	$70,911
	Annual change		-9.7%	2.5%	2.5%	2.5%
	High	$119,445	$107,645	$110,337	$113,095	$115,922
	Annual change		-9.9%	2.5%	2.5%	2.5%
Private schools	Low	$27,495	$24,963	$25,587	$26,227	$26,882
	Annual change		-9.2%	2.5%	2.5%	2.5%
	Medium	$84,023	$75,689	$77,582	$79,521	$81,509
	Annual change		-9.9%	2.5%	2.5%	2.5%
	High	$122,412	$110,752	$113,521	$116,359	$119,268
	Annual change		-9.5%	2.5%	2.5%	2.5%
Commercial strata units	Low	$1,016	$1,001	$1,027	$1,052	$1,078
	Annual change		-1.4%	2.5%	2.5%	2.5%
	Medium	$1,449	$1,515	$1,553	$1,592	$1,631
	Annual change		4.6%	2.5%	2.5%	2.5%
	High	$9,043	$8,536	$8,749	$8,968	$9,192

	Annual change		-5.6%	2.5%	2.5%	2.5%
Industrial strata units	Low	$900	$877	$899	$922	$945
	Annual change		-2.5%	2.5%	2.5%	2.5%
	Medium	$1,250	$1,264	$1,295	$1,328	$1,361
	Annual change		1.1%	2.5%	2.5%	2.5%
	High	$100,184	$88,825	$91,046	$93,322	$95,655
	Annual change		-11.3%	2.5%	2.5%	2.5%

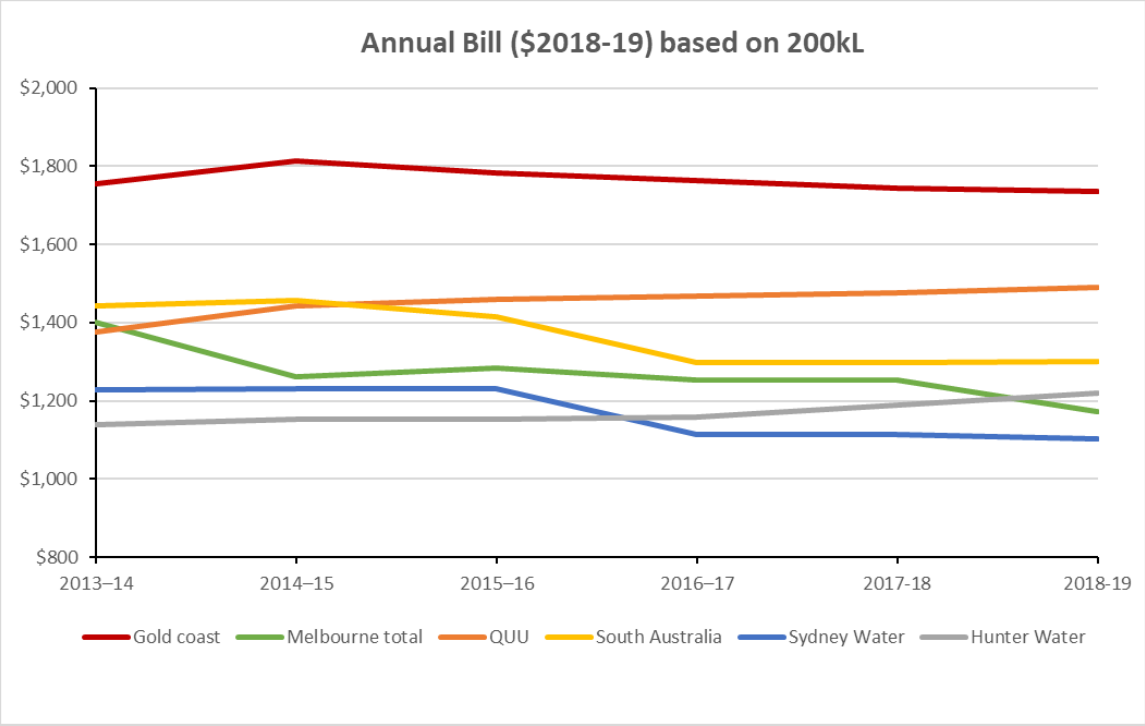
Note: A minimum charge is applied to wastewater charges. The minimum charge for non-residential customers is equivalent to the total residential wastewater charges.

14.2 Affordability

14.2.1 We consider bills remain affordable

In general, we consider our proposed bills to be affordable. Due to the low interest rate environment, our increased expenditure currently does not require an increase in customer bills. Rather, under our proposed prices bills will remain steady.

Residential annual bills for Sydney Water customers continue to be amongst the lowest in the country (see Figure 14-3).[209] Our bills are also low compared to other utilities. Our analysis shows that our bills have either remained stable or fallen since 2013-14.

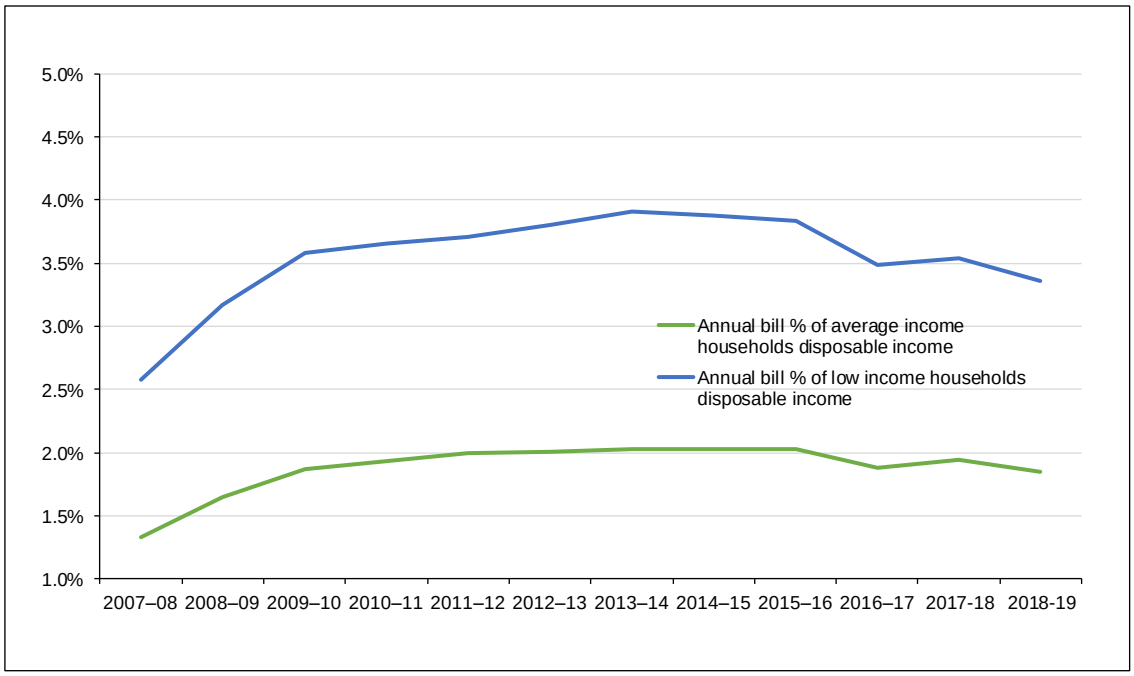


Source: National Performance Report 2018-19, Sydney Water analysis

Figure 14-3 Comparison of annual bills based on 200kL/year – major Australian utility groups

[209] Based on water use of 200 kL a year, which is the standard measure used to compare bills across Australia.

Based on analysis using ABS data, Sydney Water bills are not a large percentage of income for either average income households (around 2%) or even low-income households (around 3.5%) (see Figure 14-4).



Source: National Performance Report 2018-19, ABS data and Sydney Water analysis

Figure 14-4 Annual bills as a % of low-income and average income household disposable income

14.2.2 Customer assistance

We are proposing to maintain our extensive customer assistance program, with increased assistance in light of COVID-19. In addition to our commitments under our Customer Contract, extra assistance currently being provided to customers includes:

- longer term payment extensions for customers with capacity to pay
- extension of financial assistance for residential customers experiencing payment difficulty
- expanded Contact Centre hours
- ceasing of debt recovery activities after reminder notices, including not charging late payment fees or accrual of interest on overdue accounts
- no disconnection of services for non-payment.

We consider affordability concerns relating to short-term economic impacts are best dealt with through tailored customer assistance programs or Government funded assistance packages.

14.2.3 Pensioner concessions

As noted above, Sydney Water applies pensioner concessions to water, wastewater and stormwater drainage service charges.[210] Pensioner concessions are funded by the NSW Government as a Community Service Obligation. Criteria for pensioner concessions are agreed by DPIE and Treasury.

Our long-standing approach is to keep pensioner bills in line with non-pensioner bills, as much as possible. That is, at each price determination, pensioner bills have increased or decreased by a similar percentage to non-pensioner bills.

We will continue to work with DPIE and NSW Treasury to adjust pensioner rebates to ensure pensioners are not disproportionately disadvantaged by the price structures adopted by IPART in the final price determination.

[210] Concessions are available to recipients of the Centrelink Pensioner Concession Card and certain Department of Veterans' Affairs cards.

15 Demand

Key messages

- We support IPART's draft decision to accept Sydney Water's forecast customer numbers.
- We have used potable water sales from our July 2019 demand forecasts to model revised prices and bill impacts. These were more consistent with a base water use price of $2.11/kL.
- We acknowledge forecast demand and customer numbers may be affected by COVID-19; however, it is too uncertain to adjust forecasts based on any assumed change. Initial analysis suggests impacts on total demand could be within normal uncertainty bands.

15.1 Forecast customer numbers and water demand

15.1.1 Forecast customer numbers

We support IPART's draft decision to adopt our forecast customer numbers for 2020-24.[211]

15.1.2 Forecast water demand

In Chapter 6, we propose to maintain a $2.11/kL base water usage price (as per our July 2019 Price Proposal) and then apply a $2.93/kL water usage price if drought returns in 2020-24.[212] In line with our proposed price changes, we used the potable water demand forecast from our Price Proposal, with a revised drought forecast, to model our revised price and bill impacts. Other elements of the water demand forecast are used to determine bulk water volumes and costs assumed in proposed revenue requirement.

Further details of our base and drought water demand forecasts are shown in Table 15-1 and Table 15-2.

We note that the non-revenue water shown in the tables below is based on the leakage forecast used for our July Proposal, which assumed a slower return to the target level for the Economic Level of Leakage (ELL) than that recommended by Atkins. We agree that the bulk water cost paid for by customers should only include an efficient level of leakage. For the final Determination, we support IPART using a leakage forecast based on the target ELL in the non-revenue water demand forecast used to determine bulk water costs. We expect the difference in forecasts used for this submission has a negligible impact on annual customer bills.

[211] IPART 2020, *Draft Report*, p 17 and p 51.
[212] As per IPART's proposed approach linked to total dam levels.

Table 15-1 'Base scenario' water demand (ML)

	2020-21	2021-22	2022-23	2023-34
Billed metered consumption				
Potable (residential and non-residential)	512,067	518,841	525,231	533,211
Unfiltered charged at unfiltered price	903	903	903	906
Unfiltered charged at recycled price	903	903	903	906
Billed unmetered consumption	3,694	3,694	3,694	3,704
Recycled water top-up	982	693	715	737
Non-revenue water	57,378	57,764	58,141	58,672
Sub-total	575,928	582,798	589,588	598,136
Process losses	2,246	2,246	2,246	2,246
Total	578,174	585,044	591,834	600,382

Table 15-2 'Drought scenario' water demand (ML)

	2020-21	2021-22	2022-23	2023-34
Billed metered consumption				
Potable (residential and non-residential)	419,117	424,722	430,015	436,606
Unfiltered charged at unfiltered price	789	789	789	792
Unfiltered charged at recycled price	903	903	903	906
Billed unmetered consumption	3,140	3,140	3,140	3,148
Recycled water top-up	982	693	715	737
Non-revenue water	55,421	55,782	56,137	56,638
Sub-total	480,353	486,030	491,699	498,827
Process losses	2,246	2,246	2,246	2,246
Total	482,599	488,276	493,945	501,073

Notes for Tables 15-1 and 15-2:

- Non-revenue water includes Unbilled Metered, Unbilled Unmetered, Unauthorised, Meter Under-registration and Real Losses.
- Process losses occur when raw water volume entering into water filtration plants (WFPs) are greater than volumes put into supply as a result of processes such as backwashing, disposal of sludge and, to a lesser extent, evaporation/seepage. The figure shown represents IPART's and Atkins' estimate of process losses over 2020-24.

