

Sydney Water's response to IPART's Draft Report and Determination

IPART's review of prices for Sydney Water
from 1 July 2016

18 April 2016

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Executive summary

We welcome the opportunity to respond to the *Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 – Draft Report* (the Draft Report) issued by the Independent Pricing and Regulatory Tribunal (IPART) on 22 March 2016 along with the *Draft Determination*. The Draft Report is the result of work done since we lodged our Pricing Proposal titled *Our Plan for the future: Sydney Water's prices for 2016–20* (Pricing Proposal) on 30 June 2015.

Sydney Water Pricing Proposal 2016-20

Sydney Water's Pricing Proposal highlighted our strong commitment to providing the quality levels of service desired by customers, cost effectively and at the right prices, while remaining financially sustainable. It demonstrated our improvements over the past four years, and our desire to continue improving in light of current, emerging and future challenges. By passing on efficiency gains realised over the current period and the benefits of a low interest rate environment, Sydney Water was able to propose a significant reduction in customer bills.

The Pricing Proposal also stated our desire for constructive long-term engagement with IPART and other stakeholders, with a focus on strengthening incentives from regulation, increasing certainty and assigning risk better. Sydney Water's response to IPART's *Review of prices for Sydney Water Corporation from 1 July 2016 Water – Issues Paper* (the Issues Paper) in October 2015 reinforced this position. We highlighted that we wanted to avoid the regulatory model that evolved in other Australian sectors, which had a high degree of combativeness. We support IPART establishing a regulatory framework that promotes greater certainty and consistency in its decisions. The benefits of such a regulatory model were evident in Moody's decision to grant Sydney Water our first ever credit rating upgrade in 2015.

IPART Price Review process

Sydney Water commends and thanks IPART for overseeing a robust, transparent and constructive consultation process through this price review period. As well as the opportunity to respond to the Draft Report, IPART has provided public consultation and engagement through its Issues Paper and Public Hearing process. As reflected in the Draft Report, we have had ongoing engagement with the regulator throughout this process. This has enabled us to respond to requests for further information and clarify positions published in our Pricing Proposal. From this we have also been able to reconcile IPART's price and revenue modelling, whereas in past determinations, this has been problematic.

We also welcome IPART's decision in February to separate the wholesale access pricing determination process from both our and Hunter Water's current Price Review. This matter warrants separate consideration. IPART's decision to change timeframes in response to new information and concerns raised by stakeholders in the course of this determination process, demonstrates its flexibility and the ability to adapt its processes in dealing with important new issues. The additional time provided ensures that the interests of all parties can be appropriately balanced and we believe it is more likely that IPART can achieve an outcome that best promotes the long-term interests of customers.

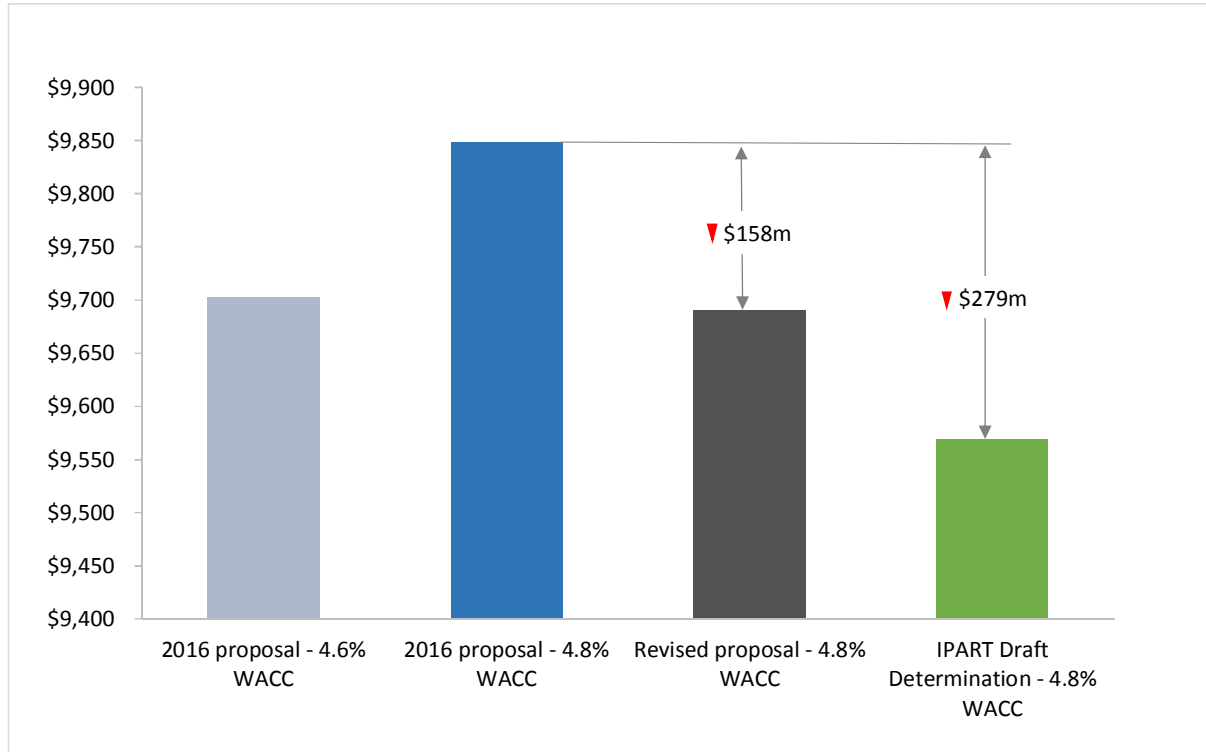
The Draft Report and Draft Determination

Sydney Water considers the Draft Report is a comprehensive, extensive and thorough document in terms of the breadth of issues it covers. It addresses matters arising from previous determinations and new issues, including our proposed modernisation of the regulatory framework and reforms on existing regulatory applications to strengthen incentives and promote greater certainty.

We appreciate the time and effort IPART has given considering our initial proposal, the subsequent submissions made, and in seeking additional information. By carefully articulating reasons for key decisions in its Draft Report, it gives us the opportunity to develop a more targeted, better quality submission in response.

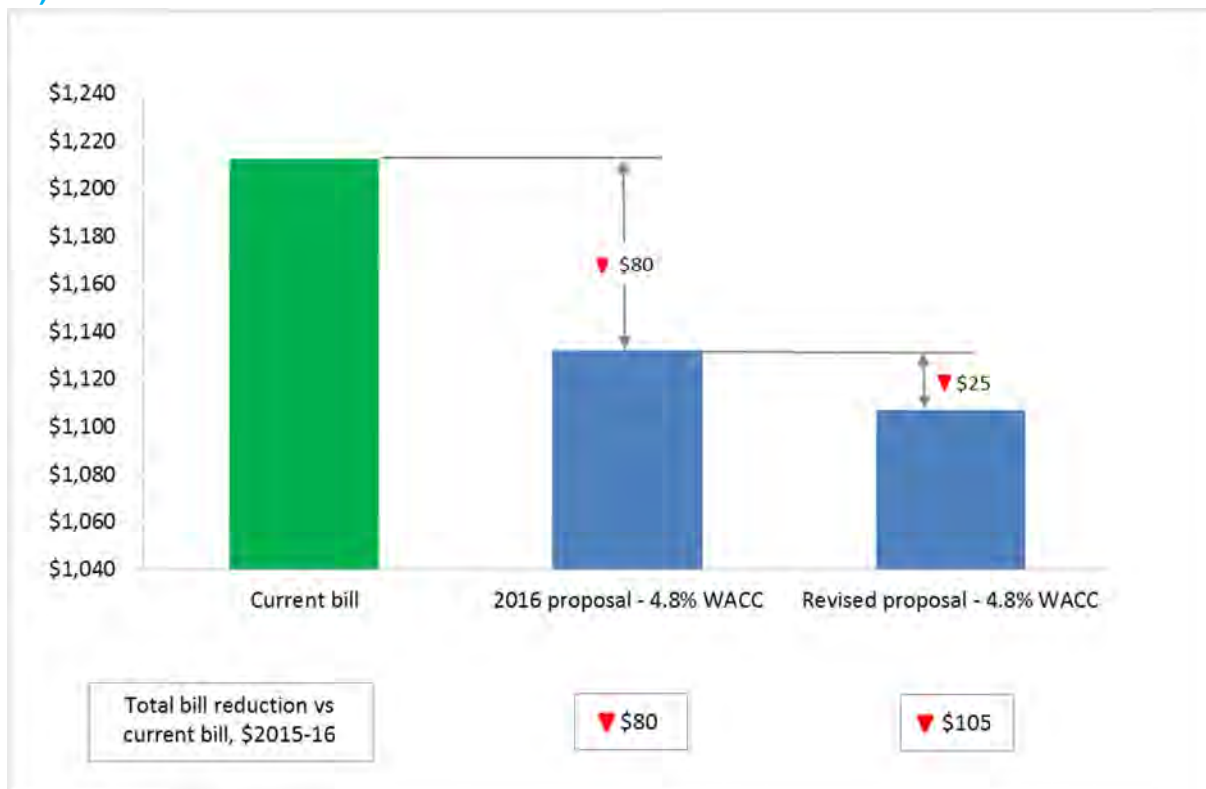
Sydney Water notes that the revenue and overall bill outcomes from the Draft Determination appear similar to those in our Pricing Proposal. IPART has used an updated 4.8% post-tax real weighted average cost of capital (WACC) in the Draft Determination, which is higher than the 4.6% assumed in our Pricing Proposal. If a comparable WACC were adopted, the allowed revenues from the Draft Determination are over four years \$279 million or 2.94% lower than the estimated revenue to recover our efficient costs in the Pricing Proposal (see Figure 1). This revenue reduction results in a small further decrease in bills relative to the substantial reduction we already proposed.

Figure 1: Sydney Water v IPART Draft Determination revenue for 2016–20 (\$million, 2015–16)



We strongly support reducing financial pressure on our customers. Sydney Water has assessed whether the proposed further reductions in the bill from the Draft Determination are in the long term interests of customers. To do this, we considered what the appropriate balance is between a larger reduction in bills, and our ability to deliver the required service levels in the future. Since our pricing proposal we have identified further efficiencies and issues with IPART's Draft Report. Based on these, to recover the efficient costs over four years it would be appropriate to reduce revenue from our Pricing Proposal by \$158 million or 1.6% (see Figure 1). Compared with our Pricing Proposal, this would in real terms equate to the average residential household customer experiencing a further \$25 water and wastewater annual bill reduction (see Figure 2).

Figure 2: Average residential bill reduction with annual water consumption of 220kL (\$2015-16)



We believe the resulting level of revenue of \$9.69 billion over four years (shown in Figure 1) and the average residential customer bill decrease of over \$100 (shown in Figure 2), will ensure we can maintain required service levels. This best promotes the long-term interests of our customers.

Sydney Water's view of the Draft Report

In tailoring our response, Sydney Water assessed IPART's reasoning and rationale against the following criteria. That is, whether the decision:

1. **promotes the generally agreed objectives of regulation** – which are economic efficiency (allocative, productive and dynamic efficiency), the commercial sustainability of prudent and efficient service provision, and protection of customers by preventing monopoly rents

2. **promotes the objectives in Section 15 of the IPART Act** – which are mostly consistent with the objectives of regulation outlined above, but also include, for example, that IPART must have regard to the actual costs of the supplier and the social impact of its decisions
3. **is consistent with best practice regulation** – the decision is transparent, accountable, proportionate, consistent and targeted.

We acknowledge that many important aspects of IPART's Draft Report and Draft Determination meet the criteria outlined above. In particular, its analysis of the:

- WACC
- pricing structures for water and wastewater
- long-run marginal cost (LRMC) of water
- the specific cost pass-through provisions proposed for Sydney Desalination Plant (SDP) and Shoalhaven transfers
- regulatory requirements on the allocation of corporate overhead costs
- regulatory treatment of asset disposals
- use of a range of techniques in considering the possibility of performance-based benchmarking in future.

We also recognise improvement in the incentive-based mechanism that IPART has put forward in relation to opex. This was an important part of Sydney Water's Pricing Proposal for IPART to modernise regulation. We believe IPART's position represents a significant improvement on the scheme put forward in the Issues Paper. In practice, distinguishing between one-off decreases and permanent decreases in cost in IPART's efficiency carryover mechanism (ECM) could be problematic. We would have preferred our proposed mechanism, as it provides for a slightly stronger efficiency incentive and a better opex-capex incentive on specific programs. However, we believe the ECM provides a good platform for further enhancement in future. If the ECM is not producing the intended outcomes at the next price review, or there is difficulty distinguishing the one-off and permanent changes in costs, then we recommend that IPART consider either implementing our model or moving to a total expenditure (TOTEX) approach to setting the revenue allowance.

To the extent we raise concerns in relation to the Draft Report, it is by exception and where we believe the Draft Determination does not meet one or more of the three objectives outlined above. Further, to distinguish between key concerns and secondary concerns, we have assessed the likely materiality of potential impacts on the long-term interests of customers.

Using the combined criteria our key concerns with the Draft Determination relate to:

- **Atkins-Cardno's efficiency review** and the acceptance of the recommended reductions in opex, capex and prudence
- **the regulatory treatment of finance leases**
- **non-residential price flexibility** negotiated via commercial agreements
- **the revenue adjustment mechanism for demand uncertainty and the cost recovery schemes for expenditure uncertainty**
- **the Rouse Hill land charge** and the proposal to share only 50% of land costs with the broader customer base.

Of concern, but where there is likely to be a lower materiality of impact, are the:

- **introduction of a low impact residential stormwater charge**
- **revised asymmetric demand elasticity estimate.**

Each of our concerns are discussed in greater detail below.

Atkins-Cardno efficiency review

Sydney Water consistently aims to improve our performance. Given the need to submit our proposal a year in advance of the Determination, our cost estimates were necessarily based on the best estimate of efficient costs as at February 2015. Since that time there have been further improvements in our business and we have managed to maintain some efficiency improvements that we were unsure were sustainable at the time of our proposal. We have identified further efficiencies that were not factored into our forecasts. On that basis we accept some of the recommended reductions in opex and capex identified by Atkins-Cardno. However, we disagree with the level and rationale for some of the reductions.

Atkins-Cardno recommended an \$80.7 million reduction in opex, \$419.8 million reduction in capex, and a \$24.8 million prudence adjustment for our customer management system. Based on our updates of the original forecasts conducted in February 2016 and our review of Atkins-Cardno's proposed reductions, Sydney Water believes more appropriate reductions are:

- a \$56 million reduction in opex
- a \$185.4 million reduction in capex
- no prudence adjustment.

In particular, we are concerned that some of Atkins-Cardno's proposed reductions to capex programs pose unnecessary risks to the ongoing delivery of services to our customers, community and the environment. This only provide a very small additional reduction in customers' bills to the substantial reduction originally proposed by Sydney Water.

Atkins-Cardno are experienced reviewers who have undertaken efficiency audits for regulated utilities in both the UK and Australia. However, they faced a daunting task in having to assess a business generating almost \$2.5 billion a year based on only four days of interviews and a review of over 700 documents over a two to three month period. Our understanding is that similar processes undertaken overseas are taken over a much longer timeframe. We have identified a number of flaws with Atkins-Cardno's analysis for justifying the recommended reductions. We believe these are in part linked to the difficulties of having to assess our business and specific programs within such a compressed timeframe.

Atkins-Cardno's Frontier Company method

In principle, we strongly support the use of performance-based benchmarking as being an important feature of a robust, best practice, incentive-based regulatory framework. Our Pricing Proposal and response to the Issues Paper reiterated this position, and IPART's desire to adopt such an approach in future price reviews is encouraging. IPART's discussion of alternative techniques and potential cross-checks in undertaking performance-based benchmarking aligns closely with an accepted best practice approach. We would like to work with IPART over the next regulatory period to develop a robust approach to performance-based benchmarking.

The benefit of performance-based benchmarking, and the introduction of the opex efficiency incentive scheme, is that it negates the need for a full efficiency audit review within a very compressed timeframe. Such reviews result in variations in recommended reductions between regulatory periods, which appear inconsistent and irreconcilable with changes in our performance. With the introduction of performance-based benchmarking and stronger incentive mechanisms, these audit processes can be more appropriately targeted so there can be a greater depth of analysis around particular programs.

Atkins-Cardno has defended the methodology employed in the current efficiency audit on the grounds of a UK Competition Tribunal decision. Sydney Water does not consider this represents a best practice approach to benchmarking. We acknowledge the reviewers have undertaken some benchmarking and provide tables on our relative performance with other businesses. Nevertheless, Sydney Water maintains the frontier company methodology that justifies 42% of the \$500 million reduction lacks robustness and transparency associated with similar regulatory proceedings.

The UK approach to benchmarking involves econometric models and other analytical approaches using data from a cross-section of businesses. All these are designed to ensure the appropriate cross-checks are conducted. However, Atkins-Cardno's frontier company methodology does not appear to incorporate what the UK Competition Tribunal and the Australian Competition Tribunal have indicated represents a valid approach. We have not had access to the models or data used to establish the frontier company. Therefore, we are unable to establish where Sydney Water lies relative to other businesses.

We have undertaken our own quantitative analysis by:

- examining our performance over the past four years
- applying the methodology endorsed by Ofwat to assess productivity
- assuming previous assessments of Sydney Water by Atkins-Cardno in 2011 are correct
- contrasting the recommended opex reductions for 2012–16 (ie \$36 million, \$2015–16) with the current recommended reductions for 2016–20.

Our total factor productivity analysis suggests over 2012–16 Sydney Water has improved its performance by around 5.4%. This is consistent with the reviewer's assessment that we have improved our performance over the past four years. However, the recommendation of a higher opex reduction in this review compared with the previous review indicates Sydney Water has moved further away from the frontier. Applying Ofwat's methodology we estimate that based on the recommended reductions in opex, relative to the frontier business, it is implied our productivity has

slowed down by 7.68%. For this to be correct, we estimate Atkins-Cardno's frontier business would have had to experience a total factor productivity improvement of 23% over an eight year period. In comparison, based on Australian Bureau of Statistics data:

- the electricity, gas, water and waste industries show the maximum multi-factor productivity for any eight year period since 2000 is around 11%
- the information, media and telecommunications sector, traditionally a sector with higher growth, shows growth of 17% over the past eight years.

Atkins-Cardno's assessment of Sydney Water's risk profile

Atkins-Cardno assessed that we are a low risk business with little appetite for change. This appeared to form the basis for a number of the reductions in expenditure. The main evidence relied upon was the existing 'headroom' in our licences. The assessment is cursory, unjustified and reflects a fundamental misunderstanding of the Operating Licence. In particular:

- licence performance is not an appropriate measure of risk appetite, especially when performance varies with weather
- the operating licence conditions and measures were established using a risk-based approach that provides for contingency, such as variations in weather. This is appropriate given the high penalties associated with breaches of the licence condition. Therefore 'headroom' in the licence condition at a point in time does not reflect a low risk appetite.
- the operating licence conditions are intended to be minimum levels of performance not average levels. It is therefore rational and efficient to target a level of performance above the minimum especially where:
 - the benefits to customers exceed the costs, and/or
 - it is consistent with cost minimisation. In some instances, for example water reticulation, moving towards minimum licence conditions can increase whole of lifecycle costs
- over the next four years we expect water continuity measures to move closer to the minimum service performance standards specified in our operating licence.

Other examples of our maturing approach to risk are:

- we have improved our risk-based planning across a number of programs, which has led to significant cost decreases in our expenditure forecast.
- on growth we have taken risk in the final year of the period, by being plan ready and prepared to wear financing losses associated with growth capex that occurs in that year
- with growth occurring and with environmental licence load limits likely to be reviewed in future, we question if it is sensible to presume our current licence headroom will persist in the longer term.
- we proposed a number of regulatory reforms in our Pricing Proposal, which if accepted would have changed the risk profile we faced.

Opex, capex, prudence

In addition to our concerns about Atkins-Cardno's frontier methodology, which was applied on both opex and capex, we believe there are issues with the proposed opex and capex reductions and the prudence assessment. In particular:

- Atkins-Cardno has justified challenging reductions to our opex as a surrogate for the absence of an incentive scheme, which ignores that IPART is introducing an efficiency carryover mechanism over the next period for opex.
- Atkins-Cardno reduced our proposed energy costs by \$20 million given the prices set in the Australian Energy Regulator's determination, which are now subject to uncertainty given the February 2016 Australian Competition Tribunal merits review decision.
- We are concerned with the \$195.7 million of capex reductions proposed on seven specific programs – wastewater treatment, avoid fail sewers, reticulation water mains renewal, North Head Biosolids, North West Growth Centre wastewater, North West Growth Centre water and metering. This is because:
 - the reductions increase our risk of not maintaining appropriate service levels, while providing less than a \$7 further reduction in the average residential customer water and wastewater bill.
 - some reductions are supported by weak evidence or appear arbitrary – for example, the \$101.5 million cut to capex for wastewater treatment plant renewals seems to be set to align with average annual levels in the current period. No account appears to have been made for the information provided on asset condition, the life of the asset, and the risk profile of the asset.
 - reductions in capex recommended have not properly accounted for the need for higher operating and maintenance expenses to maintain performance levels
 - some reductions recommend inefficient investment and result in poorer quality service – for growth expenditure, the reviewers have re-profiled it to be flat over the four year period. This does not enable efficient delivery for servicing growth in greenfield areas of Sydney. This requires lumpy investment, as assets must be in place to service the first customers, and investments are often non-linear to meet new customer connections. Further, for the water network, we believe the operating licence standard has been incorrectly presumed to be a minimum efficient cost standard. The proposed capex reductions although potentially moving us closer to the minimum requirement level, actually increases our total life-cycle cost.
- We believe there has been double-counting of catch-up delivery efficiencies. We estimate that \$39 million of the \$80.5 million of delivery efficiencies applied were already factored into our programs in our forecasts. This evidence was provided to the reviewers, along with an acknowledgement that delivery efficiencies were not applied across all programs. Atkins-Cardno chose to apply delivery efficiencies across all programs. We believe it should only apply to those programs where we did not apply our own efficiencies.
- The \$24.8 million prudence adjustment for the Customer Management System is inappropriate and no reduction should be made. The reviewers have assumed an incorrect expected life for the system, which goes against the depreciation profile for corporate assets. It also fails to include the commercial benefit from decommissioning and avoiding the costly reintegration of this system.

Implication of Atkins-Cardno's capex reduction

IPART has accepted the Atkins Cardno recommended reduction in the Draft Report, but has not subsequently adjusted for the level of tax depreciation. Given a lower capex than the Pricing Proposal, the tax depreciation figure should have been adjusted downwards to reflect lower depreciation, which should result in a higher tax building block. We expect that in the Final Determination IPART will revise the tax building block in line with its final decision on the appropriate capex allowance.

Regulatory treatment of finance leases

Sydney Water has significant concerns about IPART's regulatory treatment of finance leases and its rationale surrounding the treatment of the Blue Mountains Tunnel sewage transfer agreement (BMT), and our three Water Filtration Agreements (WFAs) for our water filtration plants at Prospect, Woronora, Illawarra and Macarthur.

Based on our analysis, which updates for the 4.8% real post-tax WACC estimate (a nominal pre-tax equivalent WACC of 8.46%) and corrects for a discounting anomaly in our Pricing Proposal, we estimate that IPART's treatment results in an effective optimisation of our capital asset base or capex disallowance of \$82 million. We do not believe there is adequate rationale for the approach. It is not in the long-term interests of our customers, and is inconsistent with good regulatory practice. A generally accepted principle of best practice regulation is that a regulated business should have a reasonable expectation that it will be able to recover efficient costs. We consider that IPART's approach does meet this standard and distorts incentives for any future efficient agreements.

There are two elements to IPART's regulatory treatment:

1. The conversion of a stream of payments treated as opex to a capital sum included in the Regulatory Asset Base (RAB) upon which Sydney Water then receives a return of and on capital. (BMT only has this component).
2. Assessment of the re-allocation and reduction of risks associated with any renegotiation of contracts. (The feature of the WFAs).

The key point of difference between IPART's proposed approach and our approach is the discount rate used for deriving the capital sum to be added to the RAB. In both our Pricing Proposal and response to the Issues Paper we stated future finance lease payments should be discounted by the equivalent regulatory nominal pre-tax WACC. This is internally consistent with IPART using the WACC as the basis for an appropriate rate of return on regulated assets. Our approach also ensures financial neutrality from the regulatory treatment of any finance lease and no distortion in financing decisions.

In contrast, IPART's approach:

- uses the implied interest rate in the lease to calculate the capital value. It states that it considers this will generate a more accurate asset value, but does not explain why this is so
- acknowledges that the interest rate may include other risks, but includes an allowance only for asset condition and performance risk. It does not explain why an allowance should be provided for only this risk and why the allowance should be set at only 50%.

IPART's regulatory treatment:

- a. **inefficiently distorts financing decisions.** IPART's use of the implied rate to discount agreements without appropriate recognition for the transfer of risks, discourages regulated businesses from pursuing re-financing and public-private partnership agreements that are in the long-term interests of customers and businesses in a low interest rate environment.

That is, by adopting its principle, IPART has created a disincentive for a regulated business to re-finance or swap from operating leases to finance leases when the implied

interest rate is higher than the WACC. Conversely, regulated businesses will have an incentive to swap out of operating leases into finance leases when the WACC is above the implied interest rate. This is the opposite of efficient financing strategies and is not in the long term interest of customers. If Sydney Water were to follow these incentives, the net cost of financing our activities will increase. BMT highlights the perverse outcome from IPART's treatment.

For BMT, Sydney Water is effectively being punished for entering into an historical agreement that was competitively tendered for, but entered into during the 1990s in a period of higher interest rates. Despite no change to the long-term agreement and our ongoing payment streams, simply because of IPART's regulatory treatment, Sydney Water estimates it is now under-compensated in nominal terms for the same cash lease payments by \$22.3 million over the next four year regulatory period.

Further, we believe IPART's treatment of this transaction where we swap opex for a capex payment is different from other transactions that trade-off up-front and ongoing costs. When Sydney Water makes a decision to swap capex for opex in other areas (for example, investment in new equipment to reduce staff time) the relevant discount rate is our WACC. But for the finance lease, IPART has effectively proposed a different discount rate. It is not clear why (and in our view not correct that) the discount rate for the two transactions should be different.

- b. **provides no clarity in the treatment of other risks.** A key element of the WFA renegotiation was to reduce residual risks for Sydney Water. We proposed an approach that enables us to share benefits of the risk reduction with customers, but ensured that Sydney Water would not be financially worse off.

IPART's treatment in contrast does not provide this assurance. There is some allowance for reducing certain risks only and the underlying principles are not clear. This creates significant risks for Sydney Water and discourages Sydney Water from entering into refinancing and renegotiating contracts that would otherwise be in the interest of both Sydney Water and our customers.

IPART should correct the above issues. Its regulatory treatment of finance leases gives companies stronger incentives to invest in capex. This is a way of reducing the risk of an adverse regulatory outcome for the firm, even though a lower whole-of-life cost approach using finance leases arrangements would have been in the customer's interests.

Pricing flexibility for non-residential customers

Sydney Water appreciates IPART's constructive approach in considering our proposal for a Weighted Average Price Cap (WAPC) and its openness to allowing some form of pricing flexibility for large non-residential customers. We acknowledge it would have been preferable if our more detailed WAPC proposal for large non-residential customers, provided to IPART in January 2016, was made earlier in the price review process. This gave IPART limited time to assess our proposal. Our proposal outlined the possibility, subject to customer consultation and feedback, of having flexible pricing for four customer groups totalling around 370 customers with revenue of around \$70 million a year.

We do not support the model IPART has provided in the Draft Determination. Allowing Sydney Water and large non-residential customers to 'opt-out' of IPART's determined water and wastewater prices, by voluntarily entering into unregulated price agreements, inadvertently results in a loss of existing safeguards under the current regulatory framework. It leaves an efficient business at risk of not being able to recover its long-term costs. In addition, IPART's regime applies across our entire base of large non-residential customers.

Our proposal was to facilitate a number of pricing flexibility pilot or trial programs with specific customer groups over the next regulatory period. This approach allows us to better control the required customer engagement and reflects an appropriate level of risk for our business and our customers to bear while pricing flexibility is in its early stages.

Sydney Water is also concerned about other aspects of IPART's Draft Determination on pricing flexibility, particularly:

- the limited incentive for parties to enter into unregulated price agreements will be limited if there is no guarantee that agreements can span more than one regulatory period
- practical issues, administrative complexity, and the additional cost burden from having to meet IPART's requirement to ring-fence any changes in cost arising from entering into an unregulated price agreement.

Sydney Water prefers adopting our proposed WAPC, as we believe our proposal is a more measured, appropriate way of introducing pricing flexibility. It also provides sufficient safeguards to address the concerns IPART has subsequently identified in its Draft Report. However, we believe it would now be preferable to retain the existing regulatory arrangements rather than implement the opt-out model in the Draft Determination.

In the interim, over 2016–20, we propose to consult further with customers to identify opportunities that exist where price flexibility could apply. We would use this as a basis to engage with IPART and investigate how pricing flexibility could be implemented in future determinations.

Measures to address demand and expenditure uncertainty

There is always a risk that actual demand and actual expenditure within the regulatory period will deviate from the forecasts used to set prices. To address this risk regulators use a number of tools to ensure that a regulated business has an appropriate exposure to these uncertainties. IPART in the Price Determination for 2012–16 has mechanisms to address demand uncertainty, the pass through of costs associated with the Sydney Desalination Plant, and recovery of expected costs of transfers from the Shoalhaven.

Sydney Water does not support IPART's draft decision to move away from a defined materiality threshold and adjust prices and revenues at the 2020 determination for deviations from forecast levels of demand. We are concerned that the ability to exercise absolute regulatory discretion may affect our ability to maintain profitability and dividends and it is not in the long-term interests of our customers.

Our first ever credit grade rating upgrade was largely due to the increased predictability and improved transparency that IPART introduced in its regulatory framework. Over the next regulatory period we expect to remain investment grade, but note we are currently on a negative outlook. We are concerned that the combined effect of the Draft Determination on prices (which puts us in a slightly worse financial position compared with our Pricing Proposal) and the scope for an

undefined post-event adjustment at the next price determination in the absence of any thresholds could adversely affect any future credit rating assessment.

Sydney Water has consistently maintained that it is appropriate for us to bear and manage the revenue risk associated with temporary or normal deviations from average weather conditions and demand. If an adjustment mechanism applies, it should only apply to mitigate the revenue risk from extreme or abnormal weather conditions and demand.

In our response to the Issues Paper we noted the current $\pm 10\%$ threshold over the whole determination period should be reconsidered as it is unlikely to ever be triggered in practice over the next regulatory period even in extreme weather events. Based on the current high dam levels, we noted a threshold of $\pm 5\%$ over the whole price determination would only be triggered if high level water restrictions are imposed in the next two or three years. Further, demand variations of minus 5% would weaken our Funds from Operations (FFO)/Debt measure below investment grade credit bounds.

To ensure transparency and consistency in regulatory decision making it is important that IPART specify a symmetric threshold in advance before any adjustment is made to revenue and prices. If IPART does not consider a $\pm 5\%$ threshold to be appropriate, then we would still prefer the $\pm 10\%$ threshold to apply as opposed to an outcome where there is no threshold. A threshold gives greater certainty to us, our customers and our shareholder. We also believe a threshold would be of value even if IPART were simply to use it as a mechanism for considering whether an adjustment should be made, rather than automatically guaranteeing an adjustment.

IPART's draft decision is broadly to maintain the existing cost pass through arrangements, with some minor changes to how the costs are recovered. The coverage of these mechanisms is narrower than our proposed cost recovery schemes. We consider our proposed schemes are consistent with regulatory best practice and have been adopted in other industries and jurisdictions. Under the Draft Determination IPART requires us to bear expenditure uncertainty, but proposes to address demand uncertainty by amending future revenue and prices if actual demand is different to forecast. We do not consider that IPART has demonstrated that this approach is appropriate given the way we operate our business, the nature and significance of these uncertainties and our capacity to bear and manage them.

Rouse Hill land charge

The Pricing Proposal and response to the Issues Paper highlighted that the Rouse Hill stormwater solution was the lowest cost solution for nutrient management for the Rouse Hill Sewage Treatment Plant. The planning requirements for this plant obliged Sydney Water to reduce nutrients to the Hawkesbury-Nepean River, via an integrated management approach. While stormwater costs are higher in Rouse Hill than in other declared stormwater drainage areas as a result of using integrated water management, it has avoided the need to employ a substantially higher cost reverse osmosis servicing solution.

It is encouraging that IPART has apportioned some of the total stormwater capital costs to the broader customer base, in setting the Rouse Hill land charge. This recognises that the civil works and land acquisition actually perform dual stormwater and wastewater functions.

Sydney Water however does not agree that the 50:50 cost recovery split adopted by IPART between Rouse Hill residents and the wider customer base is appropriate. As noted in our Pricing

Proposal, our response to the Issues Paper, and at the Public Forum, we maintain that reducing nutrient discharges to the Hawkesbury-Nepean River was the primary driver for the original purchase of land and civil works required to manage stormwater. Given this, we believe it is reasonable that a larger proportion of stormwater capital costs are recovered through the wastewater regulatory asset base (RAB).

Sydney Water believes that 70% of costs should be recovered from the general wastewater customers and 30% apportioned to new properties in Rouse Hill. Even with a 70% apportionment, the costs to the broader wastewater customer base are still well below those that would have been incurred if we had instead adopted a reverse osmosis solution at the time to meet the planning requirements. Based on Sydney Water's estimates, the benefit from adopting integrated water management rather than the alternative reverse osmosis solution, was a net present value reduction of costs of \$121 million (\$2015–16).

We also note that this proposed apportionment would avoid a \$184 annual bill increase in the land charge for a small number of customers over a five year period. We estimate that the land charge would apply to around 4,000–6,000 properties over the next price period. The charge in the Draft Determination is above the previous Government-approved charge for Rouse Hill of \$249.85.

Residential low impact stormwater drainage charge

Our preference would be to use the existing regulatory framework to seek Treasurer approval on a case-by-case basis to apply a lower price for properties that invest in significant on-site detention facilities. This seems a preferable approach, considering the very small number of residential properties that we estimate will be eligible for this type of discount. Consideration of a new customer category could then be deferred to a future broader review of stormwater charges.

In principle, there is merit in the proposition that customers who reduce costs to Sydney Water should be able to receive a lower charge. However, this is premised on stormwater costs continuing to be recovered through an impactor pays framework. Given Sydney Water stormwater infrastructure also provides benefits to the wider community, not just those who currently fund the infrastructure, we believe IPART should explore the potential for a beneficiary pays model.

Our concern with introducing this new customer category and associated charge is that, given the likely small number of customers eligible, there is potentially a high administrative cost associated with its establishment, but only a very small benefit to customers. To ensure the introduction of such a new regulation will be in the long-term interests of customers, IPART should demonstrate that it is appropriate based on a robust cost-benefit analysis.

If IPART does not consider that the existing framework can be used to deal with this issue, and are satisfied that introducing a new customer category is justified, then we request a period of twelve months to develop the residential low impact assessment scheme and implement the proposed charge.

Asymmetric demand response

When deriving the demand forecasts for our Pricing Proposal, Sydney Water assumed an asymmetric demand response from the proposed decrease in the water usage price. Based on consideration of the findings of 11 independent studies canvassing seven industries, although none

relating to water, we estimated a 0.5 demand response. This estimate was close to the average outcome. IPART whilst accepting the asymmetric response has assumed instead a 0.75 asymmetry resulting in an increase of around 12 GL in our forecast demand. IPART has justified its position on the basis that 0.75 is within one standard deviation of the mean and given a large range in the evidence expressed a low level of possible statistical confidence in our estimated 0.5 response.

We maintain that given the evidence considered by IPART it is unreasonable to adopt a 0.75 figure compared with our proposed figure of 0.5. The reasons provided by IPART for choosing 0.75 are neither statistically valid, nor represent a robust method of analysis. Based on the range of values considered, the 0.75 figure falls outside the 95% confidence interval around the mean of 0.551. This implies it is a statistically insignificant and biased estimate. Further, based on the rationale provided, we note it is equally valid for IPART to have adopted a 0.25 value. Our additional analysis demonstrates the 0.5 figure, if anything, represents a conservative upper-bound estimate of the reasonable range of estimated values.

Sydney Water also notes that our proposed opex was set based on a 0.5 estimate of demand. Should IPART choose to adopt a higher value, it needs to account for increased opex associated with higher demand. This adjustment has not been made in this instance.

Conclusion

Sydney Water once again thanks IPART for conducting a robust pricing review process, which has allowed for constructive engagement and consideration of crucial issues for the ongoing efficient functioning of the NSW urban water market over the course of the next four years. We would welcome any further engagement that is required to clarify any issues we have raised in our response to the Draft Report.

1 Introduction

We welcome the opportunity to respond to the *Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 – Draft Report* (the Draft Report) issued by the Independent Pricing and Regulatory Tribunal (IPART) on 22 March along with the *Draft Determination*. The Draft Report is the result of work done since we lodged our Pricing Proposal titled *Our Plan for the future: Sydney Water's prices for 2016–20* (Pricing Proposal) on 30 June 2015.

Sydney Water appreciates the extensive work that has gone into preparing the Draft Report and the time and effort IPART has taken to consider our initial proposal, assessing the subsequent submissions made, and in seeking additional information. By carefully articulating reasons for key decisions in its Draft Report, it gives us the opportunity to develop a more targeted, better quality submission in response.

In our Pricing Proposal we strongly supported reducing financial pressure on our customers, and we proposed a substantial bill reduction for customers. IPART's Draft Determination decreases our allowed revenues and will result in further bill reductions to customers. Sydney Water has looked to assess whether these reductions are in the long term interests of customers. To do this we have considered what the appropriate balance is between further reductions in bills, and our ability to deliver the required service levels to our customers, the community and environment in future.

Based on further costs efficiencies we have realised since the commencement of our pricing review, and a number of issues we have identified with IPART's Draft Report, Sydney Water believes that to recover our efficient costs over four years, it would be appropriate to reduce revenue from our Pricing Proposal by around 1.5%. In real terms this equate to the average residential household customer experiencing a further \$25 water and wastewater bill reduction (\$2015–16) on the substantial bill reduction already proposed in our Pricing Proposal.

To the extent we have identified issues with the Draft Determination, it is where we believe it does not meet one or more of the following criteria:

1. It promotes the generally agreed objectives of regulation – which are economic efficiency (allocative, productive and dynamic efficiency), the commercial sustainability of prudent and efficient service provision, and protection of customers by preventing monopoly rents.
2. It promotes the objectives in Section 15 of the IPART Act – which are mostly consistent with the objectives of regulation outlined above, but also include, for example, that IPART must have regard to the actual costs of the supplier and the social impact of its decisions.
3. It is consistent with best practice regulation – the decision is transparent, accountable, proportionate, consistent and targeted.

Sydney Water acknowledges that many important aspects of IPART's Draft Report and Draft Determination appear to meet this criteria, so to the extent we raise concerns in relation to the Draft Report in this submission, it is more by exception. Our submission highlights our assessment of the Draft Report and Determination using the following structure:

- Chapter 2 summarises our response to each draft decision and draft recommendation as outlined in IPART's Draft Report

- Chapter 3 contrasts Sydney Water's versus IPART's Draft Determination revenue and customer bill outcomes, and updated outcomes that we believe balance further bill reductions, with our ability to deliver the required service levels to our customers, the community and environment in future
- Chapter 4 provides our assessment of IPART's draft decisions in relation to our water demand and chargeable wastewater forecasts and the revenue adjustment mechanism where actual demand deviates from forecast over the regulatory period
- Chapter 5 summarises our response to water, wastewater, stormwater, trade waste prices, Rouse Hill charges, recycled water prices and pensioner rebates
- Chapter 6 highlights our concerns with the recommended reduction of IPART's efficiency reviews Atkins-Cardno and proposes what we consider is a more appropriate opex and capex reduction
- Chapter 7 outlines significant concerns Sydney Water has in relation to IPART's draft decision on its regulatory treatment of finance leases
- Chapter 8 examines the weighted average cost of capital (WACC) and assess Sydney Water's financial position over the next regulatory period based on the outcomes of the Draft Determination
- Chapter 9 assesses proposed changes to the regulatory framework related to price flexibility, incentive schemes, cost recovery schemes and performance benchmarking.
- Chapter 10 includes the appendices, comprised of
 - implementation issues and corrections with the Draft Determination and Draft Report
 - modelling issues
 - further comments on the frontier company methodology and Sydney Water's total factor productivity
 - the regulatory treatment of finance leases
 - nominal bill impact from the Draft Determination and Sydney Water's proposal.

2 Response to draft findings

We have outlined below Sydney Water's general position on each of IPART's draft decisions and recommendations. Further detail on our position and reasoning is provided throughout the following chapters.

Throughout this table and document, we have used the following terms to mean:

- **Supports:** Sydney Water agrees with IPART's draft decision or proposal as it is in-line with our proposal or represents best practice regulation.
- **Does not support:** Sydney Water has strong reservations with IPART's draft decision or proposal.
- **Accepts:** Sydney Water is not challenging or contesting IPART's draft decision or proposal. Includes issues that we are neutral towards or that are more appropriately considered in future price reviews.

Form of regulation

1. IPART has decided to:
 - allow Sydney Water and large non-residential customers to opt-out of IPART's determined water and wastewater prices by voluntarily entering into unregulated pricing agreements, and
 - define large non-residential customers as stand-alone non-residential customers that have annualised water consumption greater than 7.3 ML.

Does not support. See Chapter 9.

2. IPART has decided to establish an efficiency carryover mechanism for Sydney Water. This mechanism:
 - applies to controllable operating expenditure from 2015-16 to 2018-19
 - ensures the business is able to retain permanent cost reductions for four years before they are passed on to customers through lower prices, and
 - allows the business to retain temporary over and under spends.

Supports in-principle, but would prefer implementation of our proposed scheme. See Chapter 9.

3. IPART has decided to maintain its current approach to cost pass-throughs which:
 - will continue to be considered on a case by case basis at each price review, and
 - requires cost pass-throughs to comply with the criteria outlined in Box 2.3 (page 43) of IPART's Draft Report. Including having a clear trigger event and resulting efficient costs (or means of calculating the resulting efficient costs) specified in the price determination.

Accepts. See Chapter 9.

4. IPART has decided to work with regulated businesses in NSW and regulators in other jurisdictions to develop a performance benchmarking capability to inform future price reviews.

Supports. See Chapter 9.

Length of determination

5. IPART has decided to adopt a 4-year determination period from 1 July 2016 to 30 June 2020.

Supports. See Chapter 3.

Sydney Water's revenue requirement

6. IPART has decided to:
- set Sydney Water's notional revenue requirement and target revenue as shown in Table 3.1 of IPART's Draft Report, and
 - set the components of the target revenue as shown in Table 3.6 of IPART's Draft Report.

Does not support. See Chapter 3.

Operating costs

7. IPART has decided to set the efficient level of Sydney Water's operating expenditure as shown in Table 4.1 of IPART's Draft Report.

Does not support. See Chapter 6.

Bulk water pass-throughs

8. IPART has decided to:
- continue to enable Sydney Water to pass through into water service charges (after a 1-year lag) the difference between its actual and forecast SDP-related bulk water costs over the 2016 determination period
 - apply the current cost pass-through mechanism in the first year of the 2016 Determination and pass through into 2016-17 water service charges the actual 2015-16 SDP costs incurred by Sydney Water above those included in 2015-16 prices, and
 - introduce a pass through of the annual actual Shoalhaven transfer costs that Sydney Water incurs into the water service charges at a one year lag.

Supports. See Chapter 5.

Capital expenditure

9. IPART has decided to set the prudent and efficient level of Sydney Water's capital expenditure to be included in the RAB as shown in Table 5.1 and Table 5.2 of IPART's Draft Report.

Does not support. See Chapter 6.

Regulatory asset base

10. IPART has decided to:
- set the opening RAB at 1 July 2016 by rolling the RAB forward from 2011-12 to 2015-16 as shown in Table 6.1 of IPART's Draft Report
 - adopt the value of the RAB in each year of the 2016 Determination as shown in Table 6.2 of IPART's Draft Report.

Does not support. See Chapter 3.

Asset disposals

11. IPART has decided to:

- deduct the regulatory value of actual and forecast asset disposals from the RAB, where the regulatory value is determined as:
 - a. for significant sales of assets purchased before the RAB line-in-the sand: Asset sales revenue x RAB/DRC at the time the RAB was established
 - b. for significant sales of assets purchased post RAB line-in-the-sand: purchase price + capital expenditure – depreciation + indexation
 - c. for significant asset write-offs: Determined on a case-by-case basis
 - d. for non-significant write-offs: Zero unless determined by exception on a case-by-case basis
 - e. for non-significant asset sales: Receipts from asset sales
- not to deduct the sale of the Central Workshops land parcel from Sydney Water's RAB.

Accepts point a. Supports points b to e. See Chapter 3.

Finance leases

12. IPART has decided to value Sydney Water's finance leased assets by:

- discounting all future principal and interest payments associated with each lease over the life of the lease agreement
- using the implied interest rate in each lease agreement as the discount rate
- adding \$558.9 million to the RAB as the value of Sydney Water's assets subject to finance leases (instead of passing through finance lease payments as operating expenditure), and
- adding a further \$18.7 million to the RAB as the capitalised value of Sydney Water's risk premium.

Does not support. See Chapter 3 and Chapter 7.

WACC

13. IPART has decided to:

- apply a real post-tax WACC of 4.8% for the purposes of calculating an appropriate rate of return on Sydney Water's assets, and
- set an allowance for return on capital as shown in Table 6.5 of IPART's Draft Report.

Accepts methodology (we note it will be updated for Final Determination). See Chapter 8.

Regulatory depreciation

14. IPART has decided to adopt:

- a straight-line depreciation method for the 2016 determination period
- new and existing asset lives as set out in Table 6.6 of IPART's Draft Report, and
- asset lives for assets subject to finance leases as set out in Table 6.7 of IPART's Draft Report.

Mixed. Accepts generally, does not support asset lives for finance leases. See Chapter 3 and Chapter 7.

Tax allowance

15. IPART has decided to:

- make no adjustment to the regulatory tax allowance for capital gains tax on land sales
- make no adjustment to the regulatory tax allowance for revenue from grants and cash capital contributions
- adopt Sydney Water's forecasts for assets free of charge, and
- adopt the regulatory tax allowance shown in Table 6.9 of IPART's Draft Report.

Mixed. Accepts generally, recommend some adjustments. See Chapter 3.

Water sales and customer numbers

16. IPART has decided to:

- adopt Sydney Water's revised estimate of -0.264 for the price elasticity of demand for non-residential customers, for the purpose of forecasting water sales
- use a 25% reduction in both residential and non-residential elasticity estimates in forecasting water sales, to account for the perceived asymmetry in demand responses to price increases and price decreases, and
- adopt the residential and non-residential water demand forecasts, in Table 7.3 of IPART's Draft Report, for the purpose of setting Sydney Water's draft maximum water prices.

Mixed. Supports, except for elasticity estimates, which affects forecasts. See Chapter 4.

17. IPART has decided to adopt for the purpose of setting Sydney Water's draft maximum prices:

- the forecast residential customer numbers in Table 7.4 of IPART's Draft Report, and
- the forecast non-residential customer numbers in Table 7.5 of IPART's Draft Report.

Supports. See Chapter 4.

18. IPART has decided to adopt the forecasts for wastewater chargeable volumes as shown in Table 7.6 of IPART's Draft Report.

Supports. See Chapter 4.

Demand volatility mechanism

19. IPART has decided to consider at the next determination of Sydney Water's prices:

- an adjustment to the revenue requirement and prices to address any over or under-recovery of revenue over the 2016 determination period due to material differences between the level of water sales over the period and the forecast water sales used in making this determination:
 - a. unlike previous determinations, IPART has not specified a 'deadband' of water sales variability within which such an adjustment would not be considered
 - b. at the 2020 Determination, IPART will consider whether and how best to make a revenue adjustment based on the circumstances at the time.

Does not support. See Chapter 4.

Water usage charges

20. IPART has decided to:

- set Sydney Water's maximum water usage charge at \$1.97 per kL in real terms over the 2016 determination period
- pass through the per kL cost of desalinated water into Sydney Water's water usage charges if the Sydney Desalination Plant (SDP) is operating and supplying water to Sydney Water:
 - a. the water usage charge is increased by \$0.12 per kL in real terms over the 2016 determination period if SDP is operating
 - b. this uplift to the water usage charge is triggered if SDP is required to operate the plant under the conditions of its licence or operational approval (as in force at the relevant time) granted under the *Water Industry Competition Act 2006*.

Supports. See Chapter 5.

Wastewater usage charges

21. IPART has decided to:

- set a maximum non-residential wastewater usage charge of \$1.10 per kL in real terms over the 2016 determination period
- reduce the non-residential discharge allowance from 300 kL to 150 kL per year, with a 50 kL per year transition from 2016-17 onwards, and
- not introduce an explicit residential wastewater usage charge.

Supports price and not introducing explicit residential usage charge. Accepts transition. See Chapter 5.

Water and wastewater service charges

22. IPART has decided to:

- set water and wastewater service charges for residential and non-residential customers on a 20mm meter equivalent basis, where residential dwellings are deemed to each be one 20mm meter equivalent customer
- separate the implicit connection and usage components of the wastewater service charge, and
- apply a 75% discharge factor to the connection portion of the residential wastewater service charge.

Supports rebasing. Accepts deemed residential discharge factor. See Chapter 5.

23. IPART has decided to

- set the maximum water service charges as shown in Table 8.4 of IPART's Draft Report, and
- set the maximum wastewater service charges as shown in Table 8.5 of IPART's Draft Report.

Accepts. See Chapter 5.

Joint service arrangements

24. IPART has decided to:

- maintain the current charging regime for non-residential multi-premise joint service customers, and
- specify in the 2016 Determination that all instances of joint services should be considered a form of multi-premise customer.

Accepts maintaining current charging regime, but needs clarification. See Chapter 5.

Dual occupancies

25. IPART has decided to charge dual occupancies based on the number of meters connected to Sydney Water's network.

Accepts. See Chapter 5.

Stormwater drainage charges

26. IPART has decided to:

- set stormwater drainage charges on a constrained area basis, as outlined in Table 8.6 of IPART's Draft Report
- introduce a low-impact customer category for residential customers equal to the charge for apartments, and
- set the maximum stormwater drainage charges outlined in Table 8.7 of IPART's Draft Report.

Accepts stormwater drainage charges. Does not support residential low-impact category. See Chapter 5.

Trade waste charges

27. IPART has decided to:

- set the maximum trade waste prices as listed in Appendix K of IPART's Draft Report, which include an allowance for corporate overheads
- amend the trade waste pricing principles to clarify that charges should recover efficient costs, including corporate overheads
- deduct the trade waste revenue, as set out in Table 9.1 of IPART's Draft Report, from the notional revenue requirement
- change the trade waste price structure as proposed by Sydney Water as follows:
 - a. reclassify shopping centres with centralised onsite pre-treatment as industrial customers (under Risk Index 6), and
 - b. include "pre-treatment not maintained in accordance with requirements" as an explicit commercial activity code.

Supports. See Chapter 3 and Chapter 5.

Miscellaneous and ancillary charges

28. IPART has decided to:

- set the maximum prices for miscellaneous and ancillary services to apply from 1 July 2016 as set out in Appendix L of IPART's Draft Report
- not regulate the credit card payment fee
- not set maximum prices for hot water metering services at this stage, and

-
- deduct the revenue from miscellaneous and ancillary services from the notional revenue requirement as set out in Table 9.3 of IPART's Draft Report.

Supports prices, see Chapter 5. Does not support revenue allowance, see Chapter 3.

Rouse Hill charges

29. IPART has decided to:

- set the Rouse Hill land charge at \$432.89 per year in real terms
 - a. apply the land charge, for a period of five years, to new properties that connect (or have connected) to Sydney Water's water system between 1 July 2012 and 30 June 2026
 - b. set the land charge to recover 50% of Sydney Water's efficient capital costs in Rouse Hill over 2012-13 to 2025-26, with the remaining 50% to be recovered through the wastewater RAB
- maintain the Rouse Hill stormwater drainage charge at:
 - a. \$139.65 per year in real terms for residential properties and non-residential properties less than or equal to 1000m²
 - b. \$139.65 per year x land area in m²/1000 in real terms for non-residential properties greater than 1000m²
- include the Rouse Hill Area map in the 2016 Determination.

Mixed. Supports new approach to setting Rouse Hill land charge, but does not support cost recovery percentage split. Supports Rouse Hill stormwater drainage charge. Map requires clarification. See Chapter 5.

Unfiltered and unmetered water charges

30. IPART has decided to set the maximum unfiltered usage charge at the potable water usage charge less \$0.30 per kL.

Supports. See Chapter 5.

31. IPART has decided to maintain the current approach to charging unmetered properties, which includes:

- a water service charge equal to the residential service charge, and
- 180 kL of deemed water usage per year (ie, 180 kL x the water usage price).

Supports. See Chapter 5.

Minor service extensions

32. IPART has decided to maintain the existing methodology for setting minor service extension charges, with the exception of:

- updating the discount rate to be based on Sydney Water's pre-tax weighted average cost of capital.

Supports. See Chapter 5.

Recycled water charges

33. IPART has decided to:

- defer regulation of recycled water prices for all schemes apart from Rouse Hill until we have completed a broader review of our approach to regulating recycled water prices
- set a maximum usage charge of \$1.77 per kL in real terms over the 2016 determination period for recycled water supplied as part of the Rouse Hill recycled water scheme, and

-
- reallocate a proportional share of Sydney Water's corporate costs from its water and wastewater business to its recycled water business.

Supports Rouse Hill prices and broader review. Need to further consider future approach. Accepts reallocation. See Chapter 5.

Rosehill (Camellia) recycled water scheme – draft recommendation

34. IPART recommend that, in light of the changes since the scheme was established, the ongoing economic case for the Rosehill (Camellia) recycled water scheme be reassessed.

This is a matter for Government. See Chapter 5.

Late payment and dishonoured or declined payment fees – draft recommendation

35. In accordance with its Terms of Reference, IPART:
- recommends the maximum price for the existing dishonoured or declined payment fee as set out in Table 9.4 of IPART's Draft Report, and
 - specifies a late payment fee, as set out in Table 9.4 of IPART's Draft Report, and the terms and conditions in charging that fee as set out in Appendix M of IPART's Draft Report.

Supports in principle. Requests minor amendments to terms and conditions. See Chapter 5.