Methodology for calculating our forecast 'drought' scenario water sales

In calculating these forecasts, we have applied the following methodology consistent with Table 6.4 of the IPART Draft Report,[213] with adjustments as noted below:

1. Assume our base water sales forecasts in non-drought conditions are those in Table 15-1.
2. Apply a 15% reduction to these forecasts to account for the likely impact of water restrictions on sales, if drought conditions arise in 2020-24.

   We assume that there is no reduction to unfiltered water demand, as the uses to which unfiltered water are put to are not generally covered by water restrictions. Also, no reduction is applied to recycled water top up or non-revenue water, except for a small indirect effect from the reduced billed meter consumption on meter under-registration which is part of non-revenue water.
3. Apply a downward price elasticity demand adjustment to the demand obtained in step 2 above of between 3.6% and 3.7% to account for the increase in the base usage charge from $2.11/kL to $2.93/kL.

   We assume the following drought elasticities (same as IPART) and apply at a disaggregated level to each relevant sector:

   - houses: -0.109
   - apartments: -0.032
   - non-residential: -0.132[214]

   As we follow a more detailed, disaggregated approach to applying drought elasticities, the downward price elasticity demand adjustment varies slightly between 3.6% and 3.7% from year to year depending on proportion of each segment in total.

   With respect to unfiltered water, we note that we apply the price elasticity adjustment only to the proportion that is charged at an unfiltered water price and not to the proportion charged at the recycled water price, as there is no proposed increase to recycled water prices in drought conditions.

Clarification of the term water sales

We discuss the water sales forecast used to calculate prices in Chapter 6. We note that there appear to be some discrepancies between IPART's definition of water sales and our definition of water sales. Our definition of water sales is in line with industry practice and includes:

- residential potable water demand,
- non-residential potable water demand, and
- non-residential unfiltered water demand charged at unfiltered water prices.

[213] IPART 2020, *Draft Report*, p. 58.
[214] IPART 2020, *Draft Report*, p. 73. See in particular: Table J.2.

To the extent that this differs from IPART's definition, we would seek to work with IPART to clarify the definition and measure of water sales for future price reviews.

15.1.3 Potential impacts of COVID-19

While we acknowledge there will likely be impacts on demand due to COVID-19, the type, magnitude and length of these impacts is unknown. In our view, there is currently not enough data or certainty to revise customer connections or demand forecasts used for pricing purposes for 2020-24. More detail is provided in Chapter 16 and Appendix I.

16 COVID-19 impacts on Sydney Water

Key messages

- Sydney Water faces a range of impacts from the COVID-19 pandemic. However, as we are less than two months into the pandemic, there is too much uncertainty to predict the extent of the various impacts.
- Some statements can be made. The economic uncertainty faced by Sydney Water and its customers is far greater than two months ago, and that economic growth prospects have collapsed in the short term, which has triggered deflationary pressures.
- The impact of a revised inflation outlook is the single most measurable impact on our financial situation, as inflation forecast risk under IPART's WACC methodology rests with Sydney Water. The well-known issue of the upward bias in the inflation forecast used by IPART is now an even more material issue with the rate of headline inflation captured by CPI possibly negative not only over 2019/20 and but also perhaps 2020/21.
- As a first test of directional impacts on our cost and revenues, we have modelled scenarios based on different demand forecasts. These are purely speculative and not intended for use in this price review. This high-level analysis indicates a revenue impact ranging from $34 million to $261 million in 2020-24 (from reduced demand and customer connections only).
- While some input costs over 2020-24 may be lower, others may rise. Our experience to date suggests a modest upward pressure on costs. For example, from implementing split shifts in staffing and dealing with increased wastewater chokes.
- We are also extending assistance to customers who are facing payment difficulty and have suspended normal debt recovery activities. While the NSW Government funds direct financial assistance, other measures will have a negative impact on revenue.
- The NSW Government has indicated a strong commitment to development in Western Sydney, potentially using this as a stimulus area in the recovery period. This commitment is being realised through State and Federal level working groups with the mandate to guide effective recovery.

The COVID-19 pandemic has only taken hold in NSW since March 2020. There is considerable uncertainty surrounding both how long current lockdown protocols will be in place in NSW and how agile the Australian and world economy will be in returning to business as usual once social restrictions are lifted. There is no consensus among economic forecasters. Optimistic forecasts are

suggesting recovery by 2021, with pessimistic forecasts pushing recovery back another half a decade.[215]

Given the considerable uncertainty, it is not possible to make robust predictions about the likely impacts on demand, growth and costs over the next four years.

16.1 Impact on water demand is uncertain

We expect the main drivers for demand change in the near term will include:

- changes to non-residential operations, with the biggest impacts coming from sectors most directly impacted by social restrictions (eg, clubs, hotels, university accommodation and cafés/restaurants)
- potential increases in demand to support the need for improved hygiene
- potential increases associated with onshoring of industrial and manufacturing capability
- transfer of demand from the non-residential to residential sector due to working from home arrangements or un/under-employment
- a temporary slowing of population growth as immigration is halted.[216]

Non-residential demand accounts for around 25% of total water demand. Impacts on non-residential demand are likely to have a relatively small impact on total water demand.[217]

Population numbers and growth may bounce back quickly once travel restrictions are lifted, but the timing of this will remain highly uncertain for some time. It is important to note there is not a linear relationship between new connections and growth expenditure. This is discussed further below.

We are seeing increased interest in commercial and small industrial sites, driven by a desire to bring manufacturing back onshore. This could lead to increased non-residential demand.

We have prepared three demand scenarios ranging from low impact where social restrictions are lifted quickly and there is a quick economic recovery, to high impact where restrictions are sustained with a slower recovery. These are purely speculative and not intended for use in this price review. The revenue impact of the scenarios considered range from around $34m to $261m over 2020-24, relating to potential changes in customer numbers and demand only[218] Further detail is provided in Appendix I.

16.2 We are facing a range of immediate operational impacts

The pandemic is leading to modest upward pressure to our operating costs, but not significantly (at least in the short-term). Medium term impacts are harder to predict.

[215] Deloitte Access Economics, March 2020, *Business Outlook.*
[216] For example, some current residents, including international students, have gone back home overseas. See Deloitte Access Economics, March 2020, *Business Outlook.*
[217] For example, an 8% reduction in non-residential demand with half of that demand being transferred to residential demand would result in only a 1% impact on total demand.
[218] Assuming a $2.11/kL water use price.

We have started to experience a range of operational and cost impacts, for example:

- more frequent and rigorous cleaning of offices and facilities
- longer Contact Centre hours
- expanding remote working capability for large numbers of office staff now working from home
- implementing new measures to enable social distancing protocols to protect operations staff and enable capital project delivery to continue
- lost revenue from the non-application of late payment fees or interest on overdue accounts
- an increase in chokes in our wastewater system from non-toilet paper alternatives.[219]

The duration of these impacts will largely depend on the duration of restrictions and the path for economic recovery.

If the crisis continues, we may face increased risk in a number of areas. For example, closing of state borders in Australia and lock-down in some countries may cause us some supply chain disruption. However, we have identified no such issues so far and any impact is likely to be short-term.

We have updated our business continuity plans for our supply chain, operations and maintenance. These now address actions specifically related to COVID-19, including site safety & health controls, what to do if a positive case is identified on site, frequent demand and supply reviews to identify critical spares and equipment and bi-weekly reporting of supplier status. We are increasing our stock of critical tools, equipment and PPE in case of supply chain disruption or price spikes, which may have an increased warehousing cost.

16.3 We need to maintain investment in growth and other capital expenditure

Our capex program is proceeding according to plan.

Growth expenditure is driven by multiple factors beyond population growth, including the location and type of new sources of demand (that is, properties as well as new business and industry) and the capacity of existing networks in that location. Our growth funding request is already based on a conservative view of likely costs (see Chapter 3).

There are already significant commercial developments planned in greenfield areas in western Sydney, including the Aerotropolis. Developers are also signalling increased interest in commercial and small industrial sites, driven by a desire to bring manufacturing back on shore.

Construction sites are still allowed to operate. Even countries in our region that initially ceased construction, like New Zealand, are already returning this sector to operation. Government advice

[219] Data not yet available but anecdotally, we have seen around a 20% increase from 'wipes' and other non-toilet paper alternative material chokes. It is hard to know if this will have a sustained impact.

to date is that continuing investment in the property and construction industry, particularly in Western Sydney, will be vital to supporting the local economy during an economic downturn.[220]

A large portion of our capex forecast is unrelated to growth but needed to renew assets or meet environmental requirements. For example, around 55% of our 2020-24 capex is for renewals and meeting new requirements (for example, for wet weather overflows). Even for growth, investment requires large upfront investment, regardless of how long a new area may take to reach full development.

16.4 We have strengthened customer assistance

In addition to a sharp increase in unemployment, a number of large employers have announced short-term wage reduction measures.[221]

We have already seen a considerable increase in calls from customers. For example, relative to March 2019, in March 2020 we saw:

- a 12% increase in general calls (that is, calls primarily relating to billing and accounts), equating to an additional 5,000 calls in the month of March
- a 20% increase in calls to Customer Care (our hardship team)
- a doubling of page views for the 'help with your bill' page on our website

As outlined in Chapter 14, we have put in place a range of measures to assist customers, beyond our existing Customer Contract commitments. While the NSW Government funds direct financial assistance,[222] other assistance measures will have a negative impact on revenue.

16.5 Implications for IPART's regulatory framework

The considerable economic uncertainty due to COVID-19 further exacerbates known issues with IPART's regulatory framework. In particular:

- The inflation forecast that IPART deducts from our cost of capital at the beginning of the regulatory period is likely to be well above outturn inflation, given that the RBA is now expecting possible negative inflation in 2020, and also perhaps 2021. This creates significant risk and cash-flow impacts for Sydney Water.
- Efficiency savings estimated from frontier analysis may be inappropriate when we are seeing increased costs along with declines in productivity as our workforce adapts to new working arrangements.

We discuss these issues further in Chapter 12.

[220] NSW Government media release, *Jobs boost through fast-tracked planning system*, 3 April 2020.
[221] Deloitte Access Economics, March 2020, *Business Outlook.*
[222] As noted in our Price Proposal, the NSW Government funds Payment Assistance Scheme (PAS) credits provided to customers experiencing payment difficulty who meet defined criteria for financial hardship.

17 Appendices

17.1 Appendix A – Corrections and modelling issues

This appendix notes factual errors in the Atkins' Final Report and IPART's Draft Report and modelling issues in IPART's pricing model. These lists are not definitive and are in addition to issues raised in preceding chapters. We would be pleased to discuss these issues further with IPART.

17.1.1 The Atkins Final Report

Issue	Comment	Proposed amendment (if applicable)
1. Misspelling of ICCATS	On page 34, Atkins' has misspelt ICCATS as ICCAPS.	Correct spelling of ICCATS
2. Business systems, processes and services	On page 34, Atkins notes *"The report notes that we have a total of 147 systems deployed, of which **54 were implemented** between 2016-20."*	A more accurate reflection of the 54 systems would be: *"The report notes that we have a total of 147 systems deployed, of which 54 were **implemented, maintained or renewed** between 2016-20."*
3. Forecast sales volumes	On page 85, Atkins asserts that "*The weather in 2019 was hotter than average (see figures below). However, it is not clear that it was **significantly drier or wetter** in Sydney itself."*	It is clear that it was drier. In October 2019, our catchment dams had seen the lowest inflow rates since the early 1940s. By January 2020, the data showed that inflows to our catchment were less than 10% of what is usually received. Also :see http://www.bom.gov.au/climate/current/annual/nsw/archive/2019.sydney.shtml Rainfall below average, despite some heavy rain Total rainfall for the year was below average across Greater Sydney A few sites reported their driest year on record or their lowest total rainfall for several decades In most months, rainfall was below average, with April, May, November and December particularly dry, but some very wet days meant March, June and September were wetter than usual for most of Greater Sydney

4.	**MWP restriction levels**	In Table 4-10, the MWP restriction level under level 1 is listed as **3.7%.**	The correct restriction level should be **3.6%.**
5.	**New and replacement meter activity and expenditure**	The 2016 Determination figures (including the total) provided in Table 6-2 of the Atkins report are incorrect.	The correct figures are listed in IPART's 2016 Final Report.
6.	**Water pumping renewals expenditure**	The adjustment for water pumping renewals expenditure in the year 2025 in Table 6-8 is incorrectly recorded as **(2,684)**.	The correct adjustment should be **$2,684** (a positive adjustment). This means that the Total is also incorrect.
7.	**Northern Suburbs Ocean Outfall Sewer (NSOOS)**	Atkins' analysis of the NSOOS is included in the water section of the report, despite referring to a wastewater program.	
8.	**Reticulation sewers 2016-20 expenditure**	On page 204, Atkins states the program for reticulation sewers shows considerable increase in annual expenditure, "*at 30.0 million per annum compared with **$21.2 million** per annum in the current period*".	The yearly average expenditure on reticulation sewers over the 2016-20 period is **$23.2 million**, as per the data provided in the November 2019 special information request.

9.	**Savings from BOOT plant operation**	On page 264, in Table 8-6 (page 264) of the Atkins Final Report, there is an error in the calculation of savings from BOOT plant operation. Table 5-18	The table notes costs of $53m, however the correct BOOT savings are shown in the table below. **2021** | **2022** | **2023** | **2024** | **Total** -8.6 | -8.7 | -12.5 | -12.5 | -42.3 These savings represent lower BOOT costs as a result of the implementation of water restrictions, SDP1 in operation and SDP2 in operation. The original cost reduction was incorrectly calculated by using the average of all plant costs for SDP1 and SDP2 instead of Prospect BOOT only which would be the only plant impacted and whose costs per ML are considerably lower than other plants. Atkins accepted this in their response to SWC fact checking of their draft report, but have not updated this table.
10.	**Prospect Water Partnership**	On page 268, Atkins uses the term "***Project Water Partnership***".	The correct term is **Prospect Water Partnership**.

17.1.2 IPART's Draft Report

Issue	Comment	Proposed amendment (if applicable)
1. Capital expenditure	On page 11 of IPART's Draft Report, we note that IPART stated Sydney Water has proposed a **103.7%** or **$2.8 billion increase** in its capital expenditure, above the amount allowed in IPART's 2016-20 determination. On page 26, IPART stated this reflects on average, a **29%** annual increase in capex. Similarly, on page 30 in Appendix F, IPART states "*This represents an increase of $1,837 million (**39%**) from Sydney Water's actual/forecast expenditure over the 2016 determination period, and an increase of **$2,614 million (51%)** over the allowance we set for the same period.*" We also note that on pages 164 and 167 of the Atkins Final Report, Atkins has asserted that Sydney Water proposed to increase capital expenditure to **$1,252 million per annum** for the 2020-24 period.	These figures appear to be presented inconsistently and some of the calculations appear to be incorrect. For the first point: On page 11, IPART is reporting on our Update proposal, where the total $ presented included cost pass-through expenditure – so it was a $2.8 billion increase only if this was included. For the second point – IPART's calculation seem to refer to the capital expenditure including cost pass-through expenditure (not the base amount of $5,087 million in the words). The percentage increase should also not be 39%, but 56.5%. In percentage form, the calculation of the $1,837m increase in capital expenditure from Sydney Water's actual/forecast expenditure over the 2016 determination period of $3,250m is **56.5%.** Third point: Our proposed total annual capital spend over the 2020-24 period is $5.1 billion. The per annum figure is therefore **$1,272 million**. The increase in capital expenditure between 2020-24 of $5.1 billion and IPART's 2016 allowance of $2.7 billion is **$2.4 billion**. This reflects a total increase of **89%** and an annual increase of **28%** per annum.
2. Discretionary projects	On page 18 of Appendix C, IPART states that Sydney Water proposed including capital spend of about **$105 million** over 2020-24 for discretionary expenditure. Additionally on page 148, IPART noted the following: "*…included a separate allowance of about **$80 million** for two discretionary projects – the Vaucluse Diamond-*	Sydney Water proposed a combined capital spend for Vaucluse Diamond Bay and Waterway Health Improvement Programs over 2020-24 of **$80 million** (as opposed to $105 million). IPART's proposed allowance comes to a total of approximately **$84 million**.

		Bay and Waterways Health Improvement Programs."	
3.	**Prospect-Macarthur Link (ProMac)**	We note that in footnote 6 (page 23) and also on page 26, IPART claims that the reduction to ProMac is **$422 million**.	It appears that IPART has used the amount $422 million based on the change to ProMac between the draft Atkins report and the final. In Atkins draft, it removed $62 million for the 'Eastern Front' part of ProMac. While we agreed to this in our January response to Atkins draft, the correct reduction to quote in the public domain is $484 million (as shown elsewhere IPART's Draft Report). For example, page 27, which assumes no further ProMac expenditure after June 2020, the correct ProMac reduction is **$484 million**.
4.	**Reactive maintenance**	On page 37, IPART suggests Sydney Water's proposed increase for wastewater reactive maintenance in 2020-24 reflects an increase of **$60 million** from 2016-20.	Sydney Water's reactive expenditure in the period 2016-20 was $229.8 million. In 2020-24, we have proposed expenditure of $272.5 million. This reflects an increase of **$42.7 million**.
5.	**Drought pricing**	On page 41, IPART states "*our draft decision is to include an uplift to the water usage price in drought conditions, to recover the forecast costs of operating SDP*."	IPART's proposed drought water usage price recovers more than just forecast SDP costs.
		Additionally, on pages 56-57, IPART states its proposed drought prices include an estimate of the amount Sydney Water requires to recover for Shoalhaven transfers during drought pricing periods.	IPART's proposed drought price does not include estimated Shoalhaven Transfer costs. Including IPART's estimated Shoalhaven transfer costs would add another $0.03 per kL to the drought usage price. For more detail see Chapter 6.
6.	**BOOT cost reductions**	On page 42, IPART has noted: "*Atkins also recommended a **$53 million** reduction in cost pass-through operating expenditure to reflect reduced treatment costs at the Prospect Water Treatment Plant*	The correct figure is **$42.3 million** (as per Table 5-18 in Atkins Final Report). We suspect IPART has quoted this figure from Table 8-6 of Atkins Final Report, where it has been recorded incorrectly.

		when SDP is operational."	The context is also incorrect. The amount represents the total of estimated reductions in: • BOOT costs across all plants, for Atkins base case reduction for improved leakage. • BOOT costs across all plants, for Atkins 15% water restrictions scenario. • Prospect BOOT cost reductions to SDP 1 for all years. • Prospect BOOT cost reductions to SDP 2 for 2 years. We understand IPART is not proposing to include this reduction in its calculation of the drought water use price, which is appropriate.
7.	**Regulatory Asset Base (RAB)**	On page 57, IPART states that "*Other SDP costs, such as capital costs for the plant and operating costs unrelated to supplying water, are included in the RAB and recovered through normal water prices*".	None of SDP's costs are included in Sydney Water's RAB.
8.	**Days of delay**	On page 58, IPART states that Sydney Water has proposed ***39 'days of delay'***.	This reflects a typo by IPART. Days of delay noted by IPART in detailed list add to **36 days**.
9.	**Waterway Health Improvement Program (WHIP)**	1) On page 93, IPART notes they provided a WHIP capex allowance of $22.2 million over 2020-24, which is **$6.5 million** more than Sydney Water's proposal. 2) Further, IPART notes in Appendix F, that Atkins recommended "*a reduction of **$9 million** to the waterway health program, a stormwater service, to reflect actual expenditure and a correction to its program code*."	1) The difference is **$6.1 million** but this is because Atkins added $6.5 million before continuing efficiency factors were applied. Changing the amount to $6.1 million would be accurate. 2) This appears to be an error as Atkins did not recommend this in its final report (see Chapter 3 for further details).
10.	**Water usage price**	It is noted that on page 100, IPART have stated they "*Accept Sydney Water's recycled water usage price of*	We believe this is a typo, as IPART has not proposed a two-tiered water usage price.

	*$1.90/kL, independent of our **two-tiered** water usage price".*	
11. Figure 14.1	On page 134, there is missing data in Figure 14.1: *Estimated bills for residential customers using 200kL/year, under various scenarios*.	We ask that IPART provide the data in Figure 14.1.
12. Water capex	On page 32 in Appendix F, IPART states that relative to Sydney Water's estimated water capex spend over the 2016-20 period: 1) Sydney Water's proposed capex for its water service over 2020-24 reflects an increase of **101%**, and 2) IPART's determination of prudent water capex over the 2020-24 period reflects an increase of **15.7%.**	1) The percentage increase in Sydney Water's 2020-24 proposed baseline water capex relative to estimated spend over 2016-20 should be **77.3%**, reflecting an increase of $789 million. 2) The percentage increase in IPART's 2020-24 determination, relative to estimated spend over 2016-20 is **2.1%**. In calculating these higher values, it is possible that IPART has included cost pass-through expenditure in the totals ($368 million for the SDP upgrade)
13. Richmond/North Richmond Treatment project capex	On page 39 in Appendix F, IPART makes multiple references to Sydney Water's proposed capex for the Richmond/North Richard treatment project of **$96.6 million**.	The proposed capex for the Richard/North Richmond Treatment project is **$94.1 million**.
14. Stormwater capex	On page 41 in Appendix F, IPART states: 1) "Sydney Water proposed $185.2 million in capital expenditure over the 2020 determination period for its stormwater services, which represents an increase of **85%** compared to its estimated spend in the current determination period." 2) "This represents an increase of around **72%** compared to Sydney Water's estimated spend in the	Stormwater capex total in our proposal was $185 million, actual for 16-20 in proposal was $104 million. 1) The percentage increase should not be 85%, but 78%. In percentage form, the calculation of the increase in SW proposed 2020-24 capital expenditure for stormwater services compared to the spend in the current determination period of $104.0m is **78%**. 2) The percentage increase should not be 72%, but 66%. In percentage form, the calculation of the increase in Atkins'

	current determination period."	recommended efficient allowance for stormwater services compared to the spend in the current determination period of $104.0m is **66%**.
15. WHIP	In Appendix Q (page 109), IPART states that Atkins efficient expenditure assessment is **$15.9 million** over 2020-24.	Sydney Water is seeking clarification to the figure of $15.9 million. On page 93 of the Draft Report, IPART states that Atkins efficient capital expenditure for the WHIP over 2020-24 is **$22.2 million**.

17.1.3 Modelling issues

Issue	Comment	Proposed amendment (if applicable)
1. Miscoding of SGO107 SWPGA-SW	We suspect that in their Final Report, Atkins has miscoded the SGO107 SWPGA-SW program under wastewater.	The miscoding of program SGO107 SWPGA-SW has implications for Table 6-33 and Table 6-34 of the Atkins Report, i.e. reflecting the water and wastewater capex profile over the 2016-20 determination period. To reflect the miscoding, $10.3 million needs to be reduced/added to the program adjustment for wastewater/water respectively, and carried through to the calculation of total efficient expenditure for water/wastewater capex in the year 2020.
2. Green Square HAF	On page 245 (Table 6-35) in Atkins Final Report, Atkins has not removed the $7 million deduction to the Green Square HAF. The Green Square HAF is also included by IPART in their pricing and revenue model.	Sydney Water never included the HAF funding received in 2014-15 in the RAB. This should be corrected in IPART's pricing and revenue model. See Chapter 3 for more detail.

17.2 Appendix B – CONFIDENTIAL

17.3 Appendix C – CONFIDENTIAL

17.4 Appendix D – Further detail on SRMC and LRMC estimates for wastewater

The appendix comments broadly on the conceptual role of SRMC and LRMC pricing for wastewater. In particular we comment on IPART's system specific LRMC estimates.

Broadly we consider that for wastewater the correct price signal is dependent on the outcome or issue needing to be addressed within each system or location within systems.

Overall, we consider that a suite of information and measures would best facilitate outcomes for the wastewater system.

17.4.1 The SRMC of wastewater usage

The SRMC of wastewater usage relates to the how the operational expenditure (Opex) varies with wastewater discharge volume.

IPART estimated a weighted average SRMC of $0.59/kL. The SRMC was estimated by system as:

- $0.34/kL for transport costs, calculated as the total transportation Opex divided by the dry weather flows, plus
- a system-specific amount for treatment costs, calculated as the treatment Opex divided by dry weather flows.

Our July price proposal[223] includes SRMC estimates for the transport, treatment and disposal of domestic strength wastewater. For 2020–21, the reported costs are:

- $0.22/kL for the average variable cost
- $0.53/kL for the average variable and semi-fixed cost
- $0.97/kL for the average direct and variable cost

However, the analysis above, is based on the average (not marginal) variable operational costs and includes costs that are driven by pollutant load and not volume.