3 Revenue requirement, prices and bills

Key messages

- Our June 2015 Pricing Proposal proposed a target revenue of \$9,703 million over four years based on a post-tax real weighted average cost of capital (WACC) of 4.6%.
- Adopting the updated WACC figure of 4.8% used in IPART's Draft Determination, the equivalent target revenue requirement in our Pricing Proposal would be \$9,848 million. This implies IPART's Draft Determination target revenue of \$9,569 million is effectively \$279 million (2.9%) below our Pricing Proposal. The lower target revenue results in a further decrease in bills relative to the substantial reductions already proposed.
- Accounting for further efficiencies identified over the past year, our concerns with IPART's draft decisions, and using a 4.8% WACC, we consider a target revenue of \$9,690 million is appropriate. This is:
 - \$158 million or 1.6% below the target revenue from our Pricing Proposal
 - \$121 million above IPART's Draft Determination.
- Sydney Water proposes recovery of revenue compared to IPART's Draft Determination from the following four major adjustments:
 - A higher operating expenditure allowance, with our proposed \$56.7 million reduction compared to our Pricing Proposal (instead of IPART's \$80.7 million reduction in its Draft Determination)
 - A higher capital expenditure allowance, with our proposed \$185.3 million reduction (instead of \$419.8 million) plus the appropriate tax depreciation adjustment, and rejection of the prudency review for stranded assets
 - A higher regulatory asset base (RAB) value of \$660 million (instead of \$578 million) for finance leases
 - A 70% allocation, rather than a 50% allocation, of the efficient forecast capital costs of Rouse Hill land costs to Sydney Water's wastewater RAB.
- We agree with IPART's draft decisions on asset disposals. While we accept the current approach, we remain concerned that on land sales customers will be substantially overcompensated from the asset sale. This has the potential to weaken incentives for efficient asset disposal.
- Based on our lower target revenue compared with our Pricing Proposal, the average residential household customer would receive a further \$25 reduction in its water and wastewater bill. This outcome is in the long term interests of customers and represents the appropriate balance between a further reduction in bills, and our ability to continue to

deliver the required service levels to our customers, the community and environment in the future.

This chapter sets out Sydney Water's revised proposed revenue requirement. It compares IPART's draft decisions on the building blocks and RAB adjustments that make up the revenue requirement with our revised proposals. Further details on our proposed individual adjustments are given in chapters 4, 5, 6 and 7.

We note that IPART has:

- accepted our proposal for a 4-year determination period
- used a price path over the four years that is consistent with Sydney Water's target revenue and proposed price path (except for stormwater drainage prices), which takes into consideration the impact on Sydney Water and our customers
- accepted our proposed useful lives for assets (except for assets subject to finance leases)
- accepted our concerns regarding the treatment of asset write-offs, and adopted a default position that no deduction off the RAB is required for non-significant asset write-offs
- recognised the tax burden on Sydney Water for cash contributions and grants, by allowing net of tax values (instead of gross values) be deducted from the RAB
- allowed a higher tax recovery by accepting our higher forecast of assets free of charge.

This Chapter addresses revenue requirement issues only. Our response on each of the pricing and demand issues covered by the Draft Determination is discussed in Chapters 4 and 5.

3.1 Notional Revenue requirement

Notional revenue requirement represents the total efficient costs in each year of the determination, allowed by IPART for Sydney Water to manage its regulated services. This is calculated using a 'building block' method based on Sydney Water's yearly costs over the determination period.

Our revised proposed notional revenue requirement of \$9,690 million is \$121 million, or 1.2 per cent, higher than IPART's draft determined revenue over the 2016 determination period. However, we note that Sydney Water's revised notional requirement of \$9,690 million is still \$149 million below our original proposed notional revenue requirement of \$9,839 million (rebased at 4.8% WACC)¹.

Table 3-1 shows an annual notional revenue requirement comparison of Sydney Water revised proposals and IPART's draft determined values.

¹ Sydney Water's original proposed Notional Revenue Requirement was \$9,685 million, based on a pre-tax WACC (real) of 4.6%. With the alignment of the WACC to 4.8%, ie the WACC used by IPART in the Draft Determination, the proposed Notional Revenue Requirement will be adjusted up to \$9,839 million.

Table 3-1 Notional Revenue Requirement comparison (\$million, \$2015–16)

	2016–17	2017–18	2018–19	2019–20	Total
Sydney Water revised proposals	2,378	2,417	2,436	2,459	9,690
IPART draft decision	2,358	2,385	2,399	2,425	9,567
<i>Difference</i>	20	32	37	34	122
<i>Difference %</i>	0.8%	1.3%	1.5%	1.4%	1.3%

Table 3-2 and Table 3-3 show each of the components of our revised proposed building blocks, and a comparison with IPART's Draft Determination values.

Table 3-2 Sydney Water's revised proposed building block components (\$million, \$2015–16)

	2016–17	2017–18	2018–19	2019–20
Operating expenditure	1,242.9	1,238.8	1,227.3	1,222.7
Allowance for return on assets	778.1	794.8	810.3	822.3
Allowance for regulatory depreciation	289.4	307.1	324.4	340.6
Allowance for return on working capital	6.0	6.3	6.5	7.0
Total notional revenue (before tax)	2,316.5	2,346.9	2,368.5	2,392.6
Allowance for tax obligations	61.2	70.4	67.5	66.1
Total notional revenue requirement	2,377.7	2,417.3	2,435.9	2,458.7
Total target revenue	2,381.6	2,407.4	2,435.5	2,465.5
Real post-tax WACC	4.8%	4.8%	4.8%	4.8%

Table 3-3 IPART's Draft Determination and Sydney Water's revised notional revenue requirement over the 2016 determination period (\$million, \$2015–16)

Building block	Total for 2016–17 to 2019–20			
	IPART's Draft	Sydney Water Revised	Difference	Difference %
Operating expenditure	4,908	4,932	24	0.5%
Allowance for return on assets	3,172	3,206	33	1.1%
Allowance for regulatory depreciation	1,239	1,261	22	1.8%
Allowance for return on working capital	26	26	0	-0.7%
Allowance for tax obligations	222	265	43	19.4%
Total notional revenue requirement	9,567	9,690	122	1.3%

The main reasons for the differences between our revised notional revenue requirement and IPART's Draft Determination are outlined below:

- **Higher Operating expenditure (\$24 million)** – we do not agree with IPART's \$80 million reduction in opex and have some concerns about the rationale behind the reduction. We have incorporated in our revised revenue calculation a \$56 million reduction in opex instead. This represents Sydney Water's updated forecast efficient opex and the revised estimate is based on further efficiencies identified over the past year. This represents a \$24 million, or 0.5%, increase from IPART's draft decision. The reasons behind this are outlined in Chapter 6.
- **Higher return on capital (\$33 million)** through a higher RAB arising from:
 - a \$234.5 million higher capital expenditure over four years than determined by IPART in its draft decision. We have some concerns about the rationale behind IPART's reduction (see Chapter 6) and have incorporated in our revised revenue calculation a \$185.3 million reduction in capex. This represents a 1.1 per cent increase in capex from IPART's draft decision
 - a \$82 million higher capitalised finance lease value than IPART's draft decision, as IPART's allowed value does not allow us to recover a significant portion of our (efficient) finance lease charges (see Chapter 7);
 - an additional \$11 million allocation of Rouse Hill capital costs than IPART's draft decision. This assumes that IPART accepts our rationale that a higher proportion of the costs of providing the integrated water management solution in Rouse Hill is related to wastewater functions (ie 70% of the combined land and civil works compared to IPART's assumption of 50%) (see Section 5.7.4).
- **Higher return of capital (\$22 million)** – due to our revised proposals for capital expenditure, adjustments to the RAB for the proposed allocation of Rouse Hill capital costs and finance leases.

We have also contested IPART's draft decision on the asset life used for assets subject to finance leases (see Chapter 7).

- **Higher tax allowance (\$43 million)** – due to our revised proposals, the impact of actual capital expenditure for 2014–15² and lower capital expenditure for 2016-20 than originally proposed³ by Sydney Water.

We note that while we accept IPART's draft decision to not allow us to recover a contribution from customers the tax paid on their behalf for significant asset sales, we remain concerned that on land sales, customers will be substantially overcompensated

² The tax depreciation forecast provided in our June 2015 Annual Information Requirement (AIR) was based on data available in early 2015, i.e. before actual capital expenditure figures were available for the 2014-15 financial year. These figures have since been updated.

³ Note that the forecast tax depreciation figures used by IPART in its tax building block calculation was based on the capital expenditure that was originally proposed by Sydney Water. This proposed capital expenditure was reduced by \$419.8 million by IPART in its draft decision but no adjustment was made to tax depreciation to take account of this reduction. A revised forecast tax depreciation has been recomputed based on the revised forecast capital expenditure.

from the asset sale. This has the potential to weaken incentives for efficient asset disposal (see section 3.3.4).

- **Very minor changes in return on working capital**

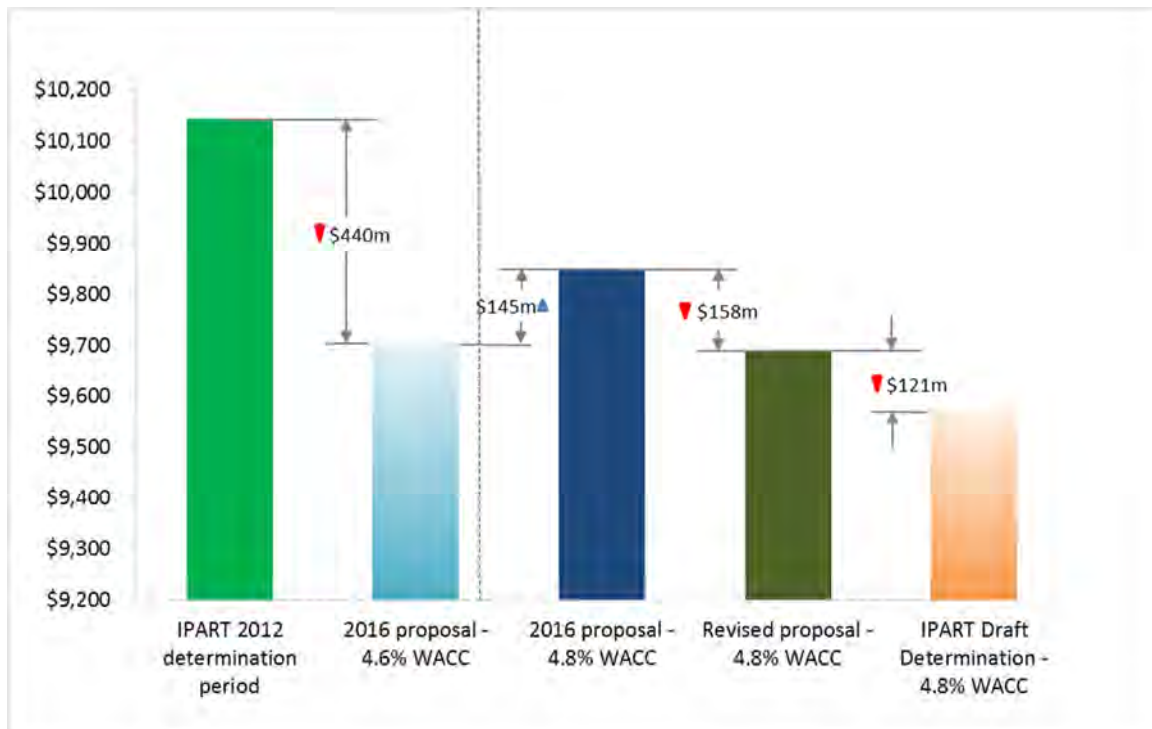
3.2 Target revenue

The target revenue for each year, is the actual revenue Sydney Water is expected to generate from prices and charges for that year. Hence, in general, in absolute terms, the amount represents by the notional revenue requirement may differ from the target revenue.

To set the target revenue in our revised proposal, we have adopted a price path that is consistent with IPART's approach in its draft decision. In our original price proposal, we sought to over-recover \$12 million in notional stormwater drainage revenue in the 2016 determination period, and under-recover this in the subsequent period. For our revised building block modelling, we accept IPART's draft decision to not adopt this approach.

Our target revenue under the original and revised proposals, when compared with IPART's are shown in Figure 3-1.

Figure 3-1: Sydney Water v IPART target revenue over 2016–20 (\$15–16)



Our Pricing Proposal provided a target revenue of \$9,703 million⁴ over four years based on a post-tax real weighted average cost of capital (WACC) of 4.6%. Adopting the updated WACC figure of 4.8% used in IPART's Draft Determination, the equivalent target revenue requirement in our Pricing Proposal is \$9,848 million. This implies IPART's Draft Determination target revenue of \$9,569 million is effectively \$279 million (2.9%) below our Pricing Proposal. Results are summarised in Figure 3-1. We consider a more appropriate target revenue based on our forecast efficient costs is \$9,960 million. This target revenue is

- \$158 million or 1.6% below the target revenue from our Pricing Proposal
- \$121 million above IPART's Draft Determination.

Length of the determination period

We accept IPART's draft decision for a four year determination for this price path. This provides opportunity for IPART to align the next price review with the next Operating Licence review, which is also due in 2020. This may also pose some challenges, as a lack of certainty around potential future licence conditions could make it difficult to forecast revenue needed to meet these requirements.

In the long term there may be merit in reviewing the length of the determination period, with a view to moving to a longer time frame from 2020. There are a number of reasons why IPART may consider this in the future:

1. Longer determination periods provide stronger incentives to regulated businesses.
2. A longer determination period could help reduce regulatory burden.
3. We currently have limited ability to be involved in the review of other determinations, such as WaterNSW's determination, which will impact our prices. A change in the length of the determination period may allow for enhanced engagement in the reviews of other utilities.
4. There is potential for the Operating Licence and Sydney Water's pricing framework to be more closely linked to provide added financial incentives to Sydney Water to pursue efficiencies that align with customer value. These types of regulatory incentives are commonly applied to cost efficiency and service performance in other industries in Australia and overseas.
5. Overseas there is a trend to move to longer price review periods as part of strengthening incentive based regulation (such as Ofgem's adoption of an eight-year price control period for transmission and gas distribution price controls). We see a benefit to moving towards this in the longer term, with the potential for limited mid-term reviews based on key factors such as the WACC and demand forecasts.

We would be pleased to work with IPART in considering these matters over the longer term.

⁴ A small rebase adjustment of \$8.5 million was made to the \$9,695 million target revenue of Sydney Water's 2016 Pricing Proposal, to account for the difference in treatment of S16A recycled water net costs by IPART and Sydney Water in price modelling.

3.2.1 Components of the target revenue

Table 3-4 below shows our revised notional and target revenue by water, wastewater and stormwater products.

Table 3-4 Sydney Water revised notional revenue requirement and target revenue (\$million, \$2015–16)

	2016–17	2017–18	2018–19	2019–20	4-yr PV
Notional revenue requirement					
Water	1,132	1,147	1,153	1,160	3,884
Wastewater	1,214	1,237	1,248	1,263	4,194
Stormwater	32	33	35	36	114
Total notional revenue requirement	2,378	2,417	2,436	2,459	8,192
Target revenue					
Water	1,131	1,142	1,153	1,167	3,884
Wastewater	1,218	1,231	1,248	1,264	4,194
Stormwater	33	34	34	34	114
Total target revenue	2,382	2,407	2,436	2,466	8,192
<i>Difference</i>	4.0	-9.9	-0.4	6.8	0.0
<i>Defference %</i>	0.2%	-0.4%	0.0%	0.3%	0.0%

While most of Sydney Water's revenue is raised through water, wastewater and stormwater drainage charges, we also generate revenue through other charges such as trade waste, recycled water and ancillary services. Our revised revenue components are shown in Table 3-5.

Table 3-5 Sydney Water revised revenue components (\$million, \$2015–16)

	2016–17	2017–18	2018–19	2019–20
Target revenue (pre-adjustment)	2,382	2,407	2,436	2,466
Less Adjustments:				
Trade waste and waste safe	31.8	32.4	33.0	33.6
Ancillary services	11.8	11.8	11.9	12.1
Recycled water revenue (16A)	3.2	1.8	1.8	1.8
Blue Mountains CSO	0.3	0.3	0.3	0.3
Rental income (50%)	6.0	6.1	6.2	6.3
Total adjustments	53.1	52.4	53.2	54.1
Revenue from usage and service charges	2,329	2,355	2,382	2,411

While we agree with most of the revenue components listed in the draft determination, we disagree with the \$0.8 million per annum upward adjustment by IPART on revenue from ancillary services.

IPART's reasoning is to match the 2015–16 forecast revenue for existing services, given that most of Sydney Water's proposed prices remained constant in real terms and demand for miscellaneous services is expected to remain constant at 350,000 transactions per year (as opposed to 330,000 transactions over 2012–16).

IPART should note that over 2012–15 the actual miscellaneous and ancillary services volume has averaged around 330,000 transactions per year.

Our forecast for the current financial year (2015–16), based on current prices and a volume of 350,000 transactions, is a revenue of \$10.5 million. We forecast a revenue of \$9.7 million for 2016–17 based on proposed prices, which have marginally reduced as a result of cost efficiencies from improved processes and online trading, and a volume of 350,000.

Accordingly, we recommend that the demand adjustment of \$0.8 million be removed, as the revenue forecast has already been based upon a forecast demand of 350,000 transactions.

3.3 Allowances for return on assets, regulatory depreciation and tax liabilities

This section focuses on the comparison of values of Sydney Water's revised RAB versus IPART's draft determined values. It also responds to IPART's proposed approach to asset lives and depreciation.

In order to calculate the returns in our revised proposed revenue requirement, we have applied the post-tax WACC of 4.8% in accordance with IPART's current estimate and Draft Determination. We note that the WACC will be updated by IPART in the Final Determination.

3.3.1 Opening RAB

In general, we agree with the RAB values that IPART has rolled forward from the 2012 determination period to the 2016 period. As shown below there are very minor differences in our revised figures and IPART's figures. These differences are as a result of data interpretation issues in relation to Rouse Hill and stormwater capex. We believe that IPART may have incorrectly included the Rouse Hill civil capital costs in the wastewater RAB, and overstated the stormwater capex in 2015–16 (these issues are listed in Chapter 10).

Table 3-6 shows the comparison.

Table 3-6 Opening RAB comparison (\$million, \$2015–16)

	2012–13	2013–14	2014–15	2015–16
Sydney Water revised opening RAB	12,874	13,557	14,264	14,825
Capital expenditure	597	548	621	690
Cash capital contribution	1.3	0.0	8.3	0.0
Asset disposals	5.9	11.7	8.2	37.6
Regulatory depreciation (allowed)	223	244	262	281
Indexation	316	415	218	379
Sydney Water revised closing RAB	13,557	14,264	14,825	15,575
IPART draft closing RAB	13,557	14,264	14,826	15,591

3.3.2 RAB over the 2016 determination period

To calculate the revised proposed RAB in each year of the 2016 determination period, we rolled forward the RAB to 2019–20 by:

- adding
 - \$660 million to the opening RAB for the value of Sydney Water’s assets subject to finance leases (see Chapter 7 for our rationale)
 - \$37.1 million to the opening RAB for capital expenditure in Rouse Hill (in accordance with our preferred approach, as discussed in Chapter 5)
 - \$2,548 million prudent and efficient forecast capital expenditure over the period
- deducting
 - \$54 million for the regulatory value of asset disposals
 - \$12.8 million for capital contributions
 - \$1,291 million for regulatory depreciation.

We have challenged Atkins Cardno’s recommended write down of \$24.8 million in electronic assets in 2017–18 (as discussed in Chapter 6). We note IPART has not captured this correctly in its modelling for the Draft Determination and effectively has not included the recommended prudency adjustment (see Chapter 10), so at this time we have made no adjustment for this in our revised figures.

The revised proposed RAB roll-forward over the 2016 determination period is shown in Table 3-7.

Table 3-7 Revised RAB for 2016 determination period (\$million, \$2015–16)

	2016–17	2017–18	2018–19	2019–20
Opening RAB				
RAB excl finance leases	15,575	15,978	16,336	16,653
RAB of finance leases	660	644	629	613
Adjustment for Rouse Hill stormwater capex	37.1	0.0	0.0	0.0
Total opening RAB	16,272	16,622	16,965	17,265
Capital expenditure	678	669	644	557
Cash capital contribution	3.2	3.2	3.2	3.2
Asset disposals	28.6	8.5	8.5	8.5
Regulatory depreciation				
Depreciation excl finance leases	281	299	317	333
Depreciation of finance leases	16	16	16	16
Total depreciation	296	314	332	349
Closing RAB	16,622	16,965	17,265	17,462

Our calculation of the revised proposed RAB for the 2016 determination results is \$274 million higher at the end of the determination period than the draft decision. Table 3-8 compares our finding on the RAB to IPART's draft decision.

Table 3-8 RAB comparison for 2016 determination period (\$million, \$2015–16)

Closing RAB	2015–16	2016–17	2017–18	2018–19	2019–20
Sydney Water revised proposal	15,575	16,622	16,965	17,265	17,462
IPART draft decision	15,591	16,507	16,788	17,033	17,188
<i>Difference</i>	-15	115	177	233	274
<i>Difference %</i>	-0.1%	0.7%	1.1%	1.4%	1.6%

3.3.3 Regulatory depreciation

In calculating regulatory depreciation, IPART has accepted Sydney Water's asset lives, except for assets subject to finance leases. We are contesting the asset lives for finance lease assets proposed by Atkins-Cardno (and adopted by IPART). The useful lives for finance lease assets proposed by Sydney Water have already been independently assessed by external professional consultants for the purpose of depreciating the water filtration plant assets (see Chapter 7).

The comparison between our revised proposed allowance for regulatory depreciation as compared to IPART's draft decision is shown in Table 3-9.

Table 3-9 Regulatory depreciation comparison (\$million, \$2015–16)

Regulatory depreciation	2016–17	2017–18	2018–19	2019–20	Total
Sydney Water revised proposal	289	307	324	341	1,261
IPART draft decision	285	302	319	334	1,239
<i>Difference</i>	5	5	6	7	22
<i>Difference %</i>	1.6%	1.7%	1.8%	2.0%	1.8%

3.3.4 Asset disposals

As discussed in our response to IPART's Issues Paper, we had in-principle broadly agreed with IPART's position in relation to asset disposals.⁵ We acknowledge that in the Draft Determination IPART has updated its position on several parts of its proposed treatment of asset disposals by taking into account our submission to its Issues Paper. As a result we now support IPART's Draft Determination positions in relation to:

- significant sales of assets purchased post the RAB line-in-the-sand
- non-significant asset sales
- significant asset write-offs
- non-significant asset write-offs.

We appreciate IPART adopting our updated significant (land) asset sale forecast in November 2015 in its draft decision. This included considering supporting evidence of the pre-line-in-the-sand surplus status of Central Workshops.

Significant asset sales

We accept IPART's position is with the detail of the treatment of capital gains tax (CGT) elements of significant asset sales where the asset was purchased pre-line-in the-sand. However, we remain concerned that as highlighted in our submission to the Issues Paper that this creates a potential disincentive for future efficient asset disposal. In particular, we believe the approach for land sales will overcompensate customers relative to the value they have gained from the use of the asset. To the extent customers receive a capital gain via a larger discount in their bill (due to the sharing of 42% of the sales value) it is also in principle appropriate for them to bear some portion of the CGT bill.

IPART has suggested in theory, it is sensible to consider that the sale value of different asset types and classes will appreciate at different rates relative to inflation (or RAB indexation). The outcome of this is that the estimated regulatory value (sales value x 0.42) will be over- or under-estimated; at times benefiting Sydney Water and at others times our customers. On average IPART has suggested in its Draft Report that the value of the pool of significant regulatory assets deducted from the RAB will equal the true regulatory value.

⁵ Sydney Water, *Sydney Water's response to IPART's Issues Paper*, October 2015, pp 40-2.

Sydney Water believes a significant practical flaw in this theoretical position is that it presumes the distribution of the sales value of assets sold are both above and below the RAB value, and the effects cancel out. In practice, our experience with land sales, which comprise almost all of our significant asset disposals, is that it consistently results in a value for the asset that is above the RAB value.

This overcompensates customers and disproportionately increase Sydney Water's CGT burden, potentially weakening the significant asset disposal incentive intended.

We believe that if the current approach is generating the intended outcomes over the next four years then IPART should reconsider the appropriate regulatory treatment.

3.3.5 Allowance for tax

In calculating the regulatory tax allowance, we note that IPART has accepted Sydney Water's proposed forecast of assets free of charge. This forecast is based on our analysis of the timing and value of new developments and major infrastructure projects over the 2016 determination period.

Although IPART makes no tax allowance in the tax building block for revenue from grants and cash contributions, IPART has allowed Sydney Water to deduct grants and cash contributions net of tax from capital expenditure. We agree with IPART that this adjustment will better reflect the impact of tax on these contributions.

As part of calculating the appropriate tax allowance, Sydney Water is also required to provide IPART with a forecast of tax depreciation, which reflects the assumptions made about future capital expenditure. We note that, although IPART has proposed a significant reduction in our proposed capital expenditure through the expenditure review process, no commensurate adjustment of forecast tax depreciation was made. We believe that to the extent IPART reduces the capex from our Pricing Proposal in its Final Determination, such an adjustment should be taken into consideration in calculating the revised allowance for tax.

Table 3-10 shows the revised forecast tax depreciation, based on the revised proposed capital expenditure.

Table 3-10 Sydney Water revised forecast tax depreciation (\$million, nominal)

	2016–17	2017–18	2018–19	2019–20
Water	108	106	116	131
Wastewater	253	256	278	301
Stormwater	5	6	7	8
Sydney Water revised tax depreciation	366	368	401	439
IPART draft tax depreciation	382	415	445	460

We would like to highlight that the tax depreciation forecast that we provided to IPART (in the Annual Information Requirement, AIR) in June 2015 was calculated in the early part of the 2015 calendar year. This was before actual capital expenditure figures were available for the 2014–15 financial year. With the update for the 2014–15 actuals, our original tax depreciation forecast has

decreased, mainly resulting from lower capital expenditure over the regulatory period, particularly on IT assets. This, combined with increased and revised timing adjustments to reflect the development and implementation time for major IT projects (T2020 and ERP), has the effect of delaying the depreciation expense to a later financial year when the systems are fully implemented.

Sydney Water's revised tax depreciation forecast, as shown above, has incorporated the actual capital expenditure in 2014–15, and our current revised capital expenditure forecast (as proposed in this response) with the updated project timing.

This readjustment is expected to result in a \$37 million total higher revenue requirement over the 2016 determination period.

3.4 Customer bill impact

Under our revised proposals, the average residential household customer would receive a further real reduction in its water and wastewater bill of \$25 reduction compared with our June 2015 Pricing Proposal.⁶

In assessing the customer bill impact from our revised proposal, we have used our preferred price structures and demand levels, which are discussed in Chapters 4 and 5.

Table 3-11 shows the estimated annual water and wastewater bills for residential customers, when compared to current bills. For a typical residential household with a 220 kL annual water consumption, our revised proposals represent a \$105 (\$2015–16 real) bill reduction per year from the current bill.

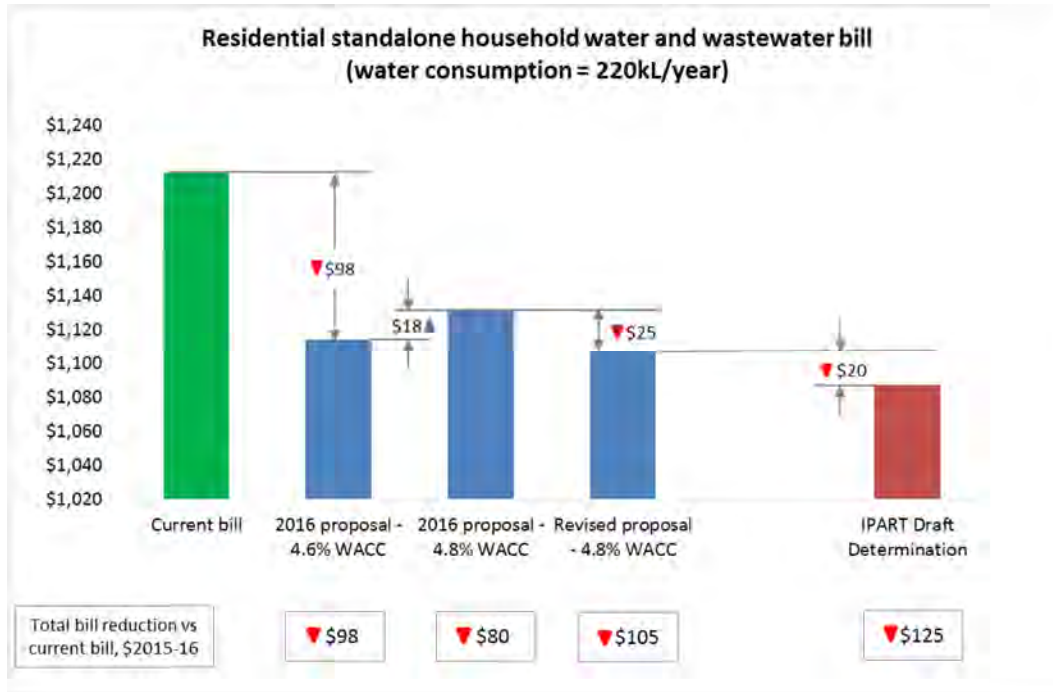
Table 3-11 Residential bills (\$2015-16 real)

	2015–16	Sydney Water revised proposal	Sydney Water submission	Difference	Difference %
160 kL/year	1,076	989	996	-7.4	-0.7%
Change from 2015–16		-8.1%	-7.4%		
200 kL/year	1,167	1,067	1,075	-7.4	-0.7%
Change from 2015–16		-8.5%	-7.9%		
220 kL/year	1,212	1,107	1,114	-7.4	-0.7%
Change from 2015–16		-8.7%	-8.1%		

⁶ This is after increasing the revenue requirement and prices to take account of the updated WACC.

Figure 3-2 shows the comparison (\$2015-16 real) of a typical household annual water and wastewater bill, under IPART determined levels and our original and revised proposals. A similar diagram, quoted in nominal dollars, is included in Chapter 10.

Figure 3-2: Residential bills comparison (\$2015-16)



4 Forecast water sales and customer numbers

Key messages

- We support IPART's draft decisions on:
 - forecast customer numbers
 - forecast chargeable wastewater volumes.
- We do not support IPART's draft decisions:
 - on forecast water demand, in particular, the demand response that has been assumed for a price decrease. We consider that IPART's increase in the asymmetry of demand response to a price reduction from 0.5 to 0.75 is incorrect.
 - to adopt a demand volatility adjustment mechanism without specifying in advance a symmetric threshold that triggers the mechanism.

Regulated prices (examined in Chapter 5) are particularly dependent on the assumptions made about future water demand and customer numbers. 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, the business may under-recover costs and vice-versa. We accept IPART's draft decisions on forecast customer numbers and forecast chargeable wastewater volumes.

However, we do not support IPART's draft decision on forecast water demand, and in particular the assumption used on the asymmetry in the price elasticity of demand. In our view IPART's inference regarding the statistical robustness of Sydney Water's proposed assumption of a 0.5 demand asymmetric response is incorrect and its choice of 0.75 is statistically insignificant. We further note that IPART has not increased our operating expenditure allowance to reflect its use of a higher forecast water demand (compared to our proposal). We have maintained our preferred value of 0.5 for the asymmetry factor in modelling prices. We believe that, based on our further analysis, it may even represent an upper bound estimate.

We also do not support IPART's draft decision on the demand volatility adjustment mechanism, ie to provide for an undefined post-event adjustment to prices and revenue if actual demand is different to the forecasts used to determine prices. Our preference is to retain the existing mechanism with a symmetric threshold specified in advance. This approach provides certainty around when the need for a revenue or price adjustment would be considered, which we believe is important for us, our customers and our shareholder. As set out in our response to IPART's Issues Paper, the current 10% threshold is too high to be effective. If the mechanism is retained we believe the threshold should be reduced to a level of at least $\pm 5\%$. These issues are discussed in turn below.

4.1 Forecast water demand

The level of demand for water services and the ability to accurately forecast this demand is a key consideration in our Pricing Proposal. Estimates of total water demand underpin and affect our costs, by directly determining the amount of raw water we buy from WaterNSW, extract from the Hawkesbury-Nepean River, and the costs associated with treatment. Further, the expected volume of water used by our customers directly determines our expected revenue and the risks associated with this revenue recovery.

IPART has historically, and in the current pricing determination, acknowledged the importance of forecasting water demand accurately, as well as Sydney Water's sophisticated and careful econometric demand modelling.

We consider ourselves to be experts in water demand modelling and understand our model and market extremely well. As such, we are constantly seeking to update our model to take into account new information relating to historical demand volumes, best available weather conditions, property growth and subject our demand model to rigorous peer review. All of this continuous work culminates in forecast error in our model of less than 5% once actual weather and other variables are considered⁷. The robustness of the model has been accepted by our independent reviewer Sapere Research,⁸ IPART, and IPART's independent reviewers of our demand model Jacobs⁹.

Through these reviews IPART has identified two potential issues with our demand model, namely a non-residential customer price elasticity value of zero and an asymmetric demand response of 0.5 to a price reduction. Each of these is discussed in turn.

4.1.1 Non-residential demand elasticity

We have acknowledged and accepted IPART's concerns in regard to non-residential demand elasticity. As a result we have put forward new evidence to IPART, and we recognise that IPART has reconsidered and accepted this evidence. This new mutual position has meant that we have reforecast our water demand using an updated non-residential demand elasticity of approximately -0.26.

4.1.2 Asymmetry assumption in the price elasticity of demand

In relation to asymmetric demand responses, we acknowledge that IPART has accepted our proposal that demand in the Sydney metropolitan water sector responds asymmetrically to price decreases relative to price increases. We also recognise IPART has considered additional evidence presented by Sydney Water, which sought to address concerns regarding the quantum of the asymmetric demand response to our proposed price decrease of water usage for the 2016–20

⁷ As discussed in Appendix 8 of Sydney Water, *Our plan for the future: Sydney Water's prices for 2016–20 Appendices – Public version*, June 2015.

⁸ Sapere Research *Peer Review of Sydney Water Short Term Demand Forecast*, January 2015 and Sapere Research *Peer review of Sydney Water's Sydney Water's Chargeable Wastewater Volume Forecast*, June 2015.

⁹ Jacobs, *Review of Demand Forecasts – Sydney Water*, January 2016.

regulatory period. IPART in its Draft Report continues to have concerns regarding the quantum of the asymmetric response.

We understand from its Draft Report that IPART has two concerns. In summary:

- none of our evidence regarding demand asymmetry relates to the water industry
- results presented have a wide range.

These two concerns combined have resulted in IPART expressing concerns about the lack of potential statistical robustness of our evidence presented. It has instead adopted a value of 0.75 rather than the proposed 0.5 value. IPART has estimated this results in an increase in our total demand by 12 GL.

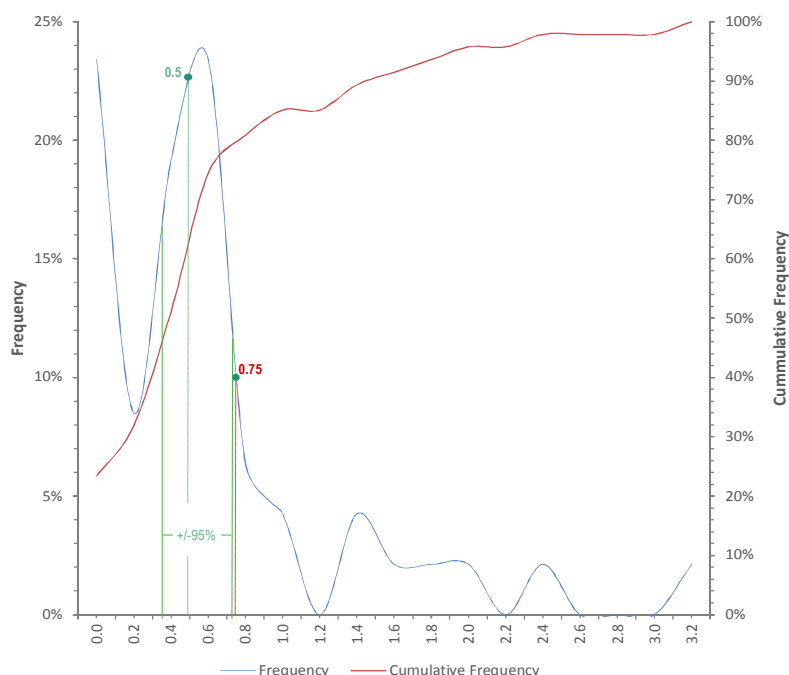
The first of IPART's concerns cannot be addressed directly by either Sydney Water or IPART, other than through the natural experiment of a price decrease in the 2016–20 price determination.

Regarding the second of IPART's concerns, and with reference to Figure 4-1, while the population of asymmetric responses has a wide maximum dispersion between extreme points 0.0 to 3.1 relative to the simple mean of 0.551, we do not agree with IPART's position and reasoning for choosing an asymmetric demand response value of 0.75. .

We do not agree with IPART simply making reference to the standard deviation as an indicator of statistical robustness to reject our 0.5 estimate. Concluding that 0.75 is the correct asymmetric demand response because it is within 1 standard deviation of the simple mean of 0.551 of the data, is an incorrect assessment method upon which to judge statistical robustness and leads IPART to a flawed conclusion.

From tests and descriptive statistics we maintain 0.5 is a conservative upper bound and reasonable estimate of the asymmetric demand response. In support of this, based on Figure 4-1, we note that 0.75 is a statistically insignificant representation of the evidence provided, ie it is outside the 95% confidence interval.

Figure 4-1: Asymmetric demand response data and 95% confidence intervals



IPART's adopted value of 0.75 for the asymmetric response of demand to price changes is statistically insignificant. Our proposed value of 0.5 is more appropriate and reasonable and likely to represent an upper bound estimate, based on the following reasons:

1. 0.5 is a statistically significant and robust representation of the evidence, representing approximately 23% of the data frequency, as opposed to 0.75 representing approximately 10% of the data frequency.
2. IPART incorrectly uses the standard deviation as a proxy for a statistical test and by this logic it is equally valid to adopt a figure of 0.25 (symmetry around 0.5).
3. IPART's use of the standard deviation alone is biased given the long right-handed tail of the data represented in Figure 4-1. The standard deviation is influenced by outliers.
4. To remove bias in any estimate, outliers must be accounted for. This suggests that an appropriate estimate lies between 0.33 and 0.44. This is based on:
 - the median of 0.33, which is more robust to skewness and outliers than the simple mean.
 - the 5% trimmed mean of 0.44. The trimmed mean removes some of the effect of outliers (both right and left of the mean) on the estimate of the mean.
5. Additionally, the mean of long-run elasticity estimates is 0.34. Long-run elasticities arguably are more appropriate as they align with the LRMC concept.

We note that our proposed value of 0.5 is also accepted by Jacobs, IPART's independent reviewers of our demand model.¹⁰ As highlighted in Chapter 6, any deviation away from 0.5 will increase our demand and water volumes raising our treatment costs, incurring greater operating costs — none of which have been accounted for by IPART.

4.2 Demand volatility adjustment mechanism

The current determination includes a mechanism to adjust our revenue, to address the risk of a material variation between actual water demand over the determination period and the forecasts used to set prices. 'Material variation' is currently defined as more than $\pm 10\%$ over the whole determination period. Only the impact of a variation outside of this level would be adjusted for, ie we bear demand risk up to the 10% threshold (or deadband), and customers bear it beyond that.

We do not support IPART's draft decision to provide for an undefined adjustment to prices and revenue at the 2020 determination, if actual outturn demand is different from forecast over the 2016 determination. Sydney Water has always said that, as a business, we believe it is appropriate for us to bear and manage the revenue risk associated with temporary or normal deviations from average weather conditions and demand. We use average weather conditions, as the best estimate of weather conditions, to forecast costs and demand.

We consider that a demand volatility adjustment mechanism should be retained to mitigate the revenue risk from extreme or abnormal weather conditions and demand. A threshold of $\pm 5\%$ would only be triggered if high level restrictions are imposed in the next two or three years. We have estimated that, based on the current high dam levels, this could only occur under highly abnormal weather conditions. As such, a $\pm 5\%$ demand volatility adjustment mechanism appropriately mitigates the risk we could not reasonably bear and manage.

We note that demand variations of -5% would weaken our key credit metrics. In particular we estimate that if actual demand is 5% less than forecast, our Funds Flow from Operations (FFO)/Debt measure would fall below the bounds for investment grade under IPART's financeability benchmark.

If an adjustment mechanism is maintained, we consider that a symmetric threshold should be specified in advance. The threshold could trigger consideration of whether an adjustment should be made, rather than automatically guaranteeing one. However we consider it is important that the threshold is specified in advance, to give certainty to us, our customers and our shareholder about when prices and revenue might be adjusted.

In its Draft Report (page 121), IPART states that its draft decision "accords with our approach taken to the determination of Essential Energy's water prices in Broken Hill" to reflect "differences in Essential Energy's customer base, specifically its exposure to a small number of large customers". The mines in Broken Hill account for over 30% of Essential Energy's forecast water sales. This is not a situation applying to Sydney Water or Hunter Water. Therefore, we do not consider this is a valid comparison or grounds for establishing a precedent for urban water price regulation generally.

¹⁰ Jacobs, *Review of Demand Forecasts – Sydney Water*, January 2016.

We are concerned that the exercise of the level of regulatory discretion under IPART's draft decision may affect our ability to maintain profitability and dividends. We also note that when we received our credit rating upgrade it was in large part due to the increased predictability and transparency IPART had introduced into its regulatory framework. While we expect to remain investment grade we were already on 'negative outlook' based on our submission.¹¹ Sydney Water is concerned about the potential effect on any future assessment of our credit rating of the draft decision on prices (which puts us in a worse financial position compared to our submission) and a potential undefined post-event adjustment to our revenues at the next price determination. We note that Moody's consistently cites the existing mechanism in its assessment of our credit rating.¹²

If IPART remains concerned about over- or under-recovery of revenue, it may wish to consider setting a revenue cap, as this would be preferable to an undefined post event adjustment. That said, we do not support a revenue cap at this time. This is not in line with how we operate our business. That is, we bear and manage the risk associated with normal deviations from average weather. If IPART maintains its draft decision then we assume that the mechanism will be applied in a manner that meets the requirements of Section 15(A) of the IPART Act in terms of the matters the Tribunal must have regard to, in particular the cost of providing the services.

¹¹ In its March 2016 credit opinion, Moody's changed Sydney Water's outlook to negative from stable. Moody's Investors Service, "Moody's revises Sydney Water's outlook to negative from stable, affirms Aa3 rating", Global Credit Research, 2 March 2016, available at https://www.moodys.com/research/Moodys-revises-Sydney-Waters-outlook-to-negative-from-stable-affirms--PR_344573.

¹² See for example Moody's Investor Service, *Credit opinion: Sydney Water*, 23 December 2014.

5 Prices

Key messages

- IPART has accepted many of our proposals regarding price levels and structures, and recognised that we used feedback from customers and our Customer Council.
- We support IPART's draft decisions to:
 - decrease water usage charges, in a way that reflects a balanced consideration of the costs of supply and customer preference
 - pass through additional costs of operating the desalination plant through a new uplift to the water usage charge and a smaller increase to the water service charge
 - apply wastewater usage charges to non-residential customers only and maintain these charges at current rates
 - set water and wastewater service charges for residential and non-residential customers on the same basis
 - maintain Rouse Hill stormwater drainage charges at current levels
 - exclude wholesale services from this price determination.
- We support IPART's draft decisions on non-residential trade waste charges and miscellaneous and ancillary charges and conducting a broader review of recycled water regulation.
- We strongly support IPART's recommended fees for dishonoured and declined payments and late payments. We also support, in principle, IPART's recommended terms and conditions for late payments, subject to some minor modifications.
- We accept IPART's draft decisions to:
 - continue transitioning to a 150 kL per year non-residential discharge allowance
 - apply a deemed 75% discharge factor to residential wastewater service charges
 - maintain the current charging regime for non-residential multi-premise joint services arrangements
 - charge dual occupancies based on the number of meter connections
 - set stormwater charges on a constrained area basis
 - set recycled water prices for the Rouse Hill recycled water scheme.
- We accept IPART's draft decisions on new remote meter read fees and unregulated fees.

- We do not support IPART's draft decisions to:
 - increase the Rouse Hill land charge to \$432.89 per year in real terms
 - introduce a low impact assessment for residential stormwater customers.
- The Draft Determination contains a number of implementation issues. Sydney Water is happy to work with IPART to ensure that the final Determination reflects IPART's final decisions.

5.1 Water pricing

5.1.1 Water usage charges

We are happy to note IPART's draft decision to accept our proposed water usage charge of \$1.97 in real terms over the 2016 determination period. This takes into account a number of factors, including the costs of supply and customer preferences, and will give customers greater control over the variable portion of their bills.

Pass through of Sydney Desalination Plant costs

We strongly support IPART's draft decision to introduce a pass through mechanism via an increase in the water usage charge to recover additional variable costs of desalination, as proposed by Sydney Water.

We note that the additional fixed costs that Sydney Water incurs when the desalination plant is operating will continue to be recovered via a change in the water service charge. The service charge pass-through mechanism will also act as true-up for the water usage charge adjustment. This approach is flexible and could account for potential changes to the operating regime of the plant in the future, which is set by the NSW Government.

Pass through of Shoalhaven transfer costs

We support IPART's introduction of a water service charge cost pass-through mechanism to compensate Sydney Water for increases in the bulk water costs we pay to WaterNSW when Shoalhaven transfers are operating.

This is efficient and avoids customers paying for services they are not receiving.

5.2 Wastewater pricing

5.2.1 Wastewater usage charges

We support IPART's draft decisions to:

- maintain the current wastewater usage charge, which only applies to non-residential customers, at \$1.10 per kL
- not introduce an explicit wastewater usage charge for residential customers.

This will maintain price stability. It allows Sydney Water to consult with customers and consider their views associated with the introduction of a residential wastewater usage charge.

We note that IPART's Draft Report (page 129) states that Sydney Water has a "preference to move towards long run marginal cost (LRMC) pricing" and is seeking an "in-depth review" of the issue before 2020. We would like to clarify that our position is that LRMC is a relevant factor when setting wastewater usage charges, and that we have committed to considering this issue further before the next price review.

5.3 Pricing structures

We support IPART's draft decisions to:

- set water and wastewater service charges for residential and non-residential customers on a 20mm meter equivalent basis

We accept IPART's draft decisions to:

- separate the implicit connection and usage components of the wastewater service charge
- apply a deemed 75 per cent discharge factor to the connection point of the residential wastewater service charge.

We will begin work to implement these changes from 1 July 2016. We note some outcomes of these draft decisions below.

5.3.1 Water service charges

We note that IPART has accepted our proposed position on water service charges.

5.3.2 Wastewater service charges

We are pleased that IPART's draft decision is to adopt our proposal to rebase the wastewater service charge to ensure that residential and non-residential customers with a 20mm meter will pay the same base service charge.

We note that IPART's draft decision to apply a 75 per cent discharge factor to the residential charges means that a residential customer and a non-residential customer will only receive the same wastewater service charge if the non-residential customer has a discharge factor of 75

per cent. Sydney Water's default discharge factor for non-residential customers with a 20mm meter connection is 78 per cent.

While Sydney Water accepts IPART's reasoning behind the use of a discharge factor for residential customers, we would like to note that a 75 per cent discharge factor may not represent a typical wastewater customer's amount of discharge to our system. We do not believe that there is such thing as a "typical" household, but as residential wastewater customers are not metered, it is difficult to articulate a more appropriate discharge factor.

As we do not have the ability to suggest an alternative discharge factor at this point in time, we accept the proposed 75 per cent, subject to us being able to seek to modify this in the future.

We note that in the Draft Determination a residential customer would need to calculate their connection charge (ie 20mm base charge multiplied by the 75 per cent discharge factor) and then add the deemed charge to identify their actual wastewater charge. We believe it would be helpful for our residential customers to have a reference table showing a single chargeable rate. We have suggested some changes in Chapter 10 Appendices.

Some of the commentary in IPART's Draft Report (page 135) regarding the introduction of a residential wastewater usage discharge factor is inaccurate. We have provided suggested amendments in Chapter 10 Appendices.

5.4 Joint services arrangements

IPART has made two draft decisions regarding joint services arrangements:

- to maintain the current charging regime for non-residential multi-premises joint services customers

We note IPART has not accepted our proposal and we accept this draft decision.

- to specify in the 2016 Determination that all instances of joint services should be considered a form of multi-premise customer

This draft decision needs clarification. We believe its intent is to clarify in the determination how Sydney Water charges for various joint services arrangements. However, the current wording in the Draft Report and Draft Determination does not accurately reflect Sydney Water's charging practice, which is aligned with the 2012 Determination.

The 2012 Determination is silent on joint services arrangements. However, it established a number of principles for how to charge combinations of residential and non-residential properties where there was a common meter (see simplified outline on page 5, Schedule 1, clause 3.3 and Schedule 2, clause 3 of the 2012 Determination). In its Draft Report (footnote 293, page 132), IPART states that "Non-residential occupancies in mixed multi-premises are deemed to have a 20mm meter to ensure that they are charged the same as residential dwellings". This seems to maintain the 2012 charging principles for these property combinations.

In its Draft Report (page 140), IPART includes the following summary of joint services charging arrangements:

- non-residential joint services are charged on a meter basis

- residential joint services are charged on a dwelling basis
- mixed development joint services are charged on a dwelling basis.

These dot points do not capture all joint services charging scenarios. The wording in the Draft Determination also does not capture the existing suite of joint services charging arrangements.

We are happy to work with IPART to ensure that the final report and determination accurately reflects IPART's final decision.

5.5 Dual occupancies

We accept IPART's draft decision to charge dual occupancies based on the number of meter connections. While IPART has not accepted our proposal to charge dual occupancies as a standalone, single residential property, its draft decision does overcome our difficulty in identifying these types of customers in the current planning environment.

We request minor amendments to the wording of the Draft Determination for clarification, as noted Chapter 10 Appendices.

5.6 Stormwater pricing

We note IPART's draft decisions to:

- set stormwater drainage charges on a constrained area basis
- While we do not agree with all of IPART's reasoning, we accept IPART's draft decisions on stormwater prices.
- introduce a low-impact customer category for residential customers
- Our preference, due to the very small number of likely eligible customers, is to work within the existing regulatory framework and seek Treasurer approval for a lower charge on a case by case basis. The proposed new customer category could then be considered as part of a broader review of all stormwater charges.
- IPART's proposed approach does not appear to be consistent with best practice regulation. If IPART is satisfied that the benefits outweighs the costs and adopts this decision, we request one year to develop the scheme before implementing the charge.

A more detailed response to these decisions is set out below.

5.6.1 Stormwater drainage charges

We accept IPART's draft decisions on stormwater drainage charges and will not contest our position further in this review. We note that under the Draft Determination prices for large customers remain largely unchanged, with bill reductions weighted towards smaller customers. This is in contrast to our proposal, which sought to maintain current price relativities between different customer categories.

In its Draft Report (page 142) IPART notes that it has decided to set stormwater charges on a constrained area basis, as it considers area-based charging is the most equitable charging

approach across customer categories and best reflects the impactor pays principle. This is in line with IPART's view that a property's area is a reasonable and readily available indicator of its contribution to Sydney Water's stormwater costs.

However, as noted in our response to IPART's Issues Paper (page 56), we are not convinced that setting stormwater drainage charges using an area based approach is appropriate, nor that IPART has offered sufficient information to demonstrate that this provides the most equitable outcomes for customers. While property size is one important factor in demand for stormwater services, it is not the sole determinant. There are other important factors and benefits that should also be considered when setting stormwater prices.

In recommending its constrained area based approach, IPART has taken into account submissions made by the Public Interest Advocacy Centre (PIAC) and the Total Environment Centre (TEC). The Draft Report states that both submissions broadly support this approach.

The TEC submission does support area based charges. It also makes reference to properties with a low ratio of impervious services. However, PIAC's submission does not appear to support the introduction of an area based approach at this time:

PIAC recommends IPART and Sydney Water use the next four years to undertake cost-benefit analysis on stormwater provision. To ensure that an accurate picture is developed of who contributes to stormwater and who benefits to ensure the costs are accurately determined.¹³

We believe this is in line with Sydney Water's proposal for a more detailed consideration of stormwater pricing as part of the next price review, while maintaining current pricing relationships over 2016–20.

Sydney Water also disagrees with IPART's statement in the Draft Report (page 147) that our engagement with customers on potentially changing the way that stormwater costs are recovered is "fundamentally flawed". This is based on IPART's view that properties outside of declared stormwater drainage areas are already paying local councils for stormwater service.

This reflects an inaccurate understanding of the nature of Sydney Water and local council stormwater charges. Most of Sydney Water's stormwater customers are also levied stormwater charges by their local councils. The nature of stormwater services provided by Sydney Water and local councils is quite different. Sydney Water provides trunk drainage services across 30 local council areas, through the provision of large drains and channels. Councils usually own and manage the reticulation system.

Sydney Water would like to continue to explore stormwater management and pricing with our stakeholders and customers. This could include considering alternative charging scenarios that take account the beneficiaries of these services, as well as impactors (see Sydney Water response to Issues Paper, page 59). Beneficiary pays pricing is consistent with the way that other services providing broad public benefits are funded, for example, public transport. In our engagement to date, we have been transparent and clear about the potential bill impacts on customers of broadening of the customer base and that they may be paying for the delivery of services outside of their own stormwater catchment area. Interestingly, our focus groups have still indicated a

¹³ PIAC submission to Issues Paper, page 8

willingness to pay for the public benefits provided by these services. We believe this work should be taken into account when IPART looks at this issue in future determinations.

5.6.2 Low impact customer category for residential properties

In principle, we believe there is possibly some merit in the proposition that customers who reduce costs to Sydney Water should be able to receive a lower charge. However, this is premised on stormwater costs being recovered through an impactor pays framework. Given that Sydney Water stormwater infrastructure also provides benefits to the wider community, not just those who currently fund the infrastructure, we believe in future IPART should explore the potential for a beneficiary pays model.

Therefore, we do not support IPART's introduction of a residential low impact customer category at this point in time. Instead, Sydney Water's preference would be to defer consideration of this new customer category to be part of a broader review of stormwater pricing. We would still have the ability in this price period to seek Treasurer approval on a case by case basis to apply a lower price for properties that invest in significant on-site detention facilities. This seems preferable, considering the very small number of residential properties that we estimate will be eligible for this type of discount.