The true SRMC in terms of wastewater volume is likely to be very small. Our preliminary analysis suggests that around 10–15% of the average costs (i.e. less than $0.05 / kL) is driven by volume. This is primarily because at the margin, most wastewater operating costs are driven by pollutant load and not volume.[224] Furthermore, the most significant variable cost relates to pumping, which can vary greatly across a system.

An analysis of the variable costs used in calculating our proposed pricing is below.

[223] Sydney Water Price Proposal, Attachment 4: Proposed prices, Section 4.4.
[224] Another contributing factor is that volumetric-driven operating costs are driven by the total volume which includes wet-weather and dry-weather flows.

Table 17-1 Contribution of volume to variable operating costs

Cost element	% of variable costs[225]	Driver/ comment
Network		
Electricity	12%	Volume-based but very location specific and partly driven by infiltration
Operating maintenance	12%	Cost does not increase with volume, rather it typically decreases with volume as flow helps to flush the pollutant and reduce the rate of corrosion
Chemicals	5%	Not-volume based. The need is driven by the pollutant
Treatment		
Treatment electricity	19%	Mainly load-based. Energy is primarily used to for aeration, the need for which is driven by pollutant load. Some energy is used for pumping at deep ocean outflows which is driven by volume
Treatment chemicals	12%	Load-based
Maintenance	17%	Mostly load-based
Grit and screening	4%	Mostly load-based
Bio solid disposal	10%	Load-based
Materials	1%	A mix of drivers possibly load-based and volume-based
Total	**100%**	**Volume-based Opex in order of 10–15% of total**

17.4.2 LRMC

The LRMC can be estimated as the sum of the marginal costs of Opex (discussed above) plus the LRMC of Capex.

The capital component estimated by IPART ranged between $0.17 to $15.21/kL. This capital component has been estimated based on our planned capital expenditure reported in the Growth Service Investment Plans (GSIPs). This includes capital investments in wastewater treatment plants (WWTPs) and the wastewater network to service growth.

As indicated in our comments within the chapter, our preliminary assessment is that the true LRMC values will be substantially lower than those estimated by IPART.

Network capital costs

The key components of the transportation network include:

[225] Based on an analysis of 2016-17 costs.

- the pipe network
- sewage pumping stations, which are used to pump sewage uphill to a point which they can then flow downhill
- storages and other emergency relief structures (ERS) to prevent overflows.

The costs of these investments are all correlated with volume; however, the LRMC with regard to wastewater volume for each of these costs is significantly less than the that incorporated into IPART's estimates.

In practice, volume generally only affects the *size* and not the *need* for the investments. This may be because investments are required due to development in new areas (e.g. new pumping stations and specifically things such as the risking main in the Wallacia system) or because the growth is in sufficiently large increments such that there is not a feasible volume reduction that would negate the need for the investment.

Another factor is that most network assets are sized for peak and, not average, flows and consequently, the denominator used in calculating LRMC should be the change in peak flows. For example, pipes are [typically] sized to cater for peak dry weather flows (PDWF), which is typically at least 2–3 times greater than average dry weather flows (ADWF).[226] Consequently, the LRMC of additional discharge volume for pipes should be 2–3 times less than the LRMC calculated using ADWF.

Furthermore, some network investments are driven by the need to address issues of overflows during by peak wet-weather events. The ratio of peak wet weather flows (PWWF) to ADWF can be very significant. For small systems the ratio may be in the order of 6–8 as may be as high as 15.

A related factor is the timing of peak flows. Wastewater volume varies through the network generally peaking in the morning due to indoor residential uses. However, the price signal provided a wastewater usage price will only directly affect non-residential customers who are more likely to contribute to wastewater volume at other times.

Another consideration is that many growth-related network investments serve are highly localised, serving a small area within a system. For example, exist to serve the wastewater discharge from a small sub-section of the system. For example, upgrades to the sewage pumping stations (SPSs) in the Castle Hill system exist to serve the suburb of Dural, which in terms of population, is a small subset of the system. Similarly, investments in the Bombo system to address internal discharge issues relate to discharge volume from a section of the suburb.

Treatment capacity costs

A treatment plant is a system of interconnected unit processes which operate in series and/or in parallel. Historically, ADWF was used to communicate the treatment capacity at a coarse level and track capacity against demand. However, the ADWF measure doesn't account for changes to the component unit processes or changes to the composition of the influent stream. In particular,

[226] See for example 02-2002-2.2 Sewerage Code of Australia Sydney Water Edition https://www.wsaa.asn.au/sites/default/files/publication/download/Appendix%20C_Flow%20Estimation%20for%20Undeveloped%20Areas_MRWA.pdf

sewage has generally become more concentrated over the past two decades due to increased water efficiency. Due to lower water usage, more load is conveyed in less volume and original design ADWF volume capacity is no longer a valid measure to assess if the treatment plant processes are operating within design load requirements.

Treatment plant capacity is assessed in terms of hydraulic capacity (i.e. volume) and load-based capacity (i.e. in terms of the mass of the relevant pollutant in the influent that can be treated).

There are different cost drivers to different processes. For example, the capacity of a preliminary screen or grit removal process is based only on hydraulic capacity.[227] The capacity of secondary and tertiary processes largely relates to load-based capacity.

The pollutant load (and not volume) is the driver of most wastewater treatment plant capital expenditure planned and documented in the GISPs. Where the capital expenditure does not change with wastewater discharge volume, the contribution of the capital costs to the calculation of LRMC for wastewater volume is zero. For example, the $19 million augmentation at the Wallacia WWTP is required to meet an increase in pollutant loads. A change in the volume (without changing the pollutant) will not impact on the costs.

There are some cases where wastewater volume is a key driver of the need to upgrade capacity. We provide some high level examples below

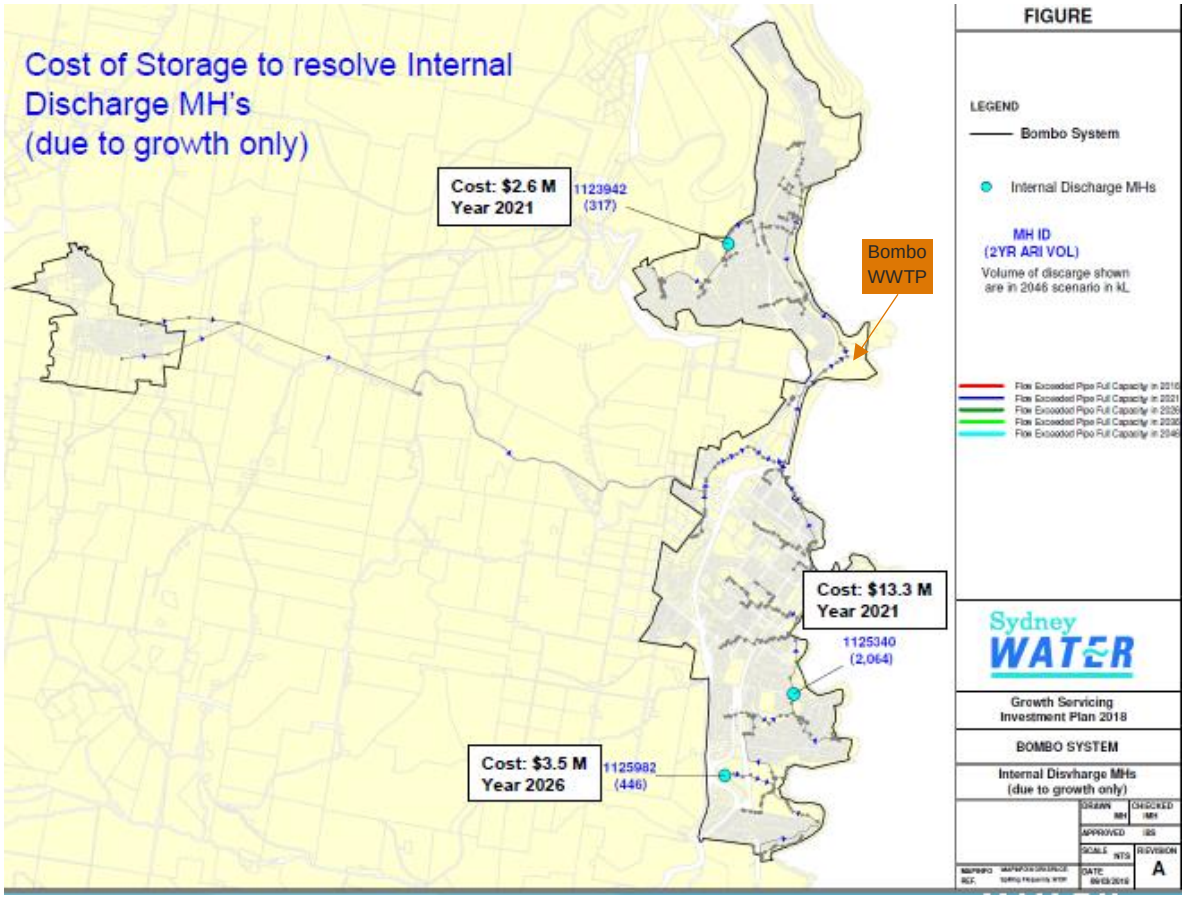
Specific examples

Bombo system

These issues can be illustrated using the Bombo system. IPART estimated the LRMC of wastewater volume in Bombo as $15.98/kL incorporating the SRMC of $0.77/kL. The only capital investment proposed for the Bombo wastewater network is the building of additional storage to resolve ‘internal discharge’ issues that occur at three manholes located in the network. The expected capital investment required is around $19m — contributing around $15/kL to IPART’s estimate of LRMC for the system.

The location of the investments is shown in Figure 17-2. The investments are upstream of most properties in the wastewater system and consequently the wastewater discharge from most properties will have no impact on the need for the investments. That is, the LRMC (measured over the planning period) for most properties would simply be the SRMC we expect to be less than $0.10/kL.

[227] Hydraulic capacity to cater for growth is for units such as: Preliminary screens; Preliminary grit removal; Primary sedimentation tanks (except for primary treatment plants); Clarifiers; Secondary and tertiary filters; Disinfection systems (UV and chlorine).



Source: BOMBO Wastewater Network GSIP 2018

Figure 17-1 Investment required in the Bombo Wastewater Network

A reduction in the discharge from properties upstream of the manholes would reduce the risk of overflows at the manholes. However, the issues are occurring during wet weather and the wastewater discharge from properties plays a minor role. Given the expected future developments and the contribution of wet weather flows, it is not feasible that a reduction in wastewater discharge by properties will remove the *need* for upgrades at the identified sites. A permanent reduction in wastewater discharge could reduce the *size* of the additional investment; however, this would be a marginal benefit.

Consequently, for the Bombo system, the true LRMC of wastewater discharge for most properties will be the SRMC, which as discussed above, appears to be smaller than the Sydney Water's proposed wastewater usage price.

Malabar

The Malabar plant services the large Malabar System (also known as the South Western & Southern Ocean Outfall System, SWOOS). The SWOOS covers southern and south-western Sydney suburbs covering an area of approximately 72,258 hectares with a population of about 1.674 million.

For the Malabar system, IPART estimated a LRMC of $3.66/kL including a contribution from operating costs (the SRMC) of $0.44/kL.

Almost half of the capital component of IPART's LRMC estimate (equivalent to around ~$1.60/kL) relates to growth-related upgrades at the Malabar treatment plant. However, only some of the upgrade cost included in IPART's estimate is affected by volume growth. Around 1/3 of the planned capital investment — relating to increase capacity in 'screening, grit removal and pumping stations' — is driven by increased volume. The remaining upgrades are driven by a combination of load and volume. Our preliminary assessment is that for the remaining investment the benefit of reduction in wastewater volume will be minimal.

Furthermore, the investment to increase volume is driven by peak wet weather flows (PWWF), which are substantially more than the ADWF that has been used in IPART's estimate of LRMC. The increase in the PWWF will be driven by an increase in PDWF plus growth in infill and infiltration as a result of new development and aging assets. A reduction in ADWF would have a small impact on the timing of the investment as the ratio of PWWF to ADWF is significant. Of note, the capacity increase in PWWF is 2,200 ML/d which is more than fifteen times the projected increase in ADWF.