We do not feel the new customer category has been sufficiently considered, in terms of whether it is aligned with best practice regulation. The Draft Report does not consider whether the new category meets the long term interests of customers, is a proportionate response to the targeted problem or would be practical to implement. This is in contrast to any new requirements that Sydney Water must meet under its Operating Licence, which are subject to cost-benefit analysis as part of IPART's end of term licence review. We would expect a similar analysis to be done here to avoid IPART potentially introducing something with high costs but limited beneficiaries.

IPART's Draft Report (page 145) states that "many" stakeholders support the introduction of a low impact charge for residential properties. However, only three submissions are noted in footnote 322. In its submission, the Sydney Coastal Councils Group (SCCG) did not explicitly seek a low impact residential charge, but recommended IPART investigate implementing stormwater drainage pricing based on the percentage of impervious area and other methodologies that encourage water sensitive urban design. The SCCG is also concerned stormwater drainage charges may not be set high enough to cover long-term rising costs. These factors may be more appropriately addressed as part of a broader review of stormwater drainage charges.

In 2012, IPART introduced a low impact customer category for non-residential properties subject to declared stormwater drainage area charges. IPART provided a one year grace period for Sydney Water to develop and implement this new customer category. Based on our experience in developing the non-residential scheme, we estimate one-off costs of at least \$200,000 to develop a new assessment scheme for residential customers and implement a low impact residential charge. Depending on customer interest, we could incur ongoing costs of \$30,000 a year¹⁴. For any approved application, we would be subject to a reduction in revenue for the 2016–20 price path. 32 non-residential properties now receive the low impact charge. The type of criteria that

¹⁴ These are high level estimates only, assuming similar rates of uptake as for non-residential properties.

non-residential properties must meet include having on-site water treatment facilities and large on-site detention systems. These criteria would need amending to assess residential properties.

Extending this category to residential properties may also indicate a false precision in how stormwater prices are calculated. That is, it implies stormwater costs are being appropriately allocated to the parties imposing those costs on the system. It does not appear that the level of the new charge (ie the apartment rate) has been subject to detailed consideration. In addition, this approach may suggest that costs should only be allocated among impactors, rather than also considering beneficiaries. As highlighted in our Pricing Proposal and response to IPART's Issues Paper, this is an area Sydney Water would like to revisit in the future.

If IPART does establish that the benefits outweigh the costs and introduces this new charge, Sydney Water would need to develop an appropriate set of criteria and internal processes to deal with potential applications. Accordingly, if adopted, we request a period of one year to develop the scheme. This is in line with the approach taken in 2012 for non-residential properties.

5.7 Prices for other services

5.7.1 Trade waste charges

IPART's draft decisions regarding trade waste prices are to:

- adopt Sydney Water's proposed prices, with an adjustment for corporate costs
- amend the trade waste pricing principles to clarify that these charges should include recovery of corporate costs
- accept Sydney Water's proposed changes to the trade waste price structure to treat shopping centres with centralised onsite pre-treatment as industrial customers (which is consistent with the 2012 determination).

We support these draft decisions, including IPART's adjustments to trade waste prices to allow recovery of a share of Sydney Water's corporate overheads. We note and accept IPART's amendments to the trade waste pricing principles.

5.7.2 Miscellaneous and ancillary charges

IPART's draft decisions regarding miscellaneous and ancillary charges are to:

- generally adopt Sydney Water's proposed prices, with an adjustment for corporate costs and a reduction to our proposed remote meter read fee
- not regulate the credit card payment fee
- not set maximum prices for hot water metering services at this point in time

We support these draft decisions, including IPART's allocation of half the efficient corporate costs to miscellaneous and ancillary charges by 1 July 2020. IPART's views on unregulated services are positive, and provide scope for Sydney Water to continue to explore opportunities for innovation and value adding. We have some concerns with the current wording used for the

remote meter read fee. More detailed comments are provided below. We note that we do not support the revenue allowance for miscellaneous and ancillary charges (see Chapter 3).

Remote meter read fees and inaccessible meter fees

We are pleased that IPART has included the inaccessible meter fee in our miscellaneous and ancillary charges. We also accept the changes IPART has proposed to the pricing and meter size bands for the remote read meter fee. We note that new meters will have the same size based charge as existing meters.

We have some concerns regarding the description of the charge in the Draft Report (page 153, in particular, footnote 342) and Draft Determination (Table 19). We request that IPART clarifies this description in both documents.

Our intention is to charge the remote read meter fee in accordance with both Clause 10.1 and 10.4 of the Customer Contract. We would also like the ability to charge the fee if we install a remote read meter at the customer's request.

This means that the fee could be charged under three scenarios, where a customer:

1. makes their meter inaccessible after 1 July 2016, on two or more occasions; or
2. installs a new meter in an inaccessible location¹⁵; or
3. requests that Sydney Water installs a remote read meter.

In each of these three scenarios we would seek the customer's permission before we install a remote read meter and apply the charge.

The current wording only anticipates the first scenario. However, it is also possible that a customer could install a new meter in an inaccessible location. According to our Water Meter Installation Guide, we should be informed that this will occur. In this instance, Sydney Water should be able to offer customers the opportunity to install a remote read meter up-front, at their own cost. This was one of our objectives for proposing these provisions for the Customer Contract.

Also, Sydney Water has in place processes for dealing with customers who currently have inaccessible meters. Therefore, our preference is that the remote read meter fee only apply to customers who **make** their meter inaccessible **after** 1 July 2016.

To clarify the intent of the clause we would request that the wording be amended. We have proposed a suggested amendment in Chapter 10 Appendices. We also note that the Draft Report and Draft Determination propose slightly different names for the remote read meter and inaccessible meter fee charges. This is also outlined in Chapter 10 Appendices.

Credit card payment fee

We support IPART's decision not to regulate this fee. We note PIAC's recommendation that this fee be subject to similar exemptions to the late payment fee. We do not feel this is necessary,

¹⁵ Clause 10.1 of the Customer Contract states that "If you **install a meter in an inaccessible location**, or make a meter inaccessible to us, we may charge you a fee for the provision of a remote reading device" (emphasis added). The description in the Draft Determination only appears to only consider clause 10.4, which relates to existing meters.

as there are a number of methods of payment available to Sydney Water customers. If customers are facing financial difficulty, we want to encourage them to contact Sydney Water to discuss payment options.

Hot water metering service fee

We support IPART's decision not to set prices for this new service proposed by Sydney Water. This acknowledges that there is scope for this service to be contestable.

Sewer service diagram fees

We accept IPART's draft decision to continue to regulate sewer service diagram fees. Sydney Water had proposed to supply sewerage service diagrams as an unregulated product from 1 July 2016, as there is no statutory obligation for us to provide the diagrams.

We note IPART's comment that Sydney Water could provide a "premium" service (for example, where additional information is added to the diagram) as a commercial unregulated service. Sydney Water will consider this as a potential future option.

5.7.3 Dishonoured or declined payment and late payment fees

Dishonoured and declined payment fee

IPART has recommended to maintain Sydney Water's current dishonoured and declined payments of \$12.27 (2015–16), which will increase by CPI each year. This includes a small increase made by IPART (23 cents) to include some of our corporate overheads. We support this approach.

The fee reflects Sydney Water's administrative costs and does not include any profit. We note that IPART's considers our proposed fee as being broadly cost reflective.

We request that IPART also notes in its final report that the dishonoured and declined payment fee does not include any fees incurred by Sydney Water because of the dishonoured or declined payment. As clarified by Sydney Water at the public hearing on 11 April 2016, additional fees could be charged by Australia Post or banks. These additional fees will be passed through to the customer. In most instances this is not necessary, as these fees are usually charged directly to the customer by the bank.

Late payment fee

Sydney Water accepts IPART's recommended late payment fee of \$4.16 in 2016–17 increasing to \$4.40 in real terms by 2019–20. This includes an adjustment made by IPART to our proposed fee for corporate costs. We support this approach.

IPART has accepted all of the conditions Sydney Water proposed to ensure that the fee is not applied to customers in hardship. It has also proposed that the late fee can only be levied (emphasis added):

1. If the customer has been notified in advance of the late payment fee **and the circumstances in which it may be levied.**

We support this new condition, subject to the removal of the words highlighted in bold.

2. At least 7 **business** days after the due date.

We support this condition, subject to the removal of the word “business”.

In general, IPART’s new conditions align with Sydney Water’s intended approach. However, the current wording raises some technical and implementation difficulties.

Since the public hearing on 11 April 2016, we have further considered the implementation of these new conditions. We are happy to notify customers in advance that a late payment fee or interest, whichever is higher, may apply to overdue accounts. We intend to include this information on customers’ bills.

However, it would be administratively complex to notify customers on each bill of the circumstances that the fee may be applied. We believe the intent of the new condition is to allow customers to understand when the fee may be applied. We are happy to do this and will consider how this could best be done. This could be via a factsheet on our website or notifying customers of the new fee via our customer newsletter (WaterWrap). We do not feel this needs to be prescribed in the terms and conditions set by IPART. Accordingly, we request these words are removed from the new condition.

With regard to IPART’s second condition, Sydney Water currently allows customers seven calendar days to pay after the due date on their bill. Most of our payment methods are available 24 hours a day, seven days a week. As we noted at the public hearing, our billing system works on a calendar day basis. A condition based on seven business days would result in significant implementation and cash flow issues. We are not able to build a change to business days for the purposes of the late fee into our IT systems. Accordingly, we request “business” be removed.

We have considered the Energy and Water Ombudsman NSW’s suggestion that Sydney Water should exempt pensioners from the late payment fee. We do not feel there is a need for all pensioners to be specifically exempt. As we noted at the public hearing, in general, pensioners are very good payers (on average, only three per cent of pensioners receive a reminder notice). Those pensioners who do have difficulty paying their bills will qualify for the exemption if they:

- are on a hardship program offered by Sydney Water
- pay their bills using Centrelink’s payment method (CPAY).

Currently, 1,886 pensioner customers use CPAY to pay their Sydney Water bill. These customers would already qualify for the exemption under the terms proposed by Sydney Water, as this would be classified as a “payment arrangement”.

5.7.4 Rouse Hill Stormwater Catchment Area

Rouse Hill stormwater drainage charge

We agree with IPART’s draft decisions to:

- maintain the Rouse Hill stormwater drainage charge at current levels for residential and non-residential properties
- include a map of the Rouse Hill Stormwater Catchment Area in the 2016 Determination.

We request that IPART amends the Determination to allow all properties that receive stormwater services to receive a charge for this service.

The Draft Determination allows Sydney Water to charge Rouse Hill stormwater charges to all properties that are within the Rouse Hill Stormwater Catchment Area. This is aligned with Sydney Water's proposal that all customers who receive stormwater services in Rouse Hill should receive a charge for this service.

The definition in the Draft Determination of the Rouse Hill Stormwater Catchment Area excludes properties in the Kellyville Village Area. This reflects previous determinations that excluded this area from the definition of the Rouse Hill Development Area. IPART also notes on page 165 of its Draft Report that that these properties should not be subject to declared stormwater drainage area charges. However, these properties are within the stormwater catchment area and do receive stormwater services from Sydney Water. Therefore, it is appropriate that these customers receive a charge for this service.

Historically, Sydney Water has applied the standard stormwater rate to properties in the Kellyville Village Area. This was in accordance with the original 1993 Determination introducing water, sewerage and drainage charges for the Rouse Hill Development Area.¹⁶ Subsequent price determinations continued to exclude these properties from Rouse Hill charges, but remained silent on what charge should be applied. To date, Sydney Water has interpreted this to mean that we should continue to apply the standard stormwater rate to these properties. We did not address this issue in our price proposal, as we intended to continue this practice in the 2016–2020 price period. However, this would not be in line with IPART's statement that these properties should not be subject to declared stormwater drainage area charges. We accept that we may have misinterpreted how these properties should have been charged under previous determinations.

The reasoning for this historical charging difference was that Kellyville Village Area properties were existing at the time that major development in Rouse Hill began. At the time, it was thought that they should not be subject to a higher stormwater charge that reflected the costs of new development in within the Rouse Hill Development Area¹⁷.

From 1 July 2016, Rouse Hill stormwater charges will be applied to all properties in the Rouse Hill Stormwater Catchment Area, including properties that were not within the original Rouse Hill Development Area. Accordingly, it may be appropriate to apply Rouse Hill stormwater charges to existing properties in the Kellyville Village Area. This will mean that broad customer classes receiving the same service pay the same price for that service.

¹⁶ The 1993 Determination (page 4) required Sydney Water to charge existing properties in the Kellyville village area "standard SWB drainage charges", until those properties were redeveloped through subdivision or construction of strata-titled dwellings. Only a very small number of properties have been redeveloped.

¹⁷ The report accompanying the Determination (pages 9-10) stated that "new infrastructure will be built to enable development but will not greatly benefit the people of Kellyville" and accepted Sydney Water's proposal to charge Kellyville Village Area properties the same stormwater rates as the rest of Sydney.

Rouse Hill land charge

We support IPART's draft decisions to:

- extend the application of the land charge to new properties that connect to Sydney Water's water system between 1 July 2012 and 30 June 2026
- allocate a proportion of total Rouse Hill stormwater capital costs to be recovered through the wastewater RAB.

We do not support IPART's draft decision to apply a 50:50 split of cost recovery between the land charge and the wastewater RAB. Instead, we maintain it is appropriate for a larger proportion of costs (approximately 70%) to be recovered through the wastewater RAB.

In total, Rouse Hill stormwater capital costs are around \$52 million, in present value terms. This is roughly split evenly between civil works and land acquisition.

IPART's draft decision recognises that both civil works and land acquisition perform dual stormwater and wastewater functions. In the 2012 Determination, IPART allowed for different forms of cost recovery based on whether costs were for civil works or land acquisition. Its proposed approach to apportion total Rouse Hill stormwater capital costs is a positive move, rather than treating land and civil works differently.

We disagree with a 50:50 cost recovery split. Instead, it is reasonable for a larger proportion of capital costs to be recovered through the wastewater RAB. Maintaining the land charge at its current level (\$248.85 per year in real terms) results in around a 70:30 split of costs between the land charge and wastewater customers. We believe this is a more reasonable apportionment. This would mean that, out of the total \$52 million in costs, the land charge would recover \$15 million (in present value terms), with the remaining \$37 million (in present value terms) from wastewater bills.

As we advocated in our response to IPART's Issues Paper (see pages 37-38 and Appendix 7.1) and at the Public Hearing in November 2015 (see pages 86-90 of hearing transcript), the purchase of land and civil works was primarily driven by the need to reduce nutrient discharges to the Hawkesbury-Nepean River. We have provided historical evidence and documents dating back to the early 1990s to demonstrate that this was a planning requirement attached to the delivery of wastewater services to this new development area.

The 1991 Environmental Impact Statement for this plant stated "an essential goal of the plant is to prevent degradation of the quality of surface water in the vicinity of the Cattai Creek Recreation Area and Mitchell Park" (page 92). This required treated effluent from the plant to not further degrade water quality in Cattai Creek or the Hawkesbury-Nepean River. To achieve this goal, Sydney Water had to not only implement best practice wastewater treatment technology, but also manage nutrients from all areas within the catchment.¹⁸

¹⁸ The EIS considered membrane technology as an alternative method of improving effluent quality. This was not adopted due to its expense and untested nature. The combined use of best available treatment technology with integrated water management was consistent with the approach determined in the 1990s for the Picton and Gerringong-Gerroa treatment plants. At these plants, excess nutrients are removed using biological processes via farm irrigation. Farm irrigation was not an option at Rouse Hill because of the extent and density of the future residential development and the lack of available farm land.

An alternative to using integrated catchment management would have been to use reverse osmosis technology at the wastewater treatment plant. In this case, all of the additional costs of doing this would have been borne by wastewater customers. Sydney Water would have had no role in stormwater management.¹⁹ Our estimate of the financial benefit of implementing integrated water management as opposed to reverse osmosis is that it reduces costs in present value terms of around \$120 million (\$2015–16).

Effectively, integrated catchment management was used to reduce nutrients from other sources (especially stormwater) to offset the increases from the Rouse Hill sewage treatment plant. This required both the quality (pollutants in stormwater and wastewater) and quantity (flow management for creek health, stability and flood management) aspects of stormwater to be managed together. The Rouse Hill stormwater system is more costly than other stormwater systems because it is trying to achieve both these aims. The integrated management approach provided both quality and quantity outcomes in the most efficient manner, with both outcomes being achieved within the same footprint. It also benefits not only customers within the catchment, but also customers immediately downstream of the catchment, and all serviced wastewater customers.

IPART's proposed approach will result in a significant bill impact on a small number of customers. The land charge does not apply to all customers in the Rouse Hill area, but only to new properties that connect to Sydney Water's network, for a period of five years. Around 4,000 – 6,000 properties will receive the charge each year over the 2016–20. We do not think a significant increase in the land charge is consistent with the Government policy to reduce the charge in 2013.

In modelling its proposed land charge of \$432.89 per year (in real terms), IPART has assumed Sydney Water has been receiving this level of charge since 1 July 2012. Sydney Water would not support retrospectively applying the higher charge and IPART's Draft Report does not suggest this should occur (see Table 9.6 on page 163 of the Draft Report). Ultimately, this would mean that over the period to 30 June 2026, Sydney Water would under-recover its costs. This may be a modelling error, rather than an intended outcome.

We also note that the statement on page 162 of the Draft Report that "The current Rouse Hill land charge is...set below cost reflective levels" may be misleading. Sydney Water is interested in recovering our efficient costs for Rouse Hill. The 2013 reduction was not based on accepting a loss, but on a reduction in costs (by limiting land acquisition to only include land required for capital works). This relied on our best estimates at the time of the amount of land needed and its future market value. Footnote 374 in the Draft Report accurately reflects what occurred at the time.

5.8 Unfiltered and unmetered water charges

We support IPART's draft decisions on unfiltered and unmetered water charges. These are consistent with our Price Proposal.

¹⁹ Rather, stormwater would have remained a responsibility of the local council. Sydney Water only manages stormwater in Rouse Hill because of the planning requirements for the wastewater treatment plant. Apart from Rouse Hill, Sydney Water has not taken on any new stormwater functions in any other part of Sydney in recent decades.

5.9 Minor Service Extension charges

We support IPART's draft decisions to:

- maintain the existing methodology for Sydney Water to set minor service extension charges
- update the discount rate to be based on the draft regulatory pre-tax weighted average cost of capital (WACC)

We note that in previous determinations the discount rate used in the minor service extension methodology was not linked to the pre-tax WACC used to earn a return on our Regulated Asset Base. We consider IPART's decision to align these is appropriate.

It would be helpful for IPART to include its reasons for this change in the final report.

5.10 Recycled water

5.10.1 Recycled water prices

IPART has made a number of draft decisions regarding recycled water pricing to:

- in the future, set prices for all recycled water schemes, following a broader review of recycled water regulation in 2017–18
- adopt Sydney Water's proposed recycled water price for the Rouse Hill scheme of \$1.77 per kL (in real terms), based on 90 per cent of our proposed drinking water usage price
- reallocate a proportion of Sydney Water's corporate costs to recycled water.

Sydney Water strongly supports a broader review of recycled water regulation. We would be pleased to work with IPART to outline our position on recycled water, current issues with the funding framework and provide suggestions on any other areas of interest for review. Such a review could cover the regulatory framework for all recycled water providers, not just public utilities.

With regard to setting prices for other recycled water schemes, Sydney Water will consider this new position. We note that this is a change in IPART's approach to recycled water pricing. Rather than taking a light-handed regulatory approach, IPART indicates that, in the future, it will set prices for all recycled water schemes. On page 171 of the Draft Report, IPART suggests this will include regulating prices for all voluntary schemes, not just mandatory schemes. We recommend that this be considered as part of the broader review flagged for 2017–18.

We support IPART's draft decisions regarding prices for the Rouse Hill scheme and allocating a proportional share of corporate costs to the recycled water business.

While IPART has not set prices for any other schemes in this Draft Determination, we are pleased to note it considers our prices for other mandated schemes are reasonable.

5.10.2 Rosehill-Camellia recycled water scheme

We note IPART's draft recommendation that the ongoing economic case for the Rosehill (Camellia) scheme should be reassessed. Sydney Water implemented this recycled water scheme

as a water security measure at the Government's request. There are significant sunk costs in the scheme and it continues to provide for future water security.

As the Government directed us to deliver the scheme, and to recover some costs through drinking water prices, it would be for Government to decide whether Sydney Water should reassess the scheme's economic case.

We also note that the Draft Report states that Rosehill scheme adds around \$8 to a typical residential customer's water **and sewerage** bill (page 58). The direction from the government only allows us to recover the costs of complying with the direction through water prices. We do not recover any costs through a customer's sewerage bill.

5.11 Other issues

5.11.1 Pensioner rebates

Sydney Water provides concessions on water, wastewater and stormwater drainage service charges to recipients of Federal Pensioner Concession Cards and certain Department of Veterans' Affairs cards.

IPART's Draft Report includes commentary in several places on the impact of their draft decisions on pensioner bills. For example, page 181 states that:

Eligible pensioners will experience larger bill reductions under our draft prices. This is because pensioners receive a concession of 83% of the wastewater service charge and are consequently largely unaffected by our decision to restructure this charge.

Table 11.2 of IPART's Draft Report then outlines pensioner bills under a number of different water use scenarios.

The pensioner bills and percentage reductions pensioners quoted by IPART are based on an assumed continuation of current rebates. This does not accurately reflect how pensioner rebates are calculated.

Each determination period, Sydney Water resets pensioner rebates in order to retain equity in bill movements between pensioner and non-pensioner customers. The objective of this policy is to ensure that pensioners are no worse off (or better off) than non-pensioner customers, as a result of price changes. The pensioner rebates are reflected in Sydney Water's annual Social Program Funding Submission, which is negotiated and agreed by NSW Treasury for inclusion in the NSW State Budget.

Based on the prices levels and structures in the Draft Determination, we anticipate that there will be a small reduction in the rebate percentage for pensioner rebates for wastewater charges. This will ensure that pensioners experience the same percentage bill reduction as non-pensioners. The existing pensioner rebate for water service charges (100%) and for stormwater service charges (50%) will remain unchanged.

If IPART would like to include this information in its Final Report, we are happy to work with IPART to calculate the expected pensioner bill reductions.

5.11.2 Wholesale pricing

We strongly support IPART's draft decisions to:

- differentiate and exclude wholesale customers from this determination
- consider the issue of prices for wholesale services as part of a separate determination.

We believe that the buying of wholesale services and on-selling them to end-users is not the same as buying those services as a direct residential or non-residential customer. We consider that any entity who wishes to do this via the monopoly infrastructure of a primary water utility is an access seeker, and should be classified as a separate wholesale customer.

As wholesale pricing is an important issue for the emerging market, we believe it is essential that IPART's objective of excluding wholesale customers is clearly articulated and understood. It would be helpful for IPART to provide more detail on its intention behind the exclusion of wholesale services in the Final Report accompanying the Determination.

It is also important that the definitions relating to wholesale services customers are clear and unambiguous. We have some concerns that the draft definitions around wholesale customers and services may not cover all circumstances that IPART intends to exclude. These concerns include that the definitions:

- do not include licenced network operators
- do not reflect the significant amendments to the WIC Act, including the changes in licensing requirements for supplying large customers
- may not contemplate all scenarios where Sydney Water provides a service to a wholesale customer which is then on-supplied by the wholesaler.

Due to the technical nature of the definitions we would be pleased to assist IPART to ensure its objectives of excluding wholesale customers from the Determination are met.

We look forward to providing further input to IPART's separate review of wholesale pricing throughout 2016.

6 Operating and capital expenditure

Key messages

- We do not support Atkins-Cardno's recommended reductions of:
 - \$80.7 million to our 2016–20 core operating expenditure forecast
 - \$419.8 million to our 2016–20 capital expenditure forecast
 - \$24.8 million from the RAB in 2017–18 for stranded IT assets.
- However, we accept:
 - \$56.0 million reduction to our operating expenditure forecast
 - \$185.4 million reduction to our capital expenditure forecast.
- We do not support the remaining reductions because:
 - the reductions will adversely impact service and environmental outcomes and are financially inefficient
 - the expenditure efficiency review does not reflect good regulatory practice and some of its recommendations do not reflect good asset management practice
 - their adverse consequences are not commensurate with small average bill savings
 - the prudency adjustment arising from replacing our existing Customer Management System:
 - uses an inconsistent IT asset life
 - ignores the avoided costs associated with not having to integrate our new billing system to the existing Customer Management System.
- We fully support IPART's plan to put performance benchmarking in place and agree on the attributes which should be included.

Core operating expenditure

- We do not accept the reduction of \$80.7 million and the resulting allowance of \$2,998.9 million.
- We are challenging \$23.9 million of the reduction.
- There are a range of risks to operating expenditure, including increasing electricity costs and the impacts of capital cuts on maintenance and breakdown costs.

Capital expenditure

- We do not accept the reduction of \$419.8 million and the resulting allowance of \$2,353.2 million.

- We are challenging \$234.5 million of the capital reduction on the basis that:
 - \$195.7 million of specific cuts lead to unacceptable service and environmental risks and do not reflect prudent asset management
 - \$39.0 million of the procurement catch-up efficiencies were inappropriately applied to program forecasts which already incorporated delivery savings.
- We do not accept the prudency reduction which removes \$24.8 million from the asset base in 2017–18 for stranding of the Customer Management System.

Please note – totals may not add due to rounding.

6.1 Outcome of the expenditure review

IPART has accepted Atkins-Cardno's recommended reductions of:

- \$80.7 million to our 2016–20 core operating expenditure forecast, comprising:
 - specific reductions of \$27.9 million
 - continuing and catch-up efficiencies of \$52.7 million.
- \$419.8 million to our 2016–20 capital expenditure forecast, comprising:
 - specific reductions of \$264.8 million
 - continuing and catch-up efficiencies \$155.0 million.
- \$24.8 million from the RAB in 2017–18 for a stranded IT asset.

6.1.1 Overview of our response

We are committed to providing services and complying with our obligations at the lowest sustainable cost. In light of the proposed cuts we challenged ourselves to reduce expenditure in the near term, while managing risk and without increasing costs inefficiently over the longer term. We concluded that:

- We **accept** a:
 - \$56.0 million reduction to our operating expenditure forecast.
 - \$185.4 million reduction to our capital expenditure forecast.
- We **do not support** the:
 - remaining reductions of:
 - \$23.9 million to our operating expenditure forecast.
 - \$234.7 million reduction to our capital expenditure forecast.
 - \$24.8 million reduction from the RAB in 2017–18 for a stranded IT asset.

We are challenging around half of the proposed cuts as they create risks to services, the environment and long term efficiency, for only very small incremental reductions to average customer bills. We do not accept that the expenditure review methods are robust as they do not reflect good regulatory practice and do not deliver optimised outcomes.

6.1.2 Revised core operating and capital expenditure forecast

Table 6-1 compares IPART's draft decision on the 2016–20 efficient level of core operating and capital expenditure to our proposal.

Table 6-1: Core operating and capital expenditure (\$million, 2015-16)

	Core operating expenditure	Capital expenditure
Our 2015 proposal	3,079.6	2,772.9
IPART's draft decision	2,998.9	2,353.2
Our revised forecast	3,022.8	2,587.9
Difference to IPART draft decision (reductions we reject)	23.9	234.7

6.1.3 Rationale for disputing the expenditure cuts

We are concerned about the limitations of the review process and the robustness of the methods by which expenditure cuts are derived. We do not consider that the efficiency review reflects good regulatory practice, especially in light of the combined \$500 million of expenditure reductions that resulted. In particular, we are concerned that some of Atkins-Cardno's proposed capital expenditure reductions pose unnecessary risks to the delivery of services to our customers, community and to the environment, yet only provide a small reduction in customer bills to originally proposed by Sydney Water.

We note that Atkins-Cardno set more challenging targets as we are not subject to an incentive scheme. We are concerned about the implications for the proposed Efficiency Carryover Mechanism (ECM).

6.1.4 Strong agreement with IPART's plan to develop performance benchmarking

IPART has stated it will work with the industry and other regulators to develop an improved performance benchmarking framework²⁰. We are fully supportive of this plan and agree with IPART's view of the attributes which should be included. Our further comments (following) on the expenditure review process and method should be considered in this context.

6.1.5 Expenditure review process

Sydney Water is a large and complex business with \$2,500 million annual revenue and 1.9 million customers. In that context, the review process and timeline do not provide reviewers a fair opportunity to be confident that \$500 million of expenditure reductions are justified.

²⁰ Decision 4, 'Review of Prices for Sydney Water Corporation' Draft Determination, IPART, March 2016, p45

We note that both Atkins-Cardno and IPART's Draft Report have concluded that the expenditure allowances are sufficient for us to meet service and environmental obligations. However, the analysis was not sufficient to allow those conclusions to be drawn and Sydney Water, customers, the wider community and the environment bear the risk. There are examples where misinterpretation and missed information seems to have led to inappropriate, large expenditure cuts.

Comments on timing and approach

The team of four efficiency reviewers spent four days at Sydney Water and divided much of their task (at least in the interview phase) into streams resourced by single reviewers. We were asked for various pieces of information and provided over 700 documents in response.

We acknowledge that the reviewers are experienced and skilled professionals who clearly had knowledge of businesses like ours. However, they had a very limited time on site for their analysis and to draw conclusions thereafter. It is unlikely that they were able to fully consider the extensive information provided and there are instances where it appears there has been some misunderstanding. For example, it is implied that certain Operating Licence targets reflect an efficient level of investment. It is recognised by Sydney Water and IPART that Operating Licence targets reflect a *minimum service standard* rather than efficient costs.

While we recognise the reviewers' skills and experience, we conclude that the challenging timescale and information volume contributed to examples such as this.

The reviewers' approach to dividing up the task may have impeded the alignment of their conclusions. For example, the strategic review was mainly done by one reviewer and we were concerned that the other reviewers considered specific issues without that important context. Similarly, the conclusions on capital and operating expenditure appear to have been made in isolation. There is no clear consideration of the need for more maintenance and repairs as a result of the \$264.9 million of scope reductions in capital expenditure.

Efficiency review methods

Atkins-Cardno recommended expenditure reductions via two mechanisms²¹. Firstly, the program review recommended specific reductions to capital programs and operational expenditure budgets.

Secondly, using the Frontier Company method, they applied continuing and catch-up efficiency to operating and capital expenditure, where:

- Continuing efficiencies assume that a theoretical frontier company improves efficiency on an ongoing basis using new technology and through innovation.
- Catch-up efficiencies assume that we are currently less efficient than the theoretical frontier company. This is based on a subjective conclusion that there are a range of business areas in which performance improvement would lead to productivity gains.

For example, in relation to operating expenditure efficiencies,

²¹ We note that the approach is different to that applied to Hunter Water and WaterNSW.

We have made a judgement in relation to improved processes and that could be achieved and by the end of the future price path... Atkins-Cardno Draft Report, p75

Table 6-2 presents the different efficiency factors that have been applied to our operating and capital expenditure.

Table 6-2: Efficiency factors applied

Efficiency type	Percentage applied	Comments
Continuing efficiencies (operating and capital expenditure)	0.25% a year	Based on a 7 year old UK regulator's Determination
Operating expenditure catch-up efficiencies	Increases from 0.75% in year 1 to 3% in year 4	Efficiencies based on a subjective view
Capital expenditure - catch-up efficiencies	Increases from 2.9% in year 1 to 8.6% in year 4	Efficiencies based on a subjective view of our capability in 4 process areas: value engineering, capital program management, cost estimation and procurement

Comments on the program specific reviews

The Atkins-Cardno report does not does present an internally consistent account of our business. It noted that our investment and asset management processes were much improved:

'Overall, we found that Sydney Water had well developed and robust program, project and asset management practices, supporting systems and documentation' Atkins-Cardno report p53

Despite our forecast being developed using these processes, the Atkins-Cardno report recommends program specific scope cuts based on little or no analysis and weak rationale. Some of the recommendations could not be enacted in practice as they do not reflect prudent asset management.

In particular, the recommendations include examples of:

- arbitrary conclusions which apply percentage reductions, or set expenditure to past levels without sufficient justification (ignoring our long-term investment forecasts)
- conclusions which are inconsistent with the information we presented
- decisions which may increase asset lifecycle costs or have very marginal savings, with a negative service impact and even non-compliance
- asset management actions which are not prudent, for example, that alkali gel spraying is widely applicable to delay a large proportion of critical sewer renewals.

Comments on the Frontier Company method

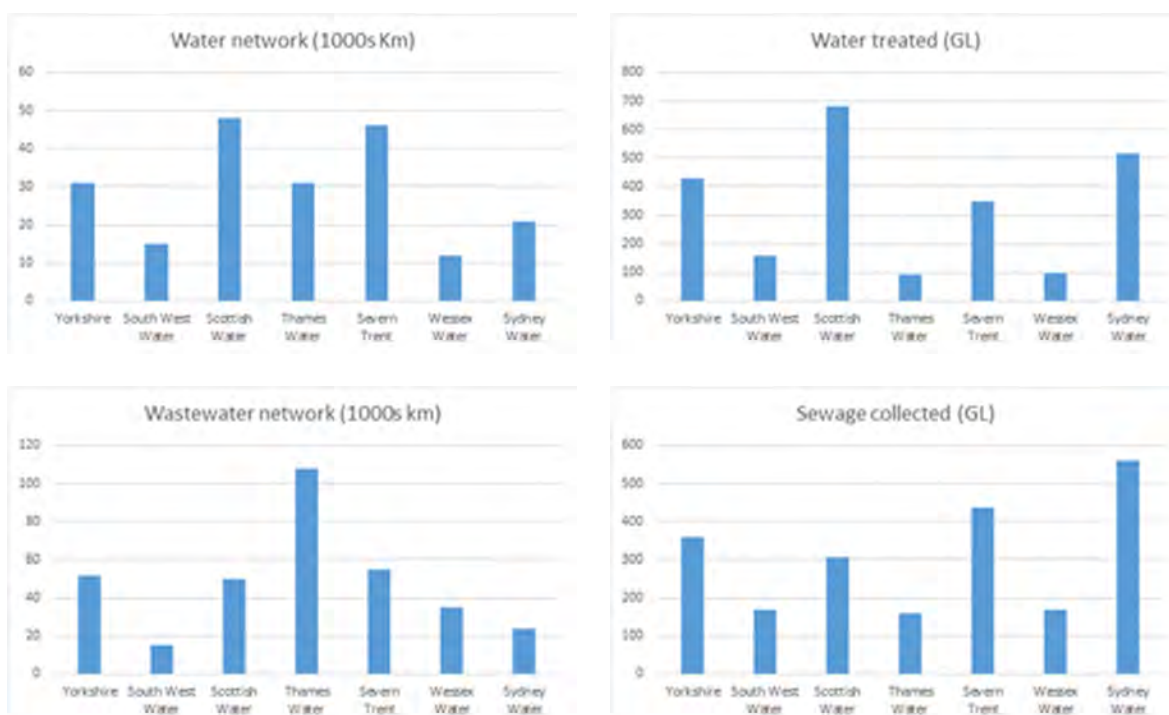
We support benchmarking as an expenditure review tool if it is developed and applied with good regulatory practice, including that:

- methods and data sources are transparent and have been reviewed by business
- the results of benchmarking analysis are validated by cross-checking with other analysis
- conclusions are based on a range of analyses
- the circumstances and characteristics of different businesses are accounted for.

This is in line with IPART's proposed approach for the future and the recent Australian Competition Tribunal's decision²².

The Frontier Company method, which leads to \$200 million of expenditure cuts, does not meet these requirements. The Atkins-Cardno report provides insufficient reasoning, rationale and justification for efficiencies applied. Given the lack of transparency, this method does not properly account for our actual circumstances – an essential element of good practice benchmarking. By way of example, Figure 6-1 shows how we are different to other water utilities.

Figure 6-1: How we are different to other water utilities



²² Application by Public Interest Advocacy Centre Ltd and Ausgrid, [2016] ACompT 1, particularly through paragraphs 443 to 494, Australian Competition Tribunal (ACT), 26 February 2016.

Table 6-3 shows our assessment of the Frontier Company method.

Table 6-3: Assessment of Frontier Company method against good practice attributes

Good practice benchmarking attribute	Included in Frontier Company method?	Comments
Transparent methods and data sources	X	<ul style="list-style-type: none"> The frontier business' characteristics are undefined
Methods and data sources validated by business	X	<ul style="list-style-type: none"> The comparison between Sydney Water and the frontier is subjective based on the reviewers' experience Continuing and catch up efficiency factors not validated Incorrectly assumes further 'catch-up' efficiency on top of ones we already applied (eg in procurement)
Results of analysis cross-checked by other methods	X	<ul style="list-style-type: none"> It does not appear this has occurred. Our cross-check suggests that the frontier (which should be a comparable water utility) has improved its productivity at a much faster rate than the rest of the Australian economy
Results are normalised for the specific circumstances of the business being reviewed	X	<ul style="list-style-type: none"> No transparency around any normalisation of data We are subjectively compared to unspecified overseas businesses These may have quite different operating contexts

The result of the analysis implies that the frontier is accelerating away from us, notwithstanding large reductions in our operating expenditure since 2012. Our review suggests that either:

- we have become significantly *less* efficient over the last four years, in spite of reducing operating expenditure on a range of measures, or
- the frontier company (a comparable water utility) has improved its productivity at a much faster rate than the rest of the Australian economy.

Neither of these is true, and it adds to our concern that there are flaws in the method and that the results have not been validated. It is less robust than the process used by the Australian Energy Regulator, which was recently critiqued by the ACT.

This section has presented an overview of our concerns. More detailed analysis of the Frontier Company method is provided in Chapter 10 Appendices.

6.1.6 Detailed responses on operating and capital expenditure

In developing our response to the draft decision, we have taken account of information which has come to light since making our Pricing Proposal in 2015. While the proposed expenditure cuts are significant, we have challenged ourselves to reduce our forecasts to a level which provides even

lower customer bills. Importantly, we have also balanced risks to services and the environment and have sought to avoid the need for future catch up asset renewals and inefficient lifecycle costs.

The remainder of this chapter addresses:

- our revised operating expenditure forecast (Section 6.2)
- our revised forecast capital expenditure forecast and our challenges to specific program cuts and the efficiency factors applied (Section 6.3).

More detailed analysis of the Frontier Company method is in Chapter 10 Appendices.

6.2 Operating expenditure

6.2.1 Summary of our position

IPART has accepted Atkins-Cardno's recommended 2016–20 core operating expenditure of \$2,998.9 million²³. This is a reduction of \$80.7 million compared to our proposal. Our position on the proposed reductions to core operating expenditure is shown in Table 6-4.

Table 6-4: Our position on the proposed reductions (\$million, 2015-16)

Category	Atkins-Cardno	Sydney Water	
	Recommended reduction	Position	Proposed reduction
Energy costs	19.4	Accepted	19.4
Service Delivery costs	8.5	Accepted	8.5
Continuing and catch-up efficiencies	52.8	Disputed	28.1
Total	80.7		56.0

After the proposed reduction of \$56.0 million, our revised forecast core operating expenditure is \$3,022.8 million. At this level of core operating expenditure we:

- have included new efficiency adjustments that increase our risk profile without requiring us to take on unacceptable risk
- are absorbing increased operating expenditure resulting from Atkins-Cardno's recommended capital expenditure reductions.

²³ For avoidance of doubt this excludes BOO water filtration costs and bulk water costs. This value is not shown in IPART's Draft Determination but can be derived from Table 4.6 in that report by subtracting B©O costs of \$354.3 million.

6.2.2 IPART's draft decision on operating expenditure

IPART's draft decision on the efficient level of total operating expenditure includes amounts for:

- Build Own Operate (BOO) water filtration costs
- bulk water costs
- core operating expenditure.

Table 6-5 compares IPART's draft decision on the 2016–20 efficient level of total operating expenditure to our proposal.

Table 6-5: 2016-20 Operating expenditure (\$million, 2015-16)

	Our proposal	IPART's draft decision	Difference
BOO water filtration costs	354.3	354.3	0.0
Bulk water costs	1,568.6	1,554.8	-13.8
Core operating expenditure	3,079.6	2,998.9 ²⁴	-80.7
Total	5,002.5	4,908.0	-94.5

6.2.2.1 BOO water filtration costs and bulk water costs

In its draft decision IPART has:

- accepted our proposed BOO water filtration costs of \$354.3 million
- reduced our proposed bulk water operational expenditure by \$13.8 million, comprised of:
 - an increase of \$8.0 million in Sydney Desalination Plant (SDP) related costs
 - a decrease of \$21.8 million in WaterNSW related costs.

In its draft decision, IPART notes that it:

- will adjust our bulk water costs in the final determination for any changes it makes to WaterNSW's prices
- has retained the pass-through mechanism to account for uncertainties around SDP future costs.

We **partially accept** IPART's draft decision 7, but only as it relates to bulk water purchase costs (as set out in Table 4.6 of the Draft Report).

We **accept** IPART's draft decision 8 relating to pass-through mechanisms for SDP and Shoalhaven costs.

²⁴ The Atkins-Cardno report included this same amount for core operating expenditure.

Core operating expenditure

IPART has accepted Atkins-Cardno's recommended 2016–20 core operating expenditure of \$2,998.9 million. This is a reduction of \$80.7 million compared to our proposal, made up of:

- \$19.4 million of specific adjustments to energy costs
- \$8.5 million of specific adjustments to Service Delivery costs
- \$52.8 million of continuing and catch-up efficiencies.

We **do not support** IPART's recommended core operating expenditure of \$2,998.9 million due to the adverse consequences of the reductions and the method used to derive them.

6.2.3 Our revised core operating expenditure forecast

While some things have changed, that will allow us to reduce our forecast of \$3,079.6 million that we developed in December 2014 we **do not support** IPART's recommended core operating expenditure of \$2,998.9 million. Atkins-Cardno's recommended savings of \$80.7 million are not in the long-term interests of customers, as to meet this challenge we must take on unacceptable risk over 2016–20.

Rather than relying of Atkins-Cardno's approach of applying general continuing and catch-up efficiencies, we have developed a revised forecast of \$3,022.8 million using the process outlined in our 2015 proposal. The new forecast, which is \$56.0 million less than our proposal:

- includes updated divisional budget forecasts which include further efficiencies compared to our forecast in December 2014
- has been challenged via our internal heat-mapping process
- does not include any allowance for additional operating expenditure requirements resulting from Atkins-Cardno's recommended capital expenditure reductions.

The intermediate steps used to derive our revised forecast core operating expenditure is shown in Table 6-6.

Table 6-6: Core operating expenditure (\$million, 2015-16)

	Total 2016-20
2015 Proposal	3,080
Updated Divisional bids	3,062
New initiatives	8
Heat map savings	-24
Other adjustments (non-Heat map)	-23
Revised forecast	3,023
IPART's draft decision	2,999
Difference	24

Table 6-7 compares IPART's draft decision on the 2016–20 efficient level of core operating expenditure to our proposal.

Table 6-7: Core operating expenditure (\$million, 2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
Our 2015 proposal	772.5	774.1	769.1	764.0	3,079.6
IPART's draft decision	764.2	757.9	742.0	734.8	2,998.9
Our revised forecast	768.7	763.7	748.7	741.7	3,022.8
Difference to IPART draft decision	4.5	5.8	6.7	6.9	23.9

Risks to revised core operating expenditure forecast

We explored making larger reductions to our core operating expenditure forecast, but concluded that risks are unacceptable. Additionally, the revised forecast includes a significant amount of downside risk. In particular the likely increase in electricity is completely out of our control and could have a large impact. Areas of uncertainty and other expected sources of higher operating costs are summarised in Table 6-8.

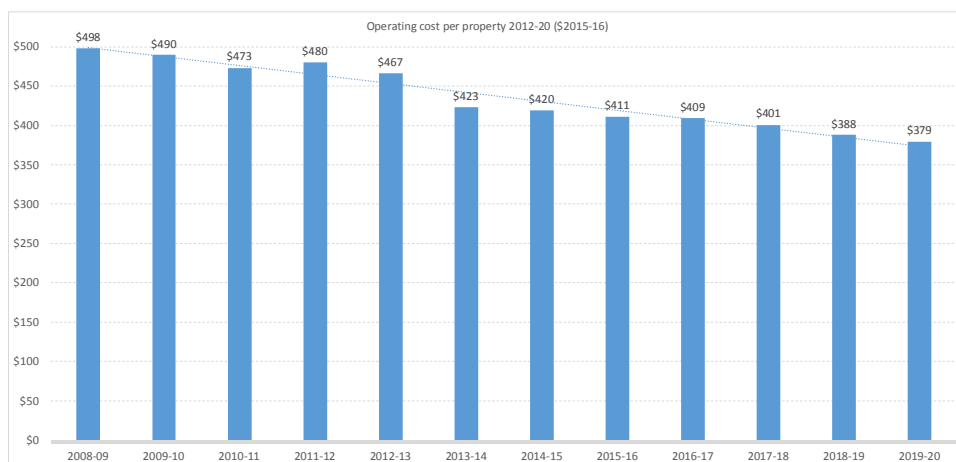
Table 6-8: Revised core operating expenditure risks

Operating expenditure risk	Impact (\$million)	Reasons and degree of confidence
Higher water filtration costs	\$1	<ul style="list-style-type: none"> Directly related to higher demand forecast assumed by IPART. Outcome is modelled in detail, impact is certain if this demand eventuates.
Higher electricity costs	\$5 to \$10	<ul style="list-style-type: none"> Network prices will increase following the successful appeal of the Australian Energy Regulator's Decision. Timing and amount is uncertain. \$10 million is around half of Atkins-Cardno's recommended reduction.
Impact of capital expenditure reduction to Reticulation Watermains	\$3 to \$4	<ul style="list-style-type: none"> Modelled, refer to Section 6.3.7.
Impact of capital expenditure reduction to Avoid Fail Sewers	\$1 to \$2	<ul style="list-style-type: none"> Modelled, refer to Section 6.3.7.
Impact of other reductions to the capital expenditure program	>\$10	<ul style="list-style-type: none"> Maintenance, breakdown, customer service and remediation costs will increase. Exact amount depends on scope cuts made but estimate does not assume major failures. While not modelled, some impact is certain.
Estimated range of the impact	\$20 to >\$27	

Core Operating expenditure per property

Figure 6-2 shows our revised core operating expenditure forecast continues our long-term trend of driving down the core operating expenditure per property. Actual cost per property was \$467 in 2012–13 and will fall to \$379 in 2019–20, a reduction of 19% from the start of the current period to the end of the next.

Figure 6-2: 2008-20 Core operating expenditure per property (\$2015–16)



6.2.4 Revised total operating expenditure

For clarity, Table 6-9 compares our proposed 2016–20 total operating expenditure to IPART’s draft decision.

Table 6-9: Revised operating expenditure forecasts compared to IPART Report (\$million, 2015-16)

	Sydney Water revised forecast	IPART draft decision	Difference
BOO water filtration costs	354.3	354.3	0.0
Bulk water costs	1,554.8	1,554.8	0.0
Core operating expenditure	3,022.8	2,998.9	23.9
Total	4,931.9	4,908.0	23.9

6.3 Capital expenditure

6.3.1 Summary of our position

IPART has accepted Atkins-Cardno's recommended reductions of:

- \$419.8 million to our 2016–20 capital expenditure forecast
- \$24.8 million from the RAB in 2017–18 for stranded IT assets.

Our position on the proposed reductions to capital expenditure is shown in Table 6-10.

Table 6-10: Our position on the proposed capital expenditure reductions (\$million, 2015-16)

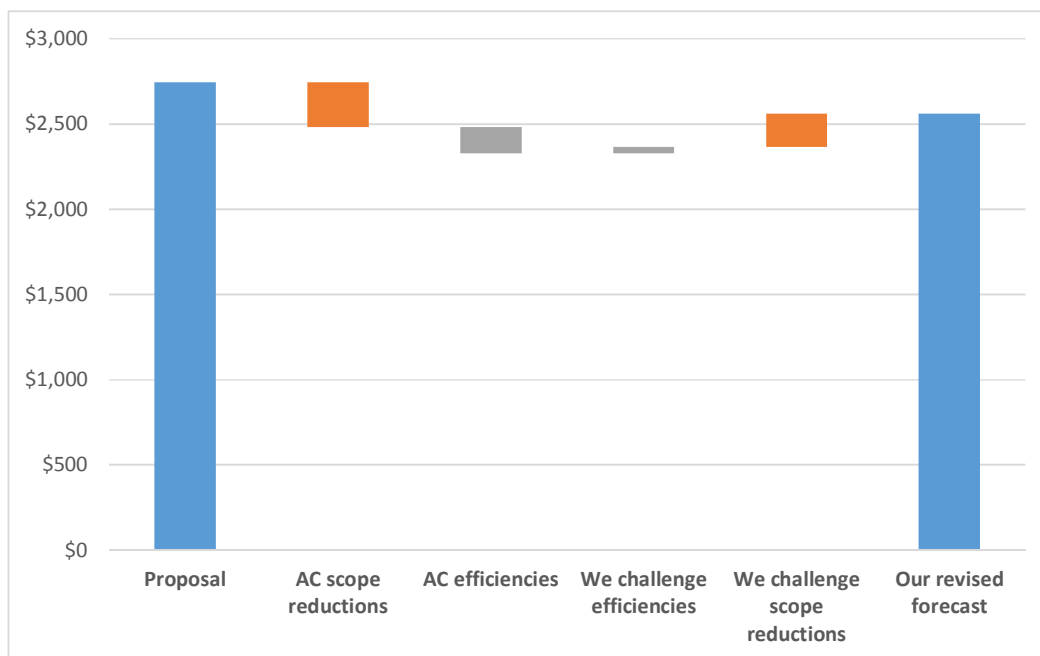
Atkins-Cardno		Sydney Water	
Category	Recommended reduction	Position	Proposed reduction
Specific reductions	264.8	Not supported	69.2
Continuing efficiency	14.3	Accepted	14.3
Catch-up efficiency	140.9	Not supported	102.0
Total	419.8		185.4
2017–18 Prudency adjustment	24.8	Not supported	0.0
Total	24.8		0.0

We accept \$185.4 million of the proposed specific and efficiencies reductions and will manage the increased service risks and possible operating cost increases. There are two specific program cuts (total value \$33.6 million) which we have accepted but have outstanding concerns about. We do not support:

- \$234.7 million of the proposed capital expenditure cuts on the basis that:
 - \$195.7 million of scope cuts across seven programs:
 - lead to unacceptable service and environmental risks and do not reflect prudent asset management
 - drive additional operating cost which have not been analysed
 - \$39.0 million of the procurement catch-up efficiencies of \$80.5 million have been inappropriately applied to program forecasts which already assumed the same savings
- the prudency reduction which removes \$24.8 million from the asset base in 2017–18 for stranding of the Customer Management System.

Figure 6-3 graphically compares the 2016–20 capital expenditure forecast of proposal, IPART's draft decision and our revised forecast.

Figure 6-3: 2016–20 capital expenditure forecast (\$million, 2015-16)



6.3.2 Possible consequences not consistent with bill impacts

The specific program reductions drive higher risks to assets, service and the environment, but result in only a small reduction in the average customer's annual bill of around \$6.70. Table 6-11 summarises the program specific cuts, the small bill reductions and risks in relation to these.

Table 6-11: Specific program reductions, bill impacts and corresponding risks

Disputed program	Program reduction (\$million, 2015-16)	Average annual bill impact (\$)	Consequence of reduction
Wastewater Treatment Renewals	\$101.5	\$3.7	<ul style="list-style-type: none"> No renewals at more than 20 treatment sites. Higher environmental risk and corresponding risk of EPA prosecution. Increased breakdown and maintenance expenditure.
Avoid Fail Sewers	\$34.3	\$1.1	<ul style="list-style-type: none"> Increases risk of structural failure in critical sewer assets, leading to much higher remediation costs and environment, health and other community impacts. Recommended increase in alkali gel spraying is not valid but if it was, operating expenditure would increase.
Reticulation Watermains Renewal	\$26.1	\$0.8	<ul style="list-style-type: none"> Higher lifecycle cost and poorer service outcomes.

North Head Bio-solids	\$13.3	\$0.5	<ul style="list-style-type: none"> Continued work arounds to meet EPL although these lead to odour complaints, higher transport costs and operational risk. Inadequate capacity when one digester is off for maintenance
NWGC – water and wastewater	\$13.4	\$0.4	<ul style="list-style-type: none"> We already assume some commercial risk in later years (if growth does not slow). This cut increases this risk as NWGC growth is actually ahead of forecast.
Metering	\$7.1	\$0.2	<ul style="list-style-type: none"> Possible public health risk form backflow protection failure Bill shock when meters are finally replaced
	\$195.7	\$6.7	

6.3.3 Our revised capital expenditure forecast

Table 6-12 compares IPART's draft decision on the 2016–20 efficient level of capital expenditure to our proposal.

Table 6-12: 2016–20 capital expenditure (\$million, 2015-16)

	Capital expenditure
Our 2015 proposal	2,772.9
IPART's draft decision	2,353.2
Our revised forecast	2,587.9
Difference to IPART draft decision	234.7

The remaining sections cover our detailed responses to the capital expenditure reductions, including:

- Our rationale for disputing the prudence adjustment
- An explanation of how the procurement catch-up efficiency has been applied to programs which already included delivery efficiency assumptions
- Responses on the program specific cuts:
 - Seven disputed program reductions
 - Two programs where we have outstanding concerns.

6.3.4 Prudence adjustment

Atkins-Cardno recommended removing \$24.8 million from the RAB in 2017-18 as a prudence adjustment arising from replacing our existing Customer Management System (CMS) when we commission our new billing system. We disagree with the adjustment because Atkins-Cardno have:

- been inconsistent in their approach to assigning IT asset lives.
- ignored the avoided costs associated with not having to integrate our new billing system to the existing CMS.

IT asset lives

On page 147 of the expenditure review report Atkins-Cardno have assumed an asset life of 15 years for CMS.

This is in contradiction to the Atkins-Cardno finding on page 167, regarding Electronic (IT assets), which states 'This confirmed that the 10 year asset life assumption is appropriate.'

We accept the proposition that a 10 year weighted life is appropriate across the portfolio of IT assets. However, we consider it appropriate that we balance the IT asset lives based on prudent choices that support our customers and business.

Avoided costs of not keeping and integrating existing CMS into the new system

Atkins-Cardno support our proposal to implement SAP IS-U (SAP's Industry Specific Solution for Utilities industries) and SAP Customer Relationship Management (CRM) solution, where CRM replaces the existing CMS. In developing the business case we considered the option of keeping and integrating the existing CMS into the new SAP platform. However, this would cost an extra \$17.8 million (over five years). This information was provided to Atkins-Cardno in November 2015.

This favours our decision as prudent and efficient and we propose that no prudency adjustment be made to the RAB in respect of CMS.

6.3.5 Application of capital expenditure catch-up efficiency

As shown in Table 6-13, Atkins-Cardno have applied \$140.9 million of catch-up efficiencies across 2016-20.