The other key investments contributing to the LRMC include network upgrades (~$0.39/kL), storages (~$0.52/kL). The contribution of these to LRMC should be reduced to reflect that the costs relate to peak and not average flows.

When these and other factors are taken into consideration, we expect that the LRMC of wastewater volume for most customers in the Malabar system will be much closer to our proposed wastewater usage price of $0.61 than the existing price.

North Head

The North Head Wastewater System is Sydney Water's second largest system stretching from the Northern Beaches to Fairfield south of the Paramatta river. It currently services 1.2 million people and expected to grow to around servicing 1.8 million in 2046.

For the North Head system IPART estimated a LRMC of $3.51 (incorporating SRMC of $0.49). The most significant investment—contributing $1.95 per kL to IPART's LRMC estimate—in the North Head System is the construction of a tertiary treatment facility to treat all dry weather flows from the pumping station SP0067, which services the wastewater discharge from locations south of the Paramatta River including the south-west growth areas.

The investment is required due a constraint on the capacity of the North Head system to convey the wastewater volume to North Head WWTP; that is, the primary driver for the investment is wastewater volume (and not pollutant load). Nevertheless, the contribution to LRMC is significantly less than in IPART's calculation.

First, the sizing of the plant is driven by peak and not average volumes. This factor alone means that the LRMC may need to be reduced by a factor of 2.5–3.5. Second, the *need* for the investment is largely driven by the large projected development growth. A large reduction in ADWF in the catchment upstream of SPS0067 would help in reducing flows into SPS0067; however, it is not feasible, given the growth, this would reduce the need for an upgrade and consequently, not lead to a large reduction in the costs.

In light of these factors, it appears likely that the true LRMC of wastewater volume in the North Head System will be below the current wastewater usage price.

17.4.3 Other issues and cases

Similar issues to those applied above, apply to other systems. Our preliminary assessment is that the true LRMC with respect to wastewater volume will likely be less than the current usage price. However, we recognise this will not always be the case. The capacity to cater for wastewater volume is a key issue in the Picton system.

In addition, to the issues raised above there are the other typical problems associated with estimating LRMC.

An issue in estimating LRMC is that, under the common methods used to measure the LRMC, the LRMC will vary significantly over time due as large increments in capacity come online. When investments result in large capacity increments, the LRMC estimates will follow a saw-tooth pattern overtime, whereby under standard estimating methods (e.g. Average Incremental Cost) the LRMC-estimate increases as the investment draws near and then falls significantly once the investment is made (or has been committed to). This is particularly an issue when calculating the LRMC for many wastewater investments.

The issue is exacerbated when short planning periods are used. Many wastewater structures (e.g. concrete structures) have very long lives (e.g. 50+ years). The analysis conducted by IPART (albeit due to data limitations) is conducted over a relatively short period of 26 years. As a consequence, the LRMC estimate could vary substantially over time. Another contributing factor is that many investments are unique in addressing one particular capacity constraint in a wastewater system. The LRMC estimated during one period may be not-at-all indicative of the LRMC estimated in a future period.

17.5 Appendix E – Comments on IPART's proposed framework for discretionary expenditure

IPART proposes a draft framework for discretionary expenditure to apply in current and future price reviews. This appendix provides comments on individual elements.

17.5.1 Phase 1: Project definition

The framework requires that, at a minimum, the project or outcome specification must include location, customer/user, delivery timeframes, whether it will be replacing another service, and expected outcomes. It is reasonable for proposals relating to discretionary outcomes to include these details.

We note that the classification of expenditure as discretionary may not be straightforward, because mapping projects to outcomes may not always be one-to-one. Some customer outcomes are achieved by multiple projects. Some projects contribute to multiple customer outcomes. These complexities would be minimised by maintaining a consistent approach to the treatment of expenditure regardless of the regulatory process used to justify the target outcomes.

17.5.2 Phase 2: Willingness to pay

The purpose of Phase 2 of the framework is to set out the evidence required to justify a discretionary outcome proposal and IPART's approach to assessing that evidence. It is unclear whether multiple sources of evidence could be used to form a judgement, including evidence from revealed preference, as distinct from stated preference, approaches. The framework implicitly makes reference to two different types of surveys:

- economic WTP surveys, which use multiple hypothetical bill impacts to measure maximum WTP for a new or changed service outcome, which can then be used as a measure of economic benefits for use in cost-benefit analysis; and
- surveys of customer support/voting surveys/market research surveys, which measure the proportion of customers that support a new or changed service outcome at its expected bill impact.

IPART's approach to assessing the evidence from these two types of surveys requires clarification, particularly given there are contrasting views on this matter within the industry, including:

- IPART's consultant, Gillespie Economics, who interpret IPART's existing requirements as requiring economic WTP surveys and do not acknowledge any role for surveys of customer support[228]
- Essential Services Commission of Victoria and its consultant, farrierswier, who concluded the PREMO regulatory approach "was successful in giving stronger emphasis to customer engagement" and "contributed significantly to… [promoting] the best long-term outcomes

[228] Gillespie Economics 2020, *Assessment of Hunter Water's and Sydney Water's Customer Willingness to Pay Surveys*, January, p 3.

for Victorian water customers",[229] despite none of the water businesses estimating economic WTP (as far as we can ascertain)

- Ofwat, who responded to the large amount of economic WTP evidence presented to it at the 2014 round of price reviews, by expecting "companies not to place sole or disproportionate reliance on such methods" and "to cross-check or triangulate findings against other data sources or research insights" when developing business plans for the 2019 round of reviews.[230]

Our view is that justification of larger projects warrants the rigorous approach we took to most service outcomes in our customer engagement program, which involved both types of survey conducted sequentially:

- an economic WTP survey used to inform cost-benefit analysis (CBA) of options, followed by
- a survey of customer support for the preferred option at the expected bill impact in the context of any other expected changes in the overall bill, to verify and triangulate the CBA.

We agree that WTP surveys should include sufficient context and information.

The draft framework states that the willingness to pay dollar amounts that customers are surveyed on should correspond to the cost of the project/outcome estimated in Phase 3. This requirement cannot be applied to economic WTP surveys, since these studies vary the bill impacts across survey respondents in order to elicit WTP. We are also concerned that this requirement may be incompatible with the need to use an upper bound estimate of the WACC to mitigate the interest rate risks posed by limits on future bill impacts under the draft framework.

We agree that WTP studies should be well-designed and results statistically valid. We note that another useful resource for assessing the rigour of WTP studies was published by the Water Services Association of Australia in 2019.[231]

The draft framework requires that bill impacts in surveys be shown in the context of the broader bill impact. It would be possible to satisfy this requirement only as part of engagement taking place very late in the process of developing a pricing proposal. Yet, we also intend to engage with customers on a more ongoing basis. A more practical approach could be to require that evidence submitted with proposals includes testing of sensitivity of WTP to broader bill impacts.

More generally, what is deemed to be best practice may differ from case to case, and is likely to evolve over time. Therefore, the framework should not be overly prescriptive about the particular method used to determine customers' willingness to pay. Instead, the framework should call for the use of best practice methods, with the onus being on the businesses to demonstrate to IPART that best practice methods were applied.

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[229] farrierswier 2019, *Victoria's water sector: The PREMO model for economic regulation*, pp vii-viii.
[230] Ofwat 2016, *Ofwat's customer engagement policy statement and expectations for PR19*, May, pp 14-16.
[231] McNair, B. and Cheesman, J. 2019. *Willingness to pay: Principles for a robust study. A report for Water Services Association of Australia*, August.

17.5.3 Phase 3: Efficiency test

We agree that utilities should recover only the forecast efficient expenditure in accordance with the treatment of mandatory expenditure.

17.5.4 Phase 4: Recovery from customers

The framework requires that the bill impact per household remains less than WTP from Phase 2. Itis not clear whether the limit is intended to be an estimate of average economic WTP or a bill impact used in a survey of customer support. This requirement could lead to intended outcomes, such as a utility being incentivised to survey based on a higher bill impact than expected, to increase certainty of cost recovery. This could lead to projects not proceeding that are actually in customers' interests.

The framework requires that costs should be recovered only from categories of customers with demonstrated WTP. We agree this is a reasonable approach in theory, that provides flexibility to improve outcomes by tailoring services to the preferences of subgroups of customers. However, we note this may not always be practical. There are challenges in doing this for smaller subgroups, for example, customers facing financial hardship or from particular backgrounds. We also found it was resource intensive to find representative samples of non-residential customers, even for a utility the size of Sydney Water. This would be much more challenging for smaller utilities.

The framework flags the use of a separate RAB for expenditure on discretionary outcomes with appropriate asset lives and a long-term WACC estimate. The framework also states that utilities need to adequately inform customers about charges for discretionary outcomes, for example, separate line item on bill, distributing pamphlets or directing customers to website. We agree that it is important to inform customers of the approximate bill impacts and services outcomes associated with discretionary projects. However, we see little value in calculating and presenting bill impacts of potentially a large number of discretionary projects on bills. Such an approach would increase administrative costs and risk confusing customers.

It is not clear whether IPART is proposing to apply different WACC estimates to the return on capital from capital expenditure used to deliver mandatory and discretionary outcomes. We do not support the use of different WACC estimates, as any difference would run the risk of distorting incentives to invest. The case for treating expenditure on the two types of outcomes differently has not been substantiated.

17.5.5 Phase 5: Follow up

The framework indicates that the standard ex-post review of capex will be coupled with "a next period adjustment to assess whether any underspend is returned to customers." The case for applying a different approach to expenditure incurred in the delivery of discretionary outcomes compared to other expenditure has not been substantiated. We are concerned that the differences between the approaches would act as a disincentive to pursue outcomes customers want through the price review process.

It is unclear whether this and other elements of the framework apply only to capital expenditure or also to operating expenditure. If the treatment of operating expenditure used to deliver discretionary outcomes is intended to differ from the treatment of operating expenditure used to

deliver mandatory outcomes, then the implications for the application of the efficiency carryover mechanism need to be clarified.

The framework requires that the charge for a discretionary outcome remains equal to or below demonstrated willingness to pay. IPART's discussion indicates that the intent of this requirement is to limit the annual recovery of historical capital expenditure in the event of future interest rate rises. We are opposed to this requirement. The risk of future interest rate rises making historical capital expenditure economically unjustified in hindsight is not peculiar to decisions about discretionary outcomes. The same risk is faced by IPART when making decisions about system performance standards. This risk should be managed at the decision-making stage by considering sensitivity analysis of the discount rate in CBA of options.

If IPART were to apply a limit, the method for its application would need to be specified in detail, since one of the primary functions of regulation is providing certainty for the recovery of sunk capital expenditure that was economically viable based on information available at the time of the investment.[232] As it stands, the framework is unclear with respect to the WACC and the measure of WTP that are intended to apply and how these parameters would be adjusted over time.

The framework states that in cases where outcomes are not delivered, funds may be returned to customers in the subsequent period. The framework should clarify the consequences of under or over performance against target outcomes.

[232] "Thus, although on a day-to-day regulators' main concerns are indeed firm opportunism and the restrain of market power, rather than thinking how to restrain themselves from expropriating the firms' quasi-rents, the origins of regulatory governance is rooted in providing investment incentives by restraining governmental opportunism." – Spiller, P.T., 2013. *Transaction cost regulation*. Journal of Economic Behavior & Organization, 89, pp 232-242.

17.6 Appendix F – Contemporary inflation expectations

17.6.1 IPART's current approach produces an inflation forecast that is implausibly high

IPART's approach may have produced reasonable forecasts in previous market conditions, the current 2.3% figure is not a credible forecast in the prevailing conditions. We consider that IPART's current inflation forecasting approach produces implausibly high estimates, which is made worse in current market conditions. Based on the below evidence we consider this an enduring outcome, which suggests inflation expectations are between 0.65% to 0.89% for at least the 2020-24 period.