Table 6-13: Catch-up efficiencies (\$million, 2015-16)

Catch-up efficiency type	Amount
Capital program management and optimisation	28.8
Value engineering	23.0
Cost-estimating	8.6
Procurement	80.5
Total	140.9

The percentage improvements applied were based on a subjective assessment of our capability in these areas, compared to a theoretical comparator business. Our overall comments on the weakness of the frontier company benchmarking method are covered generally in Section 6.1.5 and Chapter 10 Appendices. This section relates to how capital efficiencies were applied during the efficiency review.

Challenging the procurement catch-up efficiency

We accept the \$60.4 million challenge arising from Atkins-Cardno's capital program management and optimisation, value engineering and cost estimating catch-up efficiencies.

However, we do not accept \$39.0 million of the procurement catch-up efficiency, as we applied \$139.5 million of delivery efficiencies to all but six of the programs in our infrastructure capital forecast before finalising our Pricing Proposal²⁵. Consequently, Atkins-Cardno's procurement catch-up efficiency:

- *should not have been applied* to programs which already included delivery efficiencies as this would double count the opportunity
- can be applied to the six programs that were not reduced by us before finalising our Pricing Proposal.

Additionally, rather than using Atkins-Cardno's procurement catch-up efficiency, we propose to apply, a more challenging reduction of 7%, which is the average delivery efficiency applied to the other infrastructure programs. As shown in Table 6-14, this results in \$12 million more efficiency for these programs then recommended by Atkins-Cardno.

Table 6-14: Revised delivery efficiencies (\$million, 2015-16)

Program	Program expenditure	Delivery efficiency applied by Atkins-Cardno	SW proposed delivery efficiency
Retic water mains	134.1	6.2	9.4
Metering	41.6	2.0	2.9
Avoid fail sewers (excl. \$19 million on OCU and CDUs)	250.0	11.0	17.5
Retic sewers (dry weather overflow)	47.0	3.3	3.3
Stormwater renewals	71.1	3.7	5.0
SCADA/IICATS	50.0	3.5	3.5
TOTAL	593.8	29.7	41.6

²⁵ This was after we applied scope reductions. The reviewers were provided with document "All_23-01_Efficiencies in capital forecast", Sydney Water, October 2015

6.3.6 Summary of our position on catch-up efficiencies

Table 6-15 summaries our position on catch-up efficiencies.

Table 6-15: Our position on the catch-up efficiencies (\$million, 2015-16)

Atkins-Cardno		Sydney Water	
Category	Recommended reduction	Position	Proposed reduction
Capital program management and optimisation	28.8	Accepted	28.8
Value engineering	23.0	Accepted	23.0
Cost-estimating	8.6	Accepted	8.6
Procurement	80.5	Not supported	41.6
Total	140.9		102.0

6.3.7 Capital reductions we challenge with significant concerns

IPART has accepted Atkins-Cardno's recommended reductions. We have significant concerns about Atkins-Cardno's recommendations in relation to seven programs which are cut by a total of \$195.7 million. The following sections detail our concerns.

Wastewater Treatment Plant Renewals

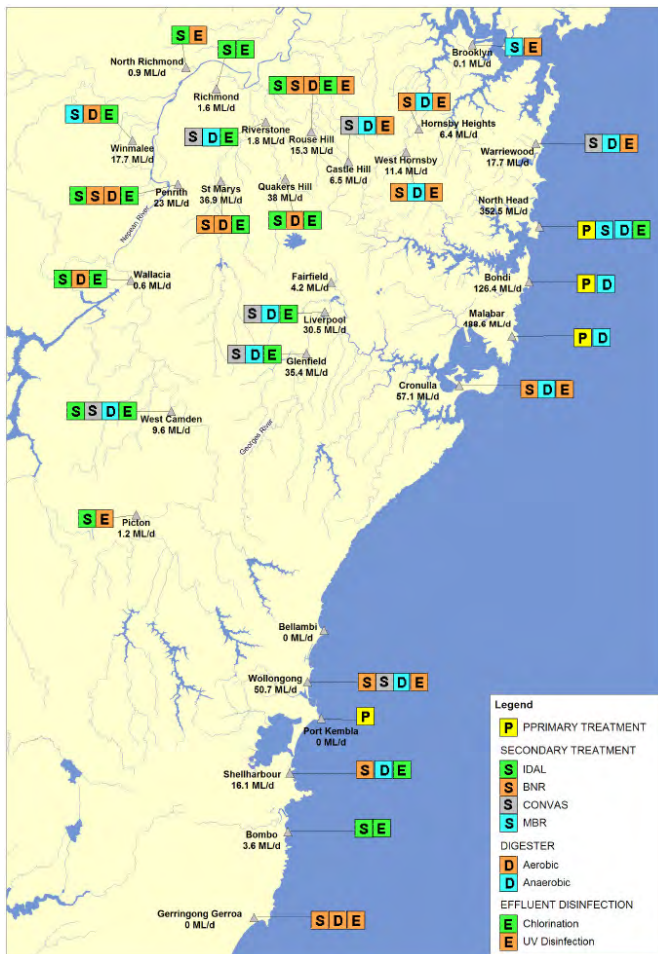
Item	Details
Atkins-Cardno's recommended reduction (excl efficiencies)	\$101.5 million from \$289.8 million
Average annual bill impact (\$)	\$3.7 per customer
Atkins-Cardno's Rationale	<ul style="list-style-type: none"> The lower level of expenditure in the 2012–16 period was sufficient to maintain Operating Licence and Environmental Protection Licence (EPL) performance. The Program Business Case did not present expected asset condition, risk and performance in 2020 if the investment did not proceed.
Our concerns	<ul style="list-style-type: none"> Neither the analysis nor the very short explanation are commensurate with a \$101.5 million program reduction. The decision to invest takes account of much more than whether EPLs and the Operating Licence have been met in the past.

- The reduction calculated was arbitrary and the recommended expenditure was simply the average annual spend in the 2012–16 period which is not directly comparable.
- After applying the continuing and catch-up efficiencies the program expenditure is reduced by almost 40%. This is a significant reduction on a program with so much interdependency and the implications stretch beyond the 2016-20 period.

Program Background

Sydney Water has 28 Wastewater Treatment Plants (WWTP) serving approximately 4.5 million people across Sydney, Blue Mountains and Illawarra. This is a significant operation, processing around 1,400 ML of wastewater per day on average. Figure 6-4 shows the location of Sydney Water's wastewater treatment facilities and the type of treatment provided.

Figure 6-4: Wastewater treatment plants - location and process types



The fleet of wastewater treatment plant is not made up of a homogenous set of assets. The plants have been constructed, expanded and enhanced over many decades to meet growth and

increasingly stringent environmental standards. Eight treatment plants were established more than 50 years ago.

Given this background, there are a range of asset types and technologies in place, and capacities and performance requirements vary greatly depending on discharge location and size:

- The three deep ocean outfall plants in Sydney serve a combined population of over 4 million, processing around 80% of total wastewater.
- Fifteen smaller and less interconnected treatment plants are located in western Sydney. They serve much smaller populations but operate with more stringent environmental standards for discharges directly or indirectly into the Hawkesbury-Nepean River.
- There are also fifteen plants which produce recycled water, as well as discharging effluent.

Investment planning for wastewater treatment must take account of the interaction of the various obligations, performance requirements, asset condition, operational dependencies and population growth. Our integrated planning approach considers the different combinations of drivers. Often we make a judgement on the allocation of drivers to expenditure items for regulatory reporting purposes. It is not always possible to make an exact calculation of how much of a project is for growth and how much is to meet existing mandatory standards. Table 6-16 shows how allocations have been made for this program.

Table 6-16: Driver allocation for wastewater treatment expenditure 2016-20 (\$million, 2015-16)

Program	Existing mandatory standards	Growth	New mandatory standards	Total
Quakers Hill WWTP	X			\$173.2
Wastewater Treatment Plant Renewals	X			\$289.8
North Head Bio-solids		X		\$35.1
Winmalee WWTP			X	\$26.1
Total				\$524.2

Given we plan on an integrated basis there are arguments for different driver allocations for some projects within these. For example, the North Head Bio-solids project which is allocated to Growth, is actually an integral part of the project to upgrade the North Head Bio-solids and de-watering end-to-end process. This is subject to a number of reliability, performance and capacity issues which cannot be easily separated. This project is discussed further in a later section.

Drivers of expenditure

The program is focused on renewing assets across the 28 WWTPs. These are a diverse set of assets. Some sites are 75 years old, others built in the 1980s and 1990s now require significant renewals.

In developing this program, there are a range of obligations which must be met and other objectives which are considered. The plants must:

- maintain performance against Environment Protection Licence (EPL) in terms of both environmental performance and proper operations
- maintain the health and safety of staff and the public
- manage the use and disposal of bio-solid products in accordance with the Bio-solid Guidelines
- meet the Operating Licence requirement in relation to asset management²⁶
- meet *Australian Guidelines for Water Recycling* (recycled water plants)
- minimise the impact of our activities on customers and communities
- consider our impacts on waterway and beach aesthetics.

The most influential of these are the 23 EPLs which cover our wastewater treatment plants – some cover multiple plants discharging into common waterways. EPLs set discharge limits in terms of volumes, frequency and output content and requirements vary greatly depending on the location. Typically, inland plants are required to measure more assessable contaminants and at much stricter levels. Table 6-17 contrasts some of the key differences between a large ocean discharge plant and a smaller inland discharge plant.

Table 6-17: Comparison of wastewater treatment performance requirements

Attribute	Coastal plant (Malabar)	Inland plant (Quakers Hill)
Population served	~1.8 million	~190,000
Max. capacity (ML a day)	500	32
Discharges to	Deep ocean outfall	Hawkesbury-Nepean River
Number of concentration limits in EPL	5	15
Example pollution concentration limit – ammonia (mg/L)	Not limited	<1 mg/L (50 th percentile)

²⁶ There are no specific wastewater treatment targets in the Operating Licence

Example assessable pollutant concentration
limit – suspended solids (mg/L)

<300 mg/L
(90th percentile)

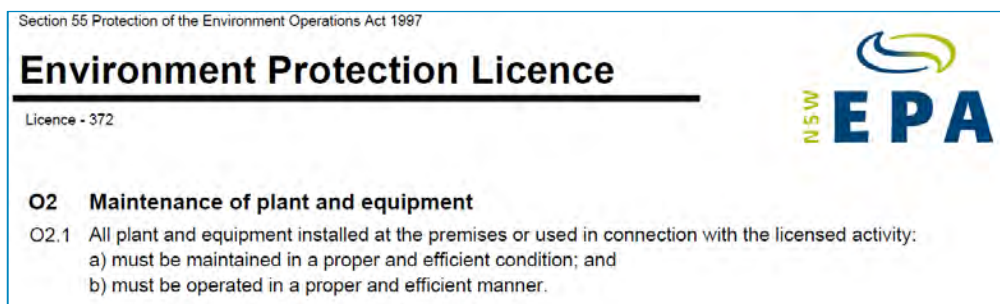
<15 mg/L
(90th percentile)

EPL compliance requires more than meeting numerical discharge limits. EPLs also provide a clear obligation on *how* operations and maintenance should be carried out, namely:

- activities must be carried out in a competent manner
- the plant must be operated and maintained properly and efficiently.

Figure 6-5 is an extract from the Malabar WWTP Environment Protection Licence showing these maintenance and operations conditions which are common to all EPLs.

Figure 6-5: Excerpt from the Malabar WWTP Environment Protection Licence



This is an important consideration. EPL compliance is therefore a case of meeting the limits set but without comprising operations and maintenance to do so²⁷.

When an asset fails and this failure has an environmental impact, the EPA can prosecute Sydney Water for failing to ensure proper and efficient maintenance of our plant and equipment. This happened at Malabar in 2013 when failure of a small bracket led to a sewage spill and a judgement against Sydney Water²⁸. The judgement clearly indicated that the Protection of the Environment Operations Act envisages that non-compliant discharges should not occur and that practical maintenance constraints did not constitute a valid defence.

In recent years there have also been noncompliant discharges although many of these were wet weather related and our environmental performance has generally been good. Nonetheless, we must continue to maintain it and we want to avoid further incidents like the one at Malabar.

In conclusion, reported performance against numerical limits is only part of EPL compliance. An important driver of the 2016-20 program is to renew assets so that we can properly and efficiently operate plants *while* complying with discharge limits.

²⁷ EPLs have other requirements – for continuous improvement in environmental performance and that the Biosolids Guidelines must be followed.

²⁸ The EPA prosecuted Sydney Water in the Land and Environment Court for a pollution incident (both the discharge and the implied EPL breach) at Malabar Wastewater Treatment Plant caused by a pipe failure in September 2013. The judgement is a clear indication that the Protection of the Environment Operations Act envisages that no non-compliant discharges should occur and that practical constraints in maintenance or inspections were not valid defence.

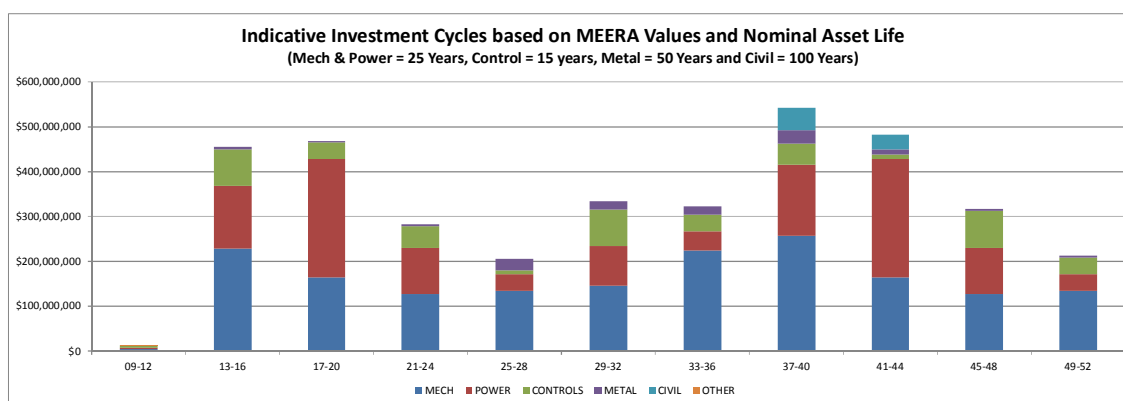
Wastewater Treatment Plant renewals – program development

We have applied two top down methods to cross-check recent and forecast investment in this program. These highlight that we have under-invested in this asset portfolio in recent years and that our 2016-20 forecast is of the right order.

An 'industry sense check' assumes that a treatment plant has a full replacement cycle of 33 years and therefore long term average renewals investment should be in the order of 3% of the replacement value of the assets. Using a combined asset replacement value of \$4.3 billion our long term average renewals investment should be somewhere around \$130 million a year. Over the last 4 years we invested an average of \$75 million a year²⁹.

Figure 6-6 shows an indicative investment profile for Wastewater Treatment Plant Renewals using MEERA values, asset installation dates and plant-type asset lives³⁰. It shows the investment increase expected around the present time – as many mechanical and electrical assets built in the 1980s and 1990s reach the end of their service lives.

Figure 6-6: Indicative investment cycles based on MEERA values and nominal asset life



It also provides a more detailed cross-check of possible investment needs in the future, showing that investment for the period 2016-2020 should be around \$480 million, an average of around \$120 million a year.

The program we have developed does require higher expenditure of \$290 million in the next four years. Including the larger renewals of \$186 million which are delivered as separate programs, this corresponds to an annual average spend of \$119 million.

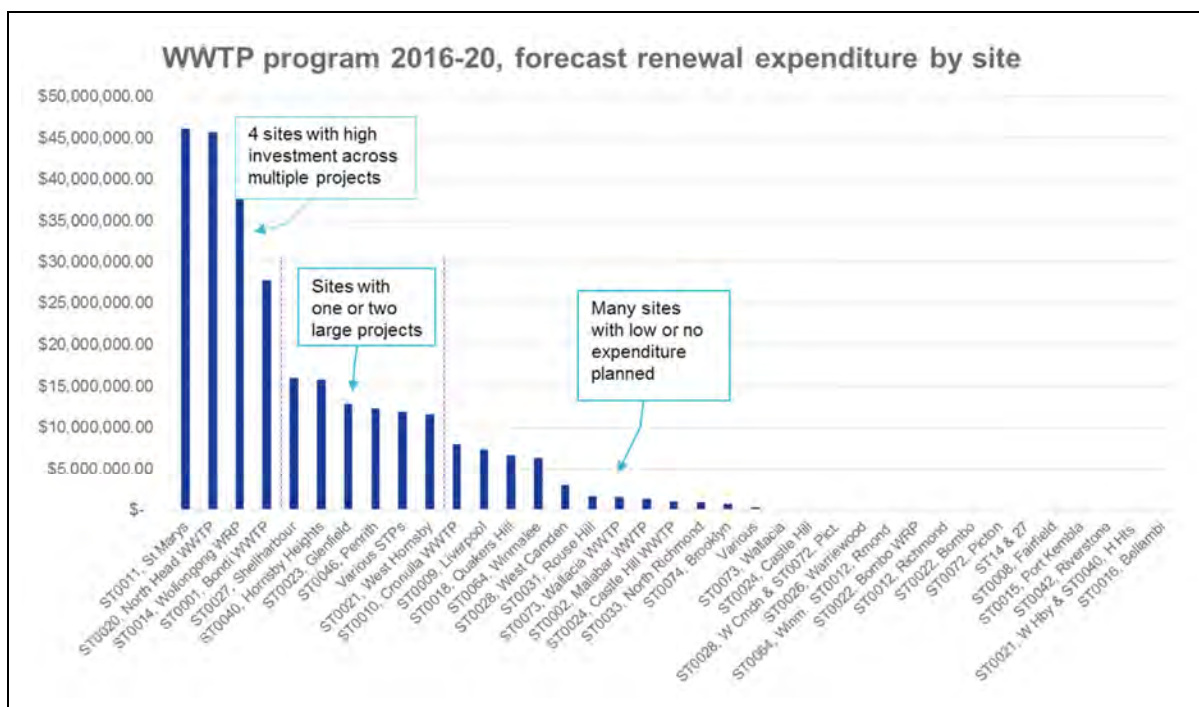
²⁹ Including the large 'stand-alone' projects such as Malabar

³⁰ The assets at these facilities have a range of asset lives with nominal average useful life as follows: Civil Concrete = 100 years, Civil Metal = 50 years, Mechanical = 25 Years, Electrical = 25 Years, Controls & Instrumentation = 15 Years

Specific needs

We regularly access our assets are regularly assessed to understand the investment needs within the context of lifecycle, condition and performance. This process identified a program of projects for the period of 2016–20. The expenditure profile is shown in Figure 6-7.

Figure 6-7: Wastewater treatment plant renewals – projects by cost



The like-for-like proportion of the program is quite low and there are many large, complex renewals at sites which have not been significantly upgraded for many years.

As shown in Table 6-18 more than half of the forecast expenditure is concentrated at four sites - St Marys, North Head, Wollongong and Bondi. These sites have acute and well defined needs and the renewal programs at each have many component programs which must be scheduled carefully.

Table 6-18: Capital expenditure at top four sites 2016-20 (\$million, 2015-16)

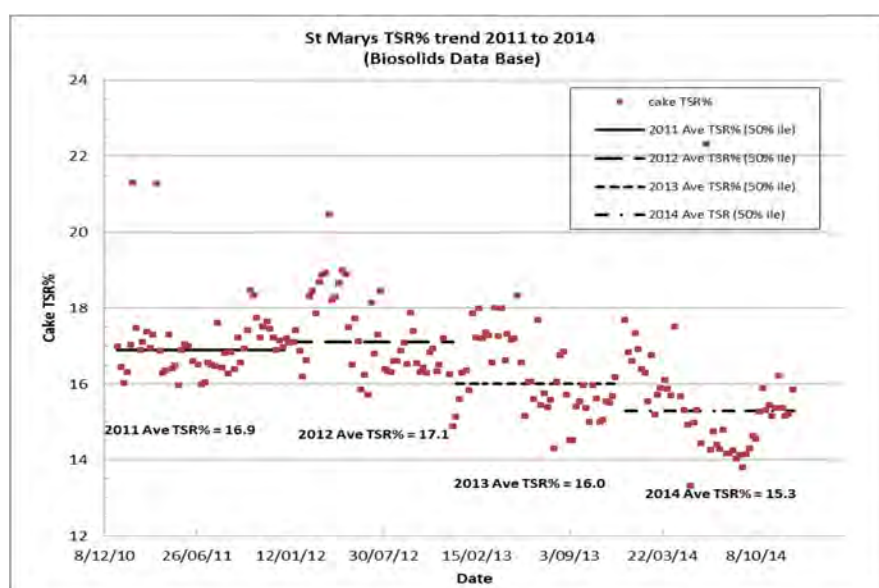
Site	Proposed Renewals Program spend	Percentage of Proposed Program
St Marys WRP	\$46.2	16%
North Head WWTP	\$45.7	16%
Wollongong WRP	\$38.6	14%
Bondi WWTP	\$37.5	14%

Site	Proposed Renewals Program spend	Percentage of Proposed Program
Bondi WWTP	\$27.8	10%
Total	\$158.3	56%

Boxout 6-1 shows an example component project at St Marys.

Boxout 6-1: St Marys biosolids dewatering upgrade

Project need: To address the deteriorating performance of the current de-watering facility. The performance indicates the increasing water content of residual biosolids.



If not addressed, there is an increasing likelihood of not complying with the EPL. Operating costs will also be higher through processing wetter sludge. The investment will reduce community impacts with lower risk of odour and related Biosolids Guidelines and less biosolid trucks leaving the site.

Program content and status of projects

A large proportion of the program to 2020 is already well defined.

Table 6-19 shows program breakdown by project status - 39% of the program assigned to active projects.

Table 6-19: WWTP project status (\$million, 2015–16)

Project Status	Expenditure	Definition
----------------	-------------	------------

Active	\$114.3 (39%)	Have approved funding, are typically well progressed with defined needs and are often in the process of being delivered
Candidate	\$59.8 (21%)	Have initiation approval and are in the process of having the needs and options assessed in detail
Funded concept	\$103.8 (36%)	Identified as a priority and have been allocated funding (but have not had detailed assessment or approval yet)
Reactive	\$12.2 (4%)	Are not planned but must be completed immediately to manage unacceptable risks (safety, compliance, performance and other risk)
Total	\$290.0	

As well as the Active projects, we have identified needs for an estimated \$165 million of Candidate and Funded Concept projects. These have a well understood need which has been identified through condition assessments, annual risk assessments, performance reviews and incident reviews. While planning has not progressed as far as Needs Approval Business Cases this process is underway.

A small amount of expenditure reserved for reactive projects completes the proposed program.

We have also provisionally identified a range of possible needs – these are defined as unfunded concepts. With a total cost estimate of around \$150 million their provisional costs are not included in the program but there is a possibility that new information would lead to them being prioritised.

Issues with Atkins-Cardno's method

The Atkins-Cardno report and IPART Draft Report proposes that the WWTP Renewals Program be cut by \$101.4 million. A clear rationale for the program reduction is not provided and neither the analysis nor the very short explanation are commensurate with such a large cut. The report suggest that the reduction was due to the risk profile of alternative options not being provided.

From the short commentary, it appears that the recommended cut was arbitrary and the recommended future expenditure was simply calculated using the average annual spend in the 2012–16 period. This has a number of flaws:

- In recommending a similar expenditure to 2012–16 it relies on the fact that this amount contributed to Sydney Water meeting its obligations through that period. Even if we had no issues at all, this is not an adequate assessment of the risk created by the large expenditure cut. It is inconsistent with prudent asset management.
- It fails to recognise that the content of the program changed from the 2012–16 period. While the 2012–16 program excluded some of the large single site projects, the proposed program includes these so that we can prioritise expenditure across the portfolio.
- It does not take account of the condition of the assets which are being renewed and that they are not the same ones as in the 2012–16 program.

Consequences of program cut

This large and arbitrary program scope cut is expected to have a range of consequences. As we do more work to develop this program, actual asset condition is generally worse than previously thought. There is likely to be an increased need for reactive work, increasing costs and decreasing performance.

Safety and environmental incidents may occur if the rate of equipment failures increase. While we will actively seek to avoid such incidents, they could lead to another prosecution by the EPA. The direct costs associated with the Malabar spill in 2013 totalled almost \$400,000, including legal costs, a penalty and an order to pay EPA legal costs. The actual cost impact on Sydney Water was much higher in terms of management and subject matter expert time used in dealing with the issue.

In light of the previous case, a future fine for an EPL breach would be larger if it was again linked to a maintenance or operational issue³¹. We would have very little chance of defending the case where we have identified a need but chosen not to fund it. In the case of poor performance, the EPA can also increase the licence fees for each of our EPLs.

To understand the implications of the program reduction, we undertook a targeted review of the highest value projects. We considered their need cases and whether alternative lower cost options were feasible.

The review concluded that there was little chance of reducing the scope at these 'top four' sites. Given the plant condition, any scope reduction will be by deferring investment. Deferring the major works at these four sites creates the risk of significant renewal backlogs into 2020-24 period. Operating costs would increase and there could be impacts on interdependent projects, such as those related to growth. However, if we progress these investments, then almost 90% of the recommended program budget will be used. The remainder of the reduced budget is taken up by five large critical projects and some smaller ones which are already active. Figure 6-8 shows the point at which the program will effectively be cut-off at \$189 million.

³¹ Maximum penalties are up to \$240,000 per day

WWTP program 2016-20, forecast renewal expenditure by site after program cut

Program is cut at \$189m

20+ sites with no renewal investment for 4 years

Site	Forecast Renewal Expenditure (\$)
ST0011, St Marys	46,000,000
ST0020, North Head WWTP	45,500,000
ST0004, Wokroona WRP	38,500,000
ST0027, Borda WWTP	27,500,000
ST0040, Shallowford	15,500,000
ST0023, Horsley Heights	15,500,000
ST0021, Glenfield	12,500,000
ST0046, Penrith	12,000,000
Various STPs	11,500,000
ST0010, West Hornsby	11,500,000
ST0008, Cronulla WWTP	7,500,000
ST0016, Liverpool	6,500,000
ST0064, Quakers Hill	6,000,000
ST0024, West Camden	6,000,000
ST0031, Rose Hill	2,500,000
ST0073, Wallacia WWTP	1,500,000
ST0002, Maribow WWTP	1,500,000
ST0024, Castle Hill WWTP	1,000,000
ST0033, North Richmond	1,000,000
ST0074, Brooklyn	1,000,000
Various	1,000,000
ST0071, Wallacia	1,000,000
ST0024, Cassile Hill	1,000,000
ST0026, Glenview	1,000,000
ST0012, Bendo WRP	1,000,000
ST0012, Remond	1,000,000
ST0022, Bendo	1,000,000
ST0072, P-ron	1,000,000
ST114 & ZI	1,000,000
ST0008, Fairfield	1,000,000
ST0015, Port Kembla	1,000,000
ST0042, Riverina	1,000,000
ST0021, W Hay & ST0040 Hays	1,000,000
ST0016, Bellambi	1,000,000

North Head Biosolids

Item	Details
Atkins-Cardno's recommended reduction (excl efficiencies)	\$13.3 million from \$35.6 million
Average annual bill impact (\$)	\$0.5 per customer
Atkins-Cardno's Rationale	<ul style="list-style-type: none"> Two digesters not required for growth – not justified on other basis

Sydney Water | Response to IPART Draft Report and Determination - April 2016

Our concerns

- Current digestion capacity is inadequate.
- This increases risk of breaching the EPL and the POEO Act operational requirements when a digester is out of service for routine maintenance.
- The program cut of \$13.3 million seems to be an arbitrary one third of the forecast
- Review of a recent similar project showed that the incremental cost of a second digester was much lower at \$2 million

Drivers of expenditure

As part of a wider plan, we proposed to install two digesters in order to increase capacity for growth and to improve reliability of North Head wastewater treatment plant. The digester capacity is inadequate and this has led to operational issues and odour complaints from customers.