Evidence from the RBA

IPART's approach assumes that inflation will immediately and permanently return to 2.5% after one year, the RBA itself has recently indicated that will not occur:

> *Whether or not further monetary easing is needed, it is reasonable to expect an extended period of low interest rates. On current projections, it will be* ***some time before inflation is comfortably back within the target range****. The Board is strongly committed to making sure we get there and continuing to deliver an average rate of inflation of between 2 and 3 per cent. It is highly unlikely that we will be contemplating higher interest rates until we are confident that inflation will return to around the midpoint of the target range.*
>
> ***Low inflation has become the norm in most economies****. This is evident in this next graph, which shows the share of advanced economies with a core inflation rate below 2 per cent and below 1 per cent (Graph 3). Currently, three-quarters of advanced economies have an inflation rate below 2 per cent, and one-third have an inflation rate below 1 per cent.*
>
> *But countries that are operating nearer to full capacity are more likely to have inflation close to target.* ***It also appears that if you have an extended period of very low inflation – as did Japan and the euro area – it is harder to get back to target as a deflationary mindset takes hold.*** [233]

The RBA has continually pushed out the time at which inflation is expected to return to the 2-3% target range. In August 2019, the RBA noted:

> *Over the year to June, inflation was 1.6 per cent, in both headline and underlying terms, extending the period over which inflation has been below the 2–3 per cent medium-term target range. The Reserve Bank Board remains committed to having inflation return to this range, but* ***it is taking longer than earlier expected.*** *…*
>
> *Looking ahead, inflation is still expected to pick up, but* ***the date at which it is expected to be back at 2 per cent has been pushed out again. Over 2020, inflation is forecast to***

[233] Statement by Philip Lowe, Governor, Address to Anika Foundation Luncheon, Sydney, 25 July 2019 (emphasis added).

be a little under 2 per cent and over 2021 it is expected to be a little above 2 per cent.[234]

Similar statements were made in November 2019 when the RBA commented that:

> *The central scenario remains for inflation to pick up, but to do so only gradually. In both headline and underlying terms, inflation is expected to be close to 2 per cent in 2020 and 2021….*
>
> *Given global developments and the evidence of the spare capacity in the Australian economy, it is reasonable to expect that an extended period of low interest rates will be required in Australia to reach full employment and achieve the inflation target*. [235]

More recently, the RBA has noted that it does not target a mechanical return to the target inflation rate, but rather determines interest rates by taking into account broader welfare considerations:

> *Our target is to achieve an average rate of inflation, over time, of between 2 and 3 per cent. This means that there is an acceptable degree of variation in inflation from year to year, and we have been prepared to use this flexibility.* ***Our focus is very much on the medium term – hence 'on average' and 'over time'****. …*
>
> *Importantly, we have always seen the inflation target as nested within the broader objective of welfare maximisation. This means that the question the Reserve Bank Board asks itself when making interest rate decisions is how those decisions can best contribute to the welfare of the Australian people. In particular, we are seeking to achieve the maximum sustainable rate of employment consistent with inflation being at target. And we are seeking to do this in a way that limits the build-up of financial imbalances that can be the source of instability down the track. In doing this, we can make a material contribution to the welfare of the society we serve.*
>
> *I acknowledge there is an element of judgement and discretion in this approach. Certainly, there is more judgement involved than in an approach to monetary policy that* ***mechanically sets interest rates so that forecast inflation is at the target in two years' time.*** [236]

In summary, the suggestion that inflation is expected to return to 2.5% after one year (which is the current IPART approach) is inconsistent with the current evidence from the RBA itself.

Evidence from market data

The IPART inflation forecast is also inconsistent with market data estimates of future inflation. A common market estimate is the 'bond breakeven' approach whereby implied inflation is derived from nominal and inflation-indexed government bonds. Figure 17-2 illustrates that 4-year bond

[234] RBA, Opening Statement to Economics Committee, 9 August 2019.
[235] Statement by Philip Lowe, Governor, Monetary Policy Decision, 5 November 2019 (emphasis added).
[236] Statement by Philip Lowe, RBA Governor, Sir Leslie Melville Lecture, 29 October 2019 (emphasis added).

breakeven inflation estimates have declined since IPART last considered its approach to inflation in 2017. The current bond breakeven inflation forecast (40-day trailing average) is 0.65% p.a.

Source: RBA.

Figure 17-2 Bond breakeven 4-year inflation forecasts

CPI inflation swaps are also commonly used as estimates of future inflation. Figure 17-3 shows 4-year estimates from inflation swaps have declined since IPART's 2017 review, with a current 4-year forecast (40-day trailing average) at 0.89% p.a.

Source: Bloomberg, 40-day trailing average.

Figure 17-3 4-year inflation forecasts from inflation swaps

Several financial institutions have stated long run estimates of inflation are below the mid-point of the RBA's target inflation band. For instance, a note by ANZ concludes that 2.5% is no longer an appropriate long-run estimate, stating:

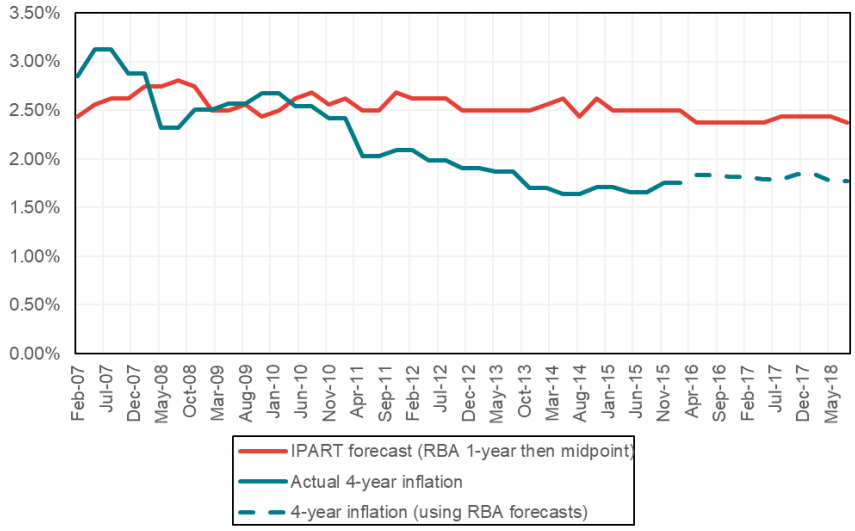
> *Worryingly for the RBA, the market now expects inflation to average around 1.5% over the next 10 years and to stay below 2% for around 25 years.*
>
> *Most measures of inflation expectations have been moving in the same direction – down. Less than a year ago, the market in the short term expected inflation to average less than*

2%, but it still expected inflation to rise and average 2% within 10 years. Now the market does not see the RBA making much progress on getting inflation to pick up.

This suggests that the market is seeing this new low-interest-rate environment continuing for a long time, in part due to structurally lower inflation outcomes. What's more, current implied forward rates indicate that the market is not expecting inflation to return to the target band for another 25 years.[237]

17.6.2 An ongoing problem

We note actual inflation outcomes have been materially below IPART inflation forecasts for several years. Figure 17-4 shows for the last 10 years, actual inflation over the subsequent 4-year period has been materially below the IPART forecast. Thus, regulated businesses have been consistently under-compensated over the last decade.



Source: RBA, IPART.

Figure 17-4 IPART forecast vs. actual inflation

17.6.3 The impact of the current pandemic

Prior to the COVID-19 crisis, the probability of inflation returning to 2.5% after one year (in line with the IPART forecast) was remote; the probability is now even lower. On any reasonable view, there is no realistic possibility at all of inflation being 2.5% in years 2 to 4 of the 2020-24 period. Within the last month, the RBA has twice reduced the target cash rate down to new historic lows (now 0.25%) and it has embarked on a quantitative easing designed to lower government bond yields.[238]

On 19 March 2020, the Governor of the RBA stated that the COVID-19 crisis would cause even further delays in progress towards restoring inflation to within the 2-3% target band, noting inflation is likely to remain below the target for "an extended period":

[237] ANZ Research, *Inflation Expectations: Anchoring at the wrong point*, August 2019 (emphasis added).
[238] Reserve Bank of Australia, *Supporting the Economy and Financial System in Response to COVID-19*, https://www.rba.gov.au/covid-19/.

> *At its meeting yesterday, the Board also agreed that we would not increase the cash rate from its current level until progress was made towards full employment and that we were confident that inflation will be sustainably within the 2–3 per cent range. This means that we are likely to be at this level of interest rates for an extended period.*
>
> *Before the coronavirus hit, we were expecting to make progress towards full employment and the inflation target, although that progress was expected to be only very gradual. Recent events have obviously changed the situation and we are now likely to remain short of those objectives for somewhat longer.*[239]

The Governor also announced that the RBA would take steps to drive down government bond yields below open market rates, and that this activity is expected to remain in place for at least three years:

> *Over recent decades, the Reserve Bank's practice has been to target the cash rate, which forms the anchor point for the risk-free term structure. We are now extending and complementing this by also targeting a risk-free interest rate further out along the yield curve.*
>
> *In particular, we are targeting the yield on 3-year Australian Government Securities (AGS) and we have set this target at around 0.25 per cent, the same as the cash rate. Over recent weeks, the yield on 3-year AGS has averaged 0.45 per cent, so this represents a material reduction...*
>
> *We expect to maintain the target for three-year yields until progress is being made towards our goals of full employment and the inflation target. Our expectation, though, is that the yield target will be removed before the cash rate is increased.*[240]

In summary, in the current market conditions, we consider there is little prospect of inflation returning to 2.5% p.a. for years 2 to 4 of the 2020-24 period.

It would could even be proposed that it would be a high risk of error to rely on the RBA forecast of inflation for the first year of 2020-24 period. The Governor has also recently stated that current market conditions are so uncertain that it is impossible to produce accurate forecasts:

> *I am not able to provide you with an updated set of economic forecasts. The situation is just too fluid.* [241]

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[239] Statement by Philip Lowe, *Responding to the Economic and Financial Impact of COVID-19*, March 2020 (emphasis added). https://www.rba.gov.au/speeches/2020/sp-gov-2020-03-19.html.
[240] Statement by Philip Lowe, *Responding to the Economic and Financial Impact of COVID-19*, March 2020. https://www.rba.gov.au/speeches/2020/sp-gov-2020-03-19.html.
[241] Statement by Philip Lowe, *Responding to the Economic and Financial Impact of COVID-19*, March 2020. https://www.rba.gov.au/speeches/2020/sp-gov-2020-03-19.html..

17.7 Appendix G – Financeability metrics impact of inflation forecasting

This appendix presents the impact of inflation forecasting risk on our financial position.[242]

For simplicity[243] we estimate financeability tests based on Moody's financeability metrics for the three solutions for inflation forecast risk we previously outlined in Chapter 12, Table 12-8:

- **Scenario 1 (status quo)** – IPART takes no action, outturn inflation 0.65%.
- **Scenario 2 (Option 2b)** – pure ex post true-up, outturn inflation 0.65%.
- **Scenario 3 (Option 2a)** – hybrid approach (within period cashflow + ex post true-up), assumed inflation 1.62%.

Other assumptions include a 3.2% real WACC, IPART inflation forecast of 2.3% and expenditures proposed in our November 2019 pricing submission update.

17.7.1 Results

Table 17-2 Scenario 1 (status quo), IPART takes no action, outturn inflation 0.65%

Ratio	2020–21	2021–22	2022–23	2023–24	2024-25	2025-26	2026-27
FFO Interest Coverage	2.07	2.18	2.15	2.08	2.01	1.97	1.94
Net Debt/RAB	61.7%	61.9%	61.5%	60.9%	59.8%	58.5%	57.6%
FFO/Net Debt	**3.8%**	**4.1%**	**4.2%**	**4.2%**	**4.2%**	**4.1%**	**4.1%**
RCF/Net Debt	2.5%	3.3%	3.6%	3.7%	3.9%	4.0%	3.9%
Rating	**Baa3**	**Baa3**	**Baa3**	**Baa3**	**Baa3**	**Baa3**	**Baa3**

[242] It is important to note that Moody's weighs 40% of their assessment using these metrics, and 60% on qualitative factors, such as business profile and financial policy. Moody's (2015). *Rating methodology – Regulated water utilities*.
[243] We acknowledge IPART's own financeability metrics and the role they play in IPART's decision making and assessment of financeability. We note that Moody's credit metrics are an integrated part of our corporate reporting templates reducing the administrative costs to produce metrics significantly. Finally, we consider results and metric construction between Moody's and IPART's Actual test metrics are highly correlated.

Table 17-3: Scenario 2 (option 2b), pure ex post true-up, outturn inflation 0.65%

Ratio	2020–21	2021–22	2022–23	2023–24	2024-25	2025-26	2026-27
FFO Interest Coverage	2.07	2.18	2.28	2.32	2.36	2.29	2.25
Net Debt/RAB	61.5%	61.6%	60.9%	60.1%	58.8%	57.5%	56.5%
FFO/Net Debt	**3.8%**	**4.2%**	**4.7%**	**5.2%**	5.6%	5.5%	**5.4%**
RCF/Net Debt	2.6%	3.6%	4.0%	4.2%	4.4%	4.3%	4.3%
Rating	**Baa3**	**Baa3**	**Baa2**	**Baa2**	**Baa2**	**Baa2**	**Baa2**

Table 17-4: Scenario 3 (option 2a), hybrid, assumed inflation 1.62%.

Ratio	2020–21	2021–22	2022–23	2023–24	2024-25	2025-26	2026-27
FFO Interest Coverage	2.30	2.40	2.44	2.42	2.41	2.34	2.29
Net Debt/RAB	60.6%	60.5%	59.8%	59.0%	57.8%	56.5%	55.5%
FFO/Net Debt	**4.7%**	**5.0%**	**5.4%**	5.6%	5.8%	5.7%	5.7%
RCF/Net Debt	3.3%	4.0%	4.2%	4.4%	4.5%	4.3%	4.3%
Rating	**Baa2**	**Baa2**	**Baa2**	**Baa2**	**Baa2**	**Baa2**	**Baa2**

For clarity, Scenarios 1 & 2 both result in underfunding during the 2020-24 period of the $1.35 billion inflation impact as outlined in section 12.2.1. Scenario 2 allows for recovery of the entire $1.35 billion in a future period whereas Scenario 1 has no recovery in any periods. Scenario 3 allows funding of $725 million within 2020-24 and the remainder trued-up ex post over 2024-28.

It is clear from the metrics that Scenario 1 has a long and lasting impact on our credit rating and FFO to Net Debt. We consider this metric is most important, as it is a measure of the available cashflow to fund the efficient return on equity and asset lives. The inflation forecasting issue leaves equity holders having to bear the losses to fund nominal debt, all else equal. This is recognised by IPART in draft decision for Hunter Water[244], noting that all three utilities fail this metric.

Scenario 2 sees an improvement in our credit metrics from financial year 2023 onwards as Moody's recognises the recovery of cashflows will be made in the future.

Scenario 3 is the only scenario that sees no degradation of our credit metrics.

[244] IPART, Draft Report for Hunter Water, 10 March 2020, p 134.

17.8 Appendix H – Estimating the value of water

As discussed in Chapter 13, our ELWC method encourages greater investment as dam levels fall, reflecting the increasing value to society of retaining water in our dams as water becomes less available.

Under the current method, the value of water is calculated as the total social cost of water at different dam levels, multiplied by the probability of each dam level being reached within the planning horizon (and given a defined starting level). This can be viewed as an expected value of water.

A potential weakness of the current ELWC method is that it may not fully reflect the significant social costs that can apply at lower dam levels. For example, while some direct financial costs are fully counted at all dam levels, any costs with an 'on/off' trigger will always be discounted by the probability of current dam levels changing. This might be the case even if the relevant cost, once triggered, remains in place for months or even years during a drought event. The following section considers an alternative method for dealing with these costs.

17.8.1 Recognising social costs during drought: a refinement to the ELWC method

Our estimates of the social cost of water restrictions are based on customer willingness-to-pay to avoid different levels of water restrictions. As the estimates for each level are additive, the social cost of being in level 3 restrictions is very high; around $22.00/kL. To the extent that a large-scale water conservation program could assist in avoiding or delaying this level of restrictions, this would be a prudent investment strategy.

An alternative model would be to set a floor on the value of water, based on the actual costs that are experienced while dams remain at that level. For example, if dam levels are below 60%, the value of water would be at least equal to the cost of bulk water from the dams plus the cost of purchasing water from the desalination plant. Similarly, if level 1 water restrictions have been introduced, the value of water would, as a minimum, include the full social cost of level 1 restrictions.

The forward-looking approach inherent in ELWC can still be incorporated, by considering the probability that costs might increase even further if dam levels dropped from the current levels. However, the probability that dams might increase from those very low levels would no longer be considered. Such an approach would allow full recognition of the very high social costs that accrue at very low dam levels, encouraging the development of a wider range of short-term water conservation responses either during or immediately before the onset of drought. The diagram below compares this alternate method against the current ELWC approach, and contrasts both against the unweighted or actual costs that occur at each dam level.

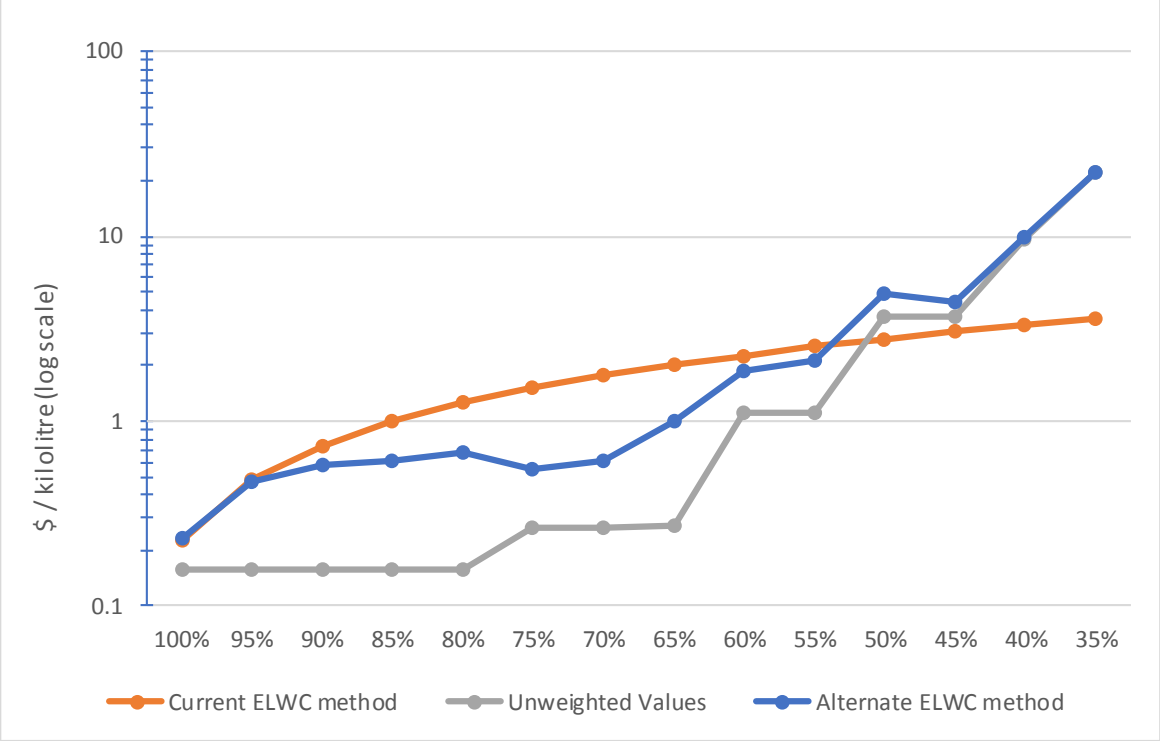


Figure 17-5 Creating a floor for the short-run value of water

A further refinement of this approach could be to only apply the floor concept when dams have fallen below, say, 50%. The value of water for dam levels above 50% would be as per the current ELWC method. If dams fall below 50%, the value of water would be above the current ELWC method, encouraging significant additional investment in water conservation during drought periods. A potential hybrid method is illustrated in the diagram below.

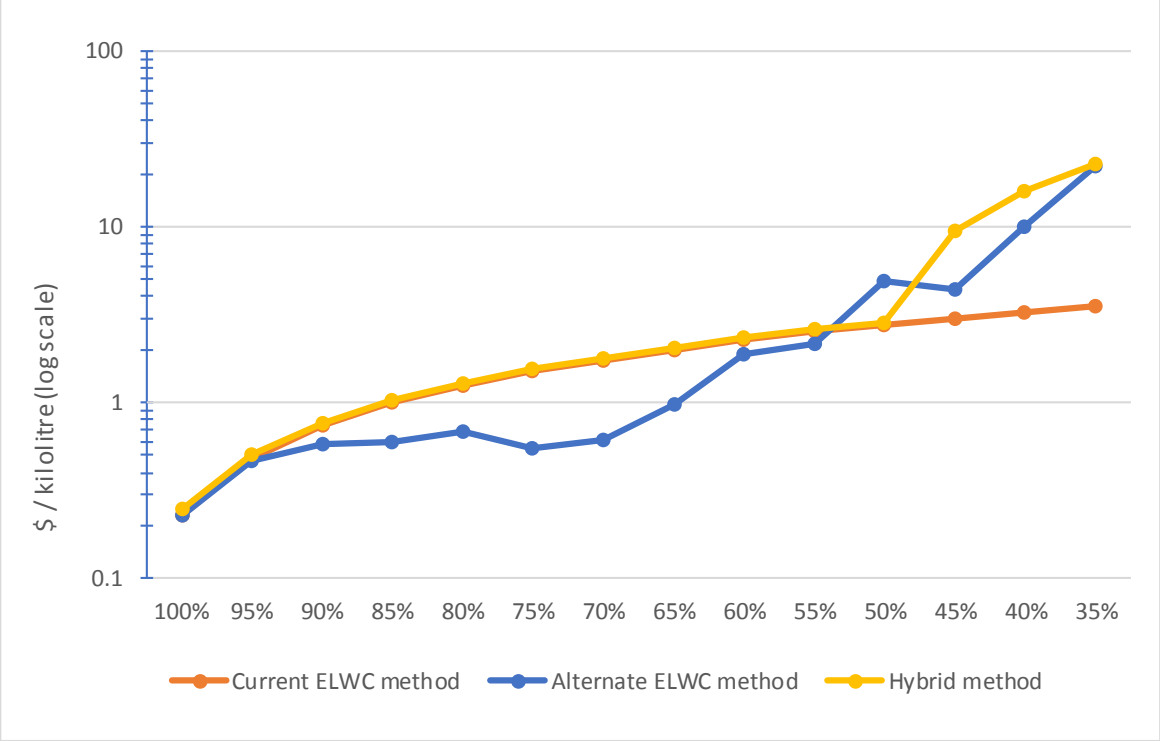


Figure 17-6 A hybrid ELWC method for the value of water

17.9 Appendix I – COVID-19: Potential customer connections and demand impacts

We do not yet have sufficient data to be able to quantify the impact of COVID-19 and the associated economic disruption on water demand or customer numbers.

Figure 17-8 shows the total demand for potable and unfiltered water from the 1 March to 15 April 2020, which includes the most recent data available. While we have observed a decline in demand of around 3.6% since strict social distancing was introduced on 23 March 2020, this is well within the range of variability we would expect from fluctuations in weather. The impact of weather on this decline will not be known until May 2020.

It is too early to measure the impact of reduced economic activity on non-residential demand in sectors reliant on water as a means of production due to the quarterly nature of meter readings. There is also potential for there to be some residual impact from water restrictions which were relaxed from Level 2 to Level 1 on 1 March 2020.

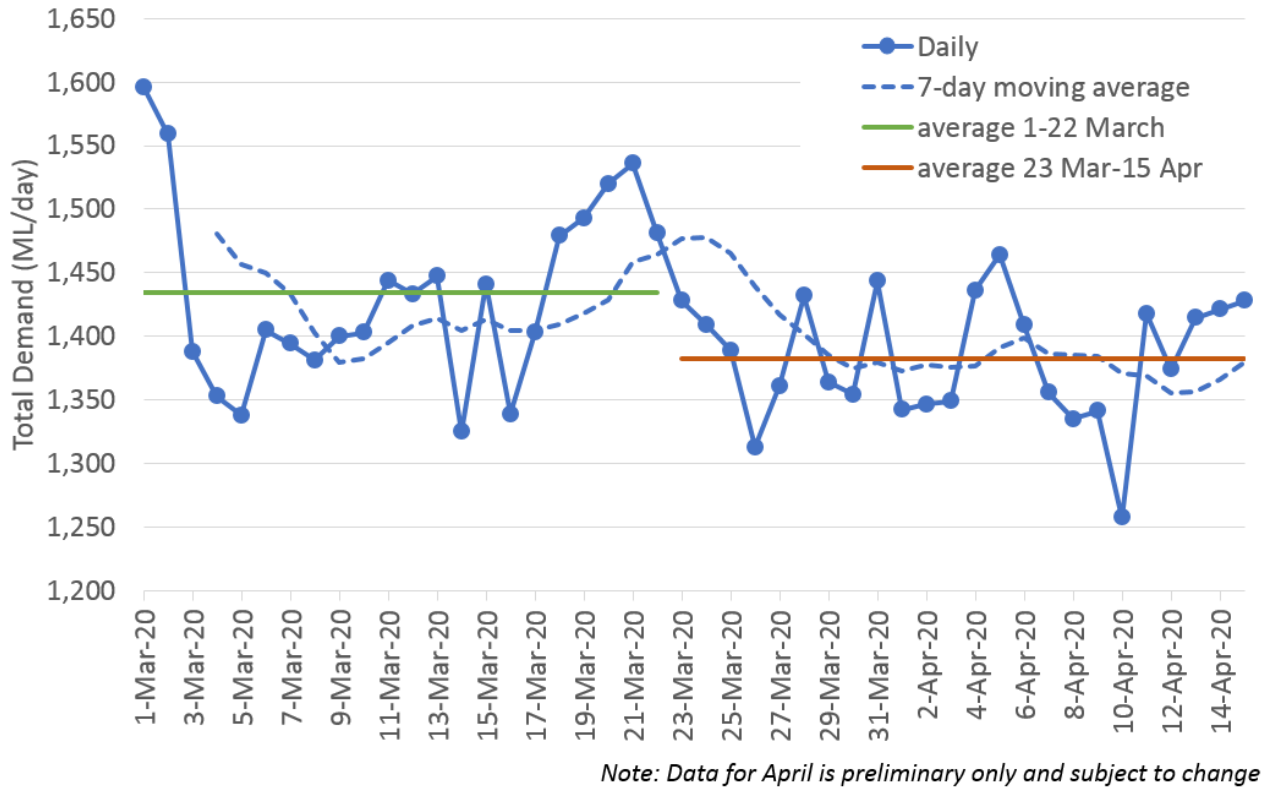


Figure 17-7 Total daily demand (1 March to 15 April 2020)

17.9.1 Scenarios considered

Three scenarios have been prepared to demonstrate the potential range of impact COVID on customer numbers and the demand for water. A brief description of each scenario is provided below. The base forecasts provided for our Price Proposal are also provided for comparison. We note that the 2019 Sydney Housing Supply Forecast predicted 1% greater growth compared with the 2016 growth forecast that underpins our Price Proposal.[245]

Given time constraints, no other factors have been considered beyond those specified for each scenario. For example, we have not considered updated actuals, changes to customer water using behaviour due to additional assistance or other interventions to provide bill support or the impact of continued water restrictions.

Non-residential property scenario forecasts have not been included in this analysis, as non-residential growth is forecast to be minor over this price path period.[246] Any change to this forecast would have a minor impact on the results of this analysis.

It should also be noted that actual circumstances are likely to differ from the scenarios described. Each scenario describes one possible combination of events which is purely speculative.

Scenario 1 - high COVID-19 impact

Assumption - Movement restrictions continue for an extended period of time and there is a very slow economic recovery (comparable to the Global Financial Crisis) which impacts the full price path period. Such as:

- Social isolation restrictions continue to the end of 2020, restricting business activity and pre-COVID-19 social behaviours.
- International borders remain closed to end of 2021 and state border crossings controlled until end 2020.
- Following the re-opening of borders there is slow uptake of international travel and migration/immigration until late 2022. International students return to commence studies in 2022, but participation remains below 2019 levels. Development slows due to lower demand for new housing and supply chain constraints. This remains constrained to 2025.
- Slow economic recovery occurs over 3 years but does not fully return to levels pre COVID-19 within the price path period.

Scenario 2 - medium COVID-19 impact

Assumption - Movement restrictions continue and there is a slow economic recovery (in comparison to the GFC). Such as:

- Social isolation restrictions continue to the end of 2020, some business operating restrictions being lifted by September 2020.

[245] NSW DPIE, *Sydney Housing Supply Forecast 2019*, accessed at https://www.planning.nsw.gov.au/research-and-demography/sydney-housing-supply-forecast.
[246] Refer to Sydney Water's July 2019 Price Proposal.

- International borders remain closed until mid 2021 and state border crossings controlled until the end of September 2020.
- Following the re-opening of borders there is slow uptake of international travel and migration/immigration until mid 2022. Some international students return to commence studies mid in 2021.
- Development slows but the industry is supported by government.
- Economic recovery occurs over 3 years, with most improvements seen in the first 2 years and returns to pre-COVID-19 levels within the price path period.

Scenario 3 - low COVID-19 impact

Assumption - Movement restrictions lifted quickly and there is a quick economic recovery (comparison to GFC). Such as:

- Social isolation restrictions lifted by end of June 2020, with no further restrictions on business operations.
- International borders remain closed until end of 2020 and state border crossing controls lifted by end of June 2020. International students return to commence studies in 2021.
- Post restrictions, majority of international travel and migration/immigration returns to pre-COVID-19 levels by late 2020.
- No impact on property development due to government support of the industry.
- Economic recovery occurs rapidly and returns to pre-COVID-19 levels by mid 2021.

17.9.2 Impact on customer numbers

The customer number forecasts under the three COVID-19 scenarios are provided in the tables below. The forecast provided for the 2020 Price Proposal, labelled as 'Base', is also provided for comparison. These forecasts assume:

- Scenario 1 (high impact) assumes growth decreases to the historic low seen during the Global Financial Crisis by 2021-22 and then will return to the long-term average by 2024-25 (slightly earlier than full economic recovery).
- Scenario 2 (medium impact) assumes growth decreases to long term average by 2020-21, and then will return to the pre-COVID-19 short term trend. Average customer number growth over the price path is the same as the short-term average.
- Scenario 3 (low impact) assumes no change in growth beyond decline already observed in the first 9 months of 2019-20. In short, government support of construction negates any direct COVID-19 impacts on construction.

Note, these assumptions are applied to the water service customer number forecasts. The resultant percentage impact is then applied to wastewater and stormwater customer forecasts.

Table 17-5 Residential customer number forecasts by scenario – water service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Base	1,929,767	1,966,889	2,004,314	2,040,021	2,074,041
Scenario 1 (high impact)	1,926,275	1,950,668	1,975,061	1,999,454	2,023,847
Scenario 2 (medium impact)	1,926,275	1,955,478	1,990,587	2,026,294	2,060,314
Scenario 3 (low impact)	1,926,275	1,963,397	2,000,822	2,036,529	2,070,549

includes non-residential in mixed mutli premise, excludes vacant and un-metered
^ forecast including 9 months of draft actuals

Table 17-6 Percentage change in residential customer number forecasts by scenario – water Service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Scenario 1 (high impact)	-0.2%	-0.8%	-1.5%	-2.0%	-2.4%
Scenario 2 (medium impact)	-0.2%	-0.6%	-0.7%	-0.7%	-0.7%
Scenario 3 (low impact)	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%

Table 17-7 Residential customer number forecasts by scenario – wastewater service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Base	1,897,384	1,933,349	1,969,318	2,003,845	2,036,887
Scenario 1 (high impact)	1,894,051	1,917,683	1,932,643	1,955,502	1,984,946
Scenario 2 (medium impact)	1,894,051	1,922,344	1,956,086	1,990,613	2,023,655
Scenario 3 (low impact)	1,894,051	1,930,016	1,965,985	2,000,512	2,033,554

includes non-residential in mixed mutli premise, excludes vacant and un-metered
^ forecast including 9 months of draft actuals

Table 17-8 Percentage change in residential customer number forecasts by COVID-19 scenario – wastewater service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Scenario 1 (high impact)	-0.2%	-0.8%	-1.9%	-2.4%	-2.6%
Scenario 2 (medium impact)	-0.2%	-0.6%	-0.7%	-0.7%	-0.6%
Scenario 3 (low impact)	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%

Table 17-9 Residential customer number forecasts by scenario – stormwater service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Base	544,141	555,590	566,959	577,953	588,585
Scenario 1 (high impact)	543,131	550,654	555,383	562,662	572,136
Scenario 2 (medium impact)	543,131	552,138	562,803	573,797	584,429
Scenario 3 (low impact)	543,131	554,580	565,949	576,943	587,575

excludes vacant, excludes Rouse Hill

^ *forecast including 9 months of draft actuals*

Table 17-10 Percentage change in residential customer number forecasts by scenario – stormwater service

	2019-20^	2020-21	2021-22	2022-23	2023-24
Scenario 1 (high impact)	-0.2%	-0.9%	-2.0%	-2.6%	-2.8%
Scenario 2 (medium impact)	-0.2%	-0.6%	-0.7%	-0.7%	-0.7%
Scenario 3 (low impact)	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%

17.9.3 Impact on water demand

We expect the biggest impact on water use will come from the non-residential sectors most severely affected by social isolation rules, such as the tourism and hospitality sectors. Other sectors may see an increase in water use, such as hospitals and cleaning businesses.

We consider it likely many non-residential customers, such as office blocks and schools, will continue to maintain at least a base level water use, even if attendance drops or operation ceases, (eg, for building cooling and cleaning). Local councils, clubs, schools and other recreational operations are expected to continue to water parks, gardens, lawns, grounds. Our highest potable water using non-residential customers are also likely to continue operations.

Non-residential demand accounts for around 25% of total water demand, and therefore the impacts from changes to non-residential demand will have a relatively small impact on total water demand.

COVID-19 will provide some opportunity to learn more about our demand drivers. For example, tourism has been suspected to be driving our per capita consumption upwards due to unaccounted for transient populations. COVID-19 may well provide us with an opportunity to quantify such unknowns.

To estimate what the impacts on demand might be under each scenario we assumed:

- no impact on residential water demand beyond the transference of personal use from non-residential to residential sectors

- potential change in residential growth (development) as outlined above
- minor impact on water demand from our largest water using non-residential customers due their business operations and their use of recycled water
- significant reductions in the short term and some longer-term reductions in demand from student accommodation, cafes, hotels, clubs, etc
- some reduction in water demand by industrial, non-residential unit, government and commercial properties
- increased demand by hospitals.

Based on these assumptions, estimated impacts on demand forecast are outlined in the tables below. The forecast provided for the Price Proposal, labelled as 'Base', is also provided for comparison.

Table 17-11 Total potable and unfiltered water demand forecasts by scenario (ML)

	2019-20^	2020-21	2021-22	2022-23	2023-24	Total over price path
Base	570,304	575,928	582,798	589,588	598,136	2,346,449
Scenario 1 (high impact)	559,721	551,325	561,937	572,749	584,239	2,270,249
Scenario 2 (medium impact)	559,996	559,220	572,423	582,687	595,117	2,309,447
Scenario 3 (low impact)	560,271	569,129	581,207	588,229	597,223	2,335,788

Table 17-12 Percentage change in total and unfiltered water demand forecasts

	2019-20^	2020-21	2021-22	2022-23	2023-24	Total over price path
Scenario 1 (high impact)	-1.9%	-4.3%	-3.6%	-2.9%	-2.3%	-3.2%
Scenario 2 (medium impact)	-1.8%	-2.9%	-1.8%	-1.2%	-0.5%	-1.6%
Scenario 3 (low impact)	-1.8%	-1.2%	-0.3%	-0.2%	-0.2%	-0.5%

17.9.4 Impact on revenue

We estimate that the revenue impacts from the above scenarios over 2020-24 would be around:

- $34 million for the low impact scenario
- $115 million for the medium impact scenario
- $261 million for the high impact scenario.

This assumes a water use price of $2.11/kL. These figures do not include potential impacts on revenue from customer assistance measures such as the suspension of late payment fees and interest on overdue accounts, or from an increase in deferral or non-payment by customers.

As with scenario customer number and demand forecasts, the above revenue estimates are based on speculative, high-level assessment only and are not intended to be adopted in the price review.

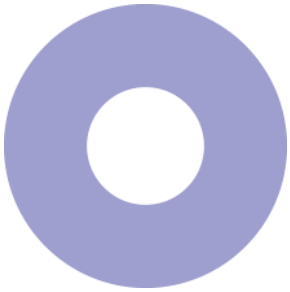
18 Attachments

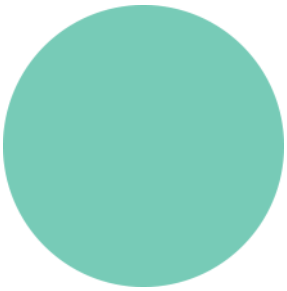
18.1 Attachment 1 – NERA review of IPART/Atkins efficiency assessment

NERA Consulting report attached to this document.

18.2 Attachment 2 – NERA inflation forecasting and recovery of efficient debt costs

NERA Consulting report attached to this document.





SW165 04/20