The drivers for this project relate to both the outcome *and* the process itself:

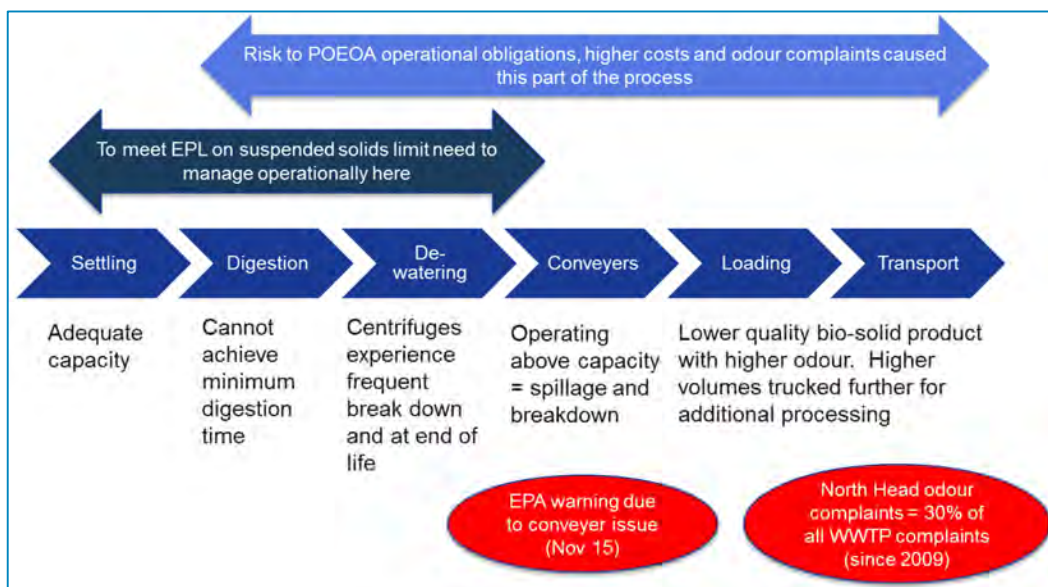
- The North Head EPL requires Sydney Water to meet various effluent quality and load limits. It also specifies how this should take place. It requires us to manage plant and operations such that assets can perform according to design
- The POEA sets obligations in relation to the odour from the plant.

The investment required in the North Head WWTP biosolids process is to address the lack of capacity in the digesters *and* other plant limitations.

Figure 6-9 describes how digester capacity issues interact with other needs:

- Managing compliance with the 'total suspended solids' levels in the EPL means that more solids are extracted and more sludge is pumped to the digestion and dewatering process
- The digesters and dewatering process are operated at capacity although digester capacity is frequently lower due to maintenance
- Sludge retention times are lower than our minimum standard of 15 days.
- This results in a higher volume (wetter) more odorous and lower quality biosolids product
- This requires more trucks to remove it to a more distant location for further composting prior to use in agricultural.

Figure 6-9: Managing requirements of the EPL and POEO Act requirements

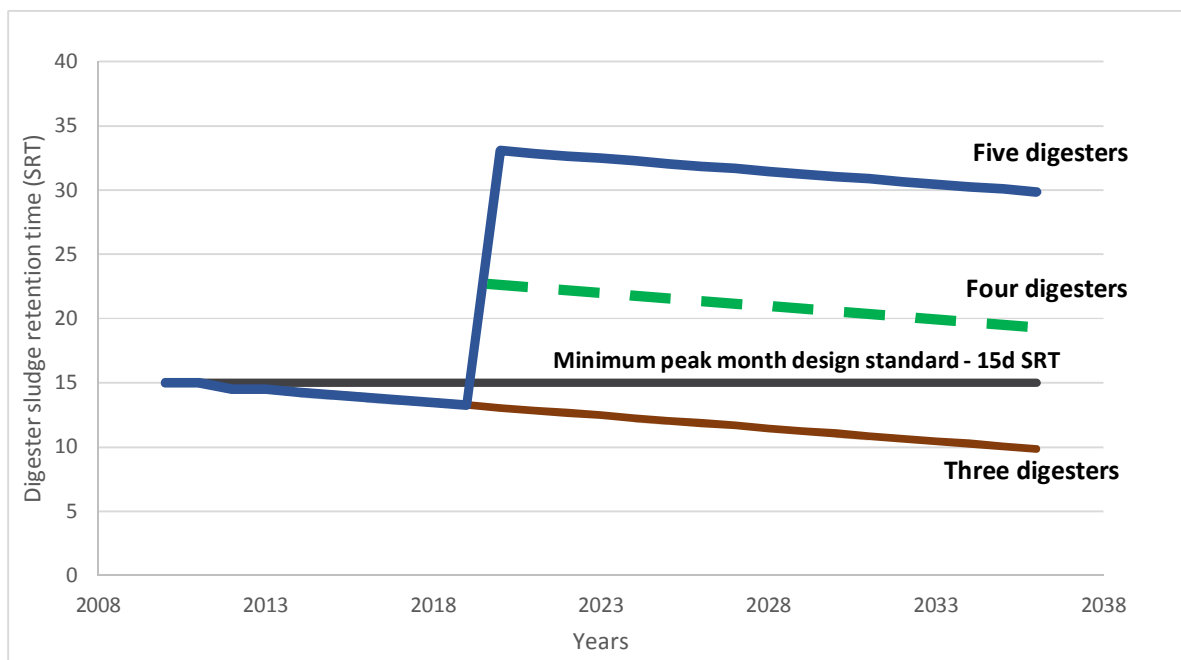


Even if digester capacity is to be considered as part of the wider process, there must be enough capacity when one is out of service for maintenance. Recent performance is that one has been out of service for six out of 18 months. As well as the implications described above, the ability for upstream chemical dosing for odour and corrosion control is constrained. As this is a part of our avoid fail sewer strategy in the future we want to limit this.

Adding one digester allows minimum retention times to be met with all in service but adding two means that the process is not constrained during frequent maintenance.

Figure 6-10 shows the sludge retention time with five, four and three digesters.

Figure 6-10: Comparison of sludge retention by number of digesters



To achieve this, amplification and renewals are required through the whole biosolids production process. Preliminary cost estimates of \$55 million for this project would be sourced from both growth and renewals programs, see Table 6-20.

Table 6-20 Funding for North Head Biosolids program (\$million, 2015-16)

Driver	Growth	Renewals	Total
Digestion, dewatering and out-loading	\$35	\$20	\$55

Atkins-Cardno' reduction to the 'growth' element likely means the renewals element would need to increase, as the digestion capacity constraint during outages would need to be managed elsewhere in the process.

Issues with Atkins-Cardno's method

Presenting the digester investment separately with a 'growth' driver may have complicated Atkins-Cardno's assessment. Atkins-Cardno (Final Report, p143) found that Sydney Water:

...has not made a strong enough case that a single additional digester would not be sufficient to cope with anticipated demand in the medium term (e.g. next price path +5 years).

It recommended a \$13.3 million program cut, as the second digester was excluded on the basis of insufficient growth. However, Atkins-Cardno (Final Report, p188) also correctly acknowledged the reliability driver:

SWC's view is that one additional digester is required due to growth and one digester is required to overcome the reliability issues of the existing digesters.

It is not clear how removing one digester led to the \$13 million cut. Our calculation is that the incremental cost of a digester is much lower. Review of the West Camden biosolids project showed the difference in cost between one and two digesters was less than \$3.0 million (out of a \$25 million project) due to the set-up and indirect costs.

Consequences of program cut

Since the expenditure review, we have begun an options study to determine a cost effective, integrated solids digestion and handling solution to meet the diverse needs of growth, reliability, customer and network management for North Head.

It is our view that including only one new digester within this will:

- Have a much higher cost over time when an additional digester is inevitably added later as part of a separate project.
- Continue the current situation where a digester outage leads to inadequate digestion capacity, with resulting operational interventions and odour complaints.
- Limit chemical dosing in the network for corrosion and odour control is also a major contributor to the solids load at North Head.

Growth – Re-profiling of the North West Growth Centre expenditure

Item	Details
Atkins-Cardno's recommended reduction (excl efficiencies)	\$13.4 million from \$150.4 million
Average annual bill impact (\$)	\$0.4 per customer
Atkins-Cardno's Rationale	<ul style="list-style-type: none"> • Re-profiles expenditure on their conclusion that actual connections always lag forecasts
Our concerns	<ul style="list-style-type: none"> • We strongly oppose this reduction as it is based on a flawed analysis, proposing a smoothed profile which is neither consistent with the nature of growth expenditure nor with the underlying investment drivers for the NWGC. The conclusion suggests that the drivers of our growth expenditure are misunderstood.

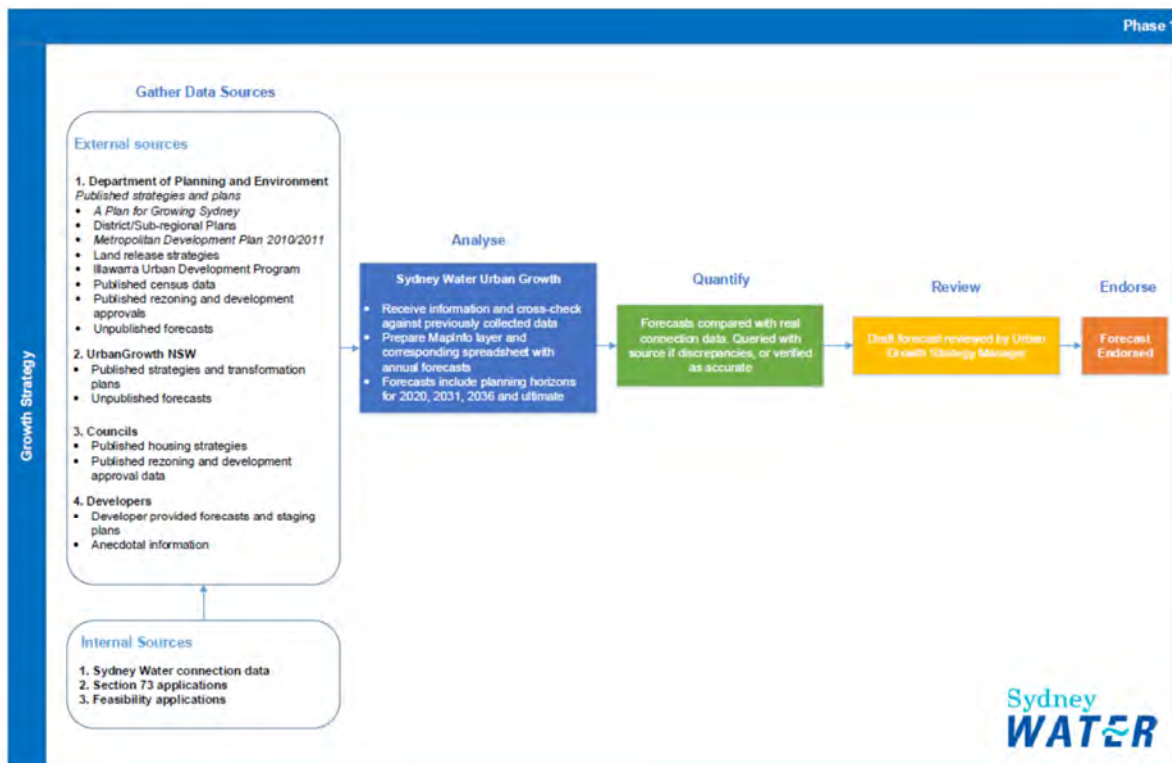
Drivers of expenditure

In considering new growth in green field areas such as the North West Growth Centre (NWGC), we need to provide capacity in the trunk network for new connections in an efficient way – this means investing in backbone capacity in time for the first connection. Growth expenditure is therefore lumpy in nature and the projects can be high value and work cannot always be efficiently spread over a long period.

We are conscious that development projections can be aspirational. In developing the growth expenditure program, we have refined our processes to take account of new information sources and the fact that the NSW government no longer publishes development plans. For the NWGC, we rely on more current but confidential and unpublished annual forecasts provided by the Department of Planning and Environment (DPE), the key planning authority for NSW.

We also now have a forecasting review process to check published and unpublished Government development forecasts to ensure the timely servicing of green field growth areas. Figure 6-11 illustrates how we review, adjust and endorse development projections for growth areas.

Figure 6-11: Growth strategy forecasting process



The development forecasts are consistently reviewed throughout our infrastructure planning and delivery process. Consistent with our decision making framework for investing in urban growth, we will only invest in services where there is demonstrated development demand and the risk of delay is low. To take account of this, our growth investment process includes a number of hold points, where we can review whether delivery should be delayed. The last of these is between business case and delivery.

In the case of the NWGC, in 2013–14 and 2014–15, Sydney Water’s adjusted development projections were slightly higher than actual dwelling completions (due to short term development delays in certain precincts). However, the growth in the NWGC is now progressing ahead of forecast. Based on completions in the six months to December 2015, the supply of new dwellings

in 2015–16 is likely to exceed Sydney Water's projection by 22 per cent and the DPE's unadjusted projection by 30 per cent³³.

The reality of growth in the NWGC can also be seen in Figure 6-12.

Figure 6-12: North Kellyville Growth Precinct Aerial View

22 September 2013

Source: nearmap



06 December 2015

Source: nearmap



Issues with Atkins-Cardno's method

Atkins-Cardno's recommended that NWGC investment was re-profiled based on a view that development projections for green field growth are aspirational. This conclusion was based upon a figure prepared by Sydney Water. This compared dwelling forecasts in two previous Metropolitan Development Plans (MDPs) against the actual dwelling connections in green field areas across Sydney³⁴.

However, this was not representative of the NWGC as it covered the whole city. Further, the MDP dwelling forecasts are no longer used to plan for infrastructure in the NWGC – they are out-of-date, with the last being released in 2011–12. The conclusions drawn by Atkins-Cardno are not valid as:

- they are based on an out-dated data set which is not specific to NWGC
- they ignore the risk Sydney Water took on in its original forecast – the NWGC capital program presumed no unknown new development areas were accelerated prior to 2020–21. This may not be the case
- re-profiling is not appropriate for growth expenditure – it is inherently lumpy.

Consequences

The consequences of this program cut are:

³³ Supporting data for this exists but cannot be made available in this public document.

³⁴ This was Figure 7-20 in the Atkins-Cardno report

- reputational risk to Sydney Water and knock-on stakeholder impacts. If growth continued and we did not invest due to the program cut there will be impacts on developers, potential new occupiers and economic growth of the area generally.
- commercial risk to Sydney Water – if growth continues at the very fast pace and Sydney Water invests just in time for new connections it will lose the financing cost of the investment. This assumes that it is later deemed prudent.

Avoid fail sewers

Item	Details
Atkins-Cardno's recommended reduction (excl efficiencies)	\$34.3 million from \$269.8 million ³⁵
Average annual bill impact (\$)	\$1.1 per customer
Atkins-Cardno's Rationale	<ul style="list-style-type: none"> • The program scope can be reduced by using sacrificial alkali gel and other innovative approaches to defer renewals³⁶. • Average annual renewal length of 2012–16 is appropriate going forward.
Our concerns	<ul style="list-style-type: none"> • Atkins-Cardno clarified that expenditure on the 'one-off' comprehensive rehabilitation of the critical Northern Sewer Ocean Outfall System (NSOOS) and other sub-programs were excluded from the program specific cut³⁷. As a result around 34% of the remaining sewer renewal program has effectively been cut. • Alkali gel is not an applicable means of deferring in around 90% of this program. • Program cut is an arbitrary adjustment.

³⁵ Including corrosion and odour strategy

³⁶ The report also mentioned that there were: 'expected efficiencies from innovative condition assessments' and 'planned design and procurement efficiencies'

³⁷ The interim draft final (9/12/16) states: "The proposed reductions have been applied to the Avoid Fail Wastewater Main Renewals program (SEM055). The NSOOS project (SEM047) and related odour / corrosion projects (SEM039, SEM040, SEM044, SEM063, SBE002 and SBE005) have not been recommended for adjustment." p339

Drivers of expenditure

Avoid fail sewers make up around 2,700 km (11%) of the wastewater network. As shown in Figure 6-13, the assets exist across the network with higher concentrations in the Sydney CBD, areas of higher population and near the coast.

Figure 6-13: Our avoid fail sewer network (diameters of 375 mm and above)



The Avoid Fail Sewer Program seeks to ensure lowest life cycle cost by rehabilitating sewers just before the point of structural failure. For the purposes of this program, this means the sewer has degraded to the point where corrosion is in the structure and minor rehabilitation is no longer an option³⁸. As illustrated in Boxout 6-2 structural repairs are much more expensive, costing up to four times more rehabilitation.

The key to the efficiency of this program is to understand the assets sufficiently so that this tipping point can be predicted. A major focus of this program is therefore to understand the condition of critical sewers and a significant proportion of activity is related to inspections, surveys and other condition assessments.

In most parts of the wastewater network, there are no operational work-arounds in the event of a major sewer failure - flows cannot be diverted and leakage of wastewater is possible. This is a further consideration in the renewal of these assets. Due to their size and locations, major failures can lead to a range of community, public health and environmental impacts.

³⁸ It does not necessarily mean the sewer has collapsed

Boxout 6-2: Critical Sewer Failure - a real-life example

In 2006, the Southern and Western Sewer Ocean Outfall System (SWSOOS) needed structural remediation as opposed to lining rehabilitation. As parts of the SWSOOS run close to Sydney Airport a full structural failure may have had major community and transport impacts.

Analysis of contract costs at the time showed that the structural rehabilitation unit costs (\$/m²) were 2.7 times higher than the equivalent non-structural rehabilitation costs.

This due to each unit of rehabilitation requiring extra tasks and materials for much more extensive surface preparation and structural concrete reinstatement. This is before the cost and safe access impacts of a longer project are included. In some locations these are significant considerations as wastewater flows or gas levels can restrict work scheduling and equipment access.

Example of corroded sewer



Issues with Atkins-Cardno's method and conclusions

Atkins-Cardno has recommended an arbitrary cut based on the assumption that the 2012–16 period level of renewals is appropriate through 2016–20. We have been unable to reconcile exactly how the \$34.3 million program cut has been calculated. The lengths replaced and program contents are not directly comparable between the 2012–16 and 2016–20 periods and no analysis has been provided. In terms of our ability to achieve the reduction in the program, the Atkins-Cardno expenditure review report states (p 120):

...use of a sacrificial alkali gel to extend the asset useful life has and will continue to allow some major renewal projects to be deferred.

This is incorrect. While we presented information on the use of alkali gels to defer some expenditure, we were very clear that it is a new technique which is limited in scope by pipe size, material and condition. It is our experience so far that alkali gel spray may allow deferrals on concrete sewers larger than 1500 mm in diameter with more than 5 mm of remaining concrete cover over the reinforcement. Each spray only allows a short deferral and it must be repeated every two to three years depending on the local conditions.

We reviewed the 2016–20 program to consider what proportion of it might be able to be deferred through gel spraying. Table 6-21 shows that only a very small proportion of the planned program could even be considered for alkali gel application as a means of a deferral.

Table 6-21: Scope for alkali gel use in the 2016–20 program

Program element	Length	Percentage
Gravity sewer renewals	34 km	-
Committed work	1.3 km	-
Remaining program	32.7 km	100%
Gel spraying potential	2 km	6%

Even if we were able to defer these 2 km of renewals via gel spraying the operating cost impact would be around \$1.5 million³⁹. This is around \$350,000 more than the associated value of a four year capital deferral, with a higher level of risk.

Atkins-Cardno's other recommendations for implementing the program savings do not seem valid as:

- They are not valid options for reducing costs. For example, innovative condition assessment initiatives we discussed during the review were focused on hard to access sewers. It is not clear how these would reduce the cost of the program before the condition results are viewed.
- They appear to overlap with activities covered in the catch-up efficiencies applied post adjustment and we are concerned that this is a double-dip.

Consequences

If this cut is applied, the consequences are greater risk of sewer structural failure and consequently higher costs for structural remediation of assets. The risk of a major failure is also more likely and this could have a significant environmental or community impact depending on the location.

Using gel spray to defer 2 km of potentially applicable sewer would lead to a net increase in cost.

³⁹ Assuming two sprays would be required over the period

Reticulation water mains

Item	Details
Recommended cut (excl efficiencies)	\$26.1 million from \$134.1 million
Average annual bill impact (\$)	\$0.8 per customer
Rationale	<ul style="list-style-type: none">Reducing reticulation water main renewals is possible due to the 'significant headroom' in Operating Licence measure Properties affected by 3 or more interruptions.The size of the reduction is not explained.
Our concerns	<ul style="list-style-type: none">These reductions will drive higher life cycle costs in conjunction with poorer service outcomes.The rationale for the cut is incorrect - Operating Licence targets do not reflect an efficient level of investment.

Drivers of expenditure

We identify an efficient renewal profile based on replacing sections of water main when their failure rate is three times or more in a two year period. In the program forecast, the renewal profile includes known candidates for early years and an investment envelope for later years, based on analysis of the asset population.

The 'three in two' criterion used in developing the program is set to balance renewal costs with repair costs. Once a main has been subject to three breaks in two years, the break rate generally accelerates resulting in increasing repair costs and repeat interruptions for customers.

As a result of investing at this efficient level, the network generally performs well against the Operating Licence indicators 'Properties affected by three or more interruptions' and 'Properties affected greater than five hours'. This is because these set a minimum level of service and not the efficient level of investment.

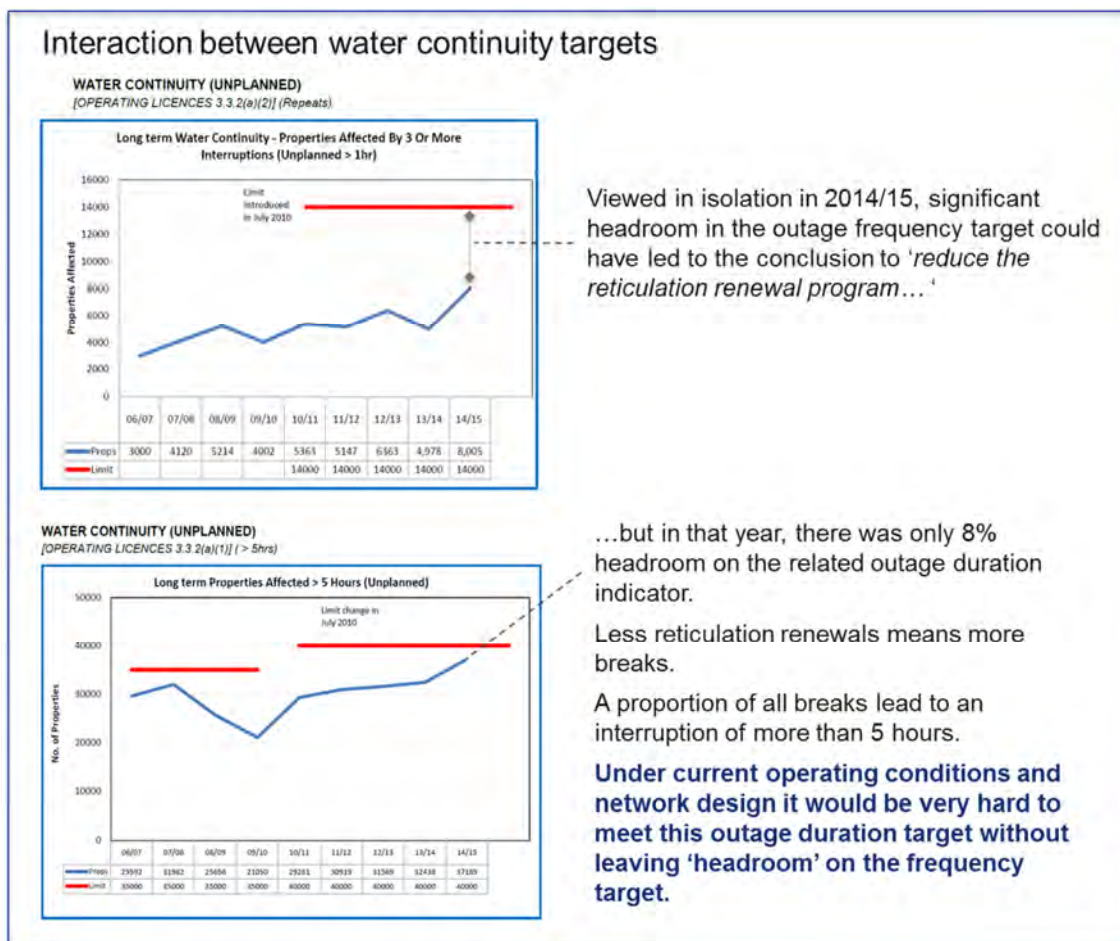
Issues with Atkins-Cardno's method

The Atkins-Cardno recommended a program cut based on the incorrect assumption that 'headroom' against the 'Properties affected by three or more interruptions' indicator means that investment is too high. This seems to disregard the fact that investment is driven by achieving the lowest lifecycle cost. It also misrepresents the attention of the Operating Licence targets, which were set on the basis that they allow for volatility in weather and other operating conditions. The Atkins-Cardno report concludes that (p 103):

...we are of the view that further reduction of in the planned renewals by the end of the future price path is unlikely to significantly impact on the level of mains breaks or performance against the Operating Licence.

This seems to misinterpret the efficiency focus of the investment program and also fails to consider the interaction between the Operating Licence indicators on water continuity. Performance against these targets is influenced by similar things – headroom against one indicator does not mean that renewal investment can be reduced. Boxout 6-3 shows recent performance on the two water continuity indicators.

Boxout 6-3: Interactions between water continuity indicators



This shows that Atkins-Cardno's conclusion is incorrect, especially as the number of breaks generally accelerates after multiple breaks in a particular section (ie the candidate projects not renewed).

In addition to its flawed basis of the cut, the size of capital expenditure cut seems arbitrary and no explanation was provided.

Consequences

The reduction in this program is not efficient increasing operating costs to more than the value of the deferral. A poorer service outcome is almost certain and an Operating Licence breach is more likely. The following analysis quantifies the impacts.

Analysis of consequences – Reticulation Water Mains program cut

The example uses recent actual data on break rates, customer events and repair costs to model the cost and service impact of the recommended program cut.

Operating cost increase

As shown in Table 6-22, the \$6.5 million per year program reduction will result in a \$3.9 million increase in operating expenditure. The example assumes:

- About 40 less main renewal jobs completed annually
- Each of the 40 'candidate jobs' already has a history of breaks (at least 3 in 2 years)
- A relatively conservative break rate on deferred candidate mains sections
- A repair cost of \$6,060 per job.

Table 6-22: Operating cost increase as a result of reduction to reticulation water mains program

Year of deferral	2016/17	2017/18	2018/19	2019/20	Total
Break rate (breaks a year)*	1.5	1.5	1.8	1.8	-
Additional breaks	60	120	192	264	636
Additional repair cost (\$million, 2015-16)	0.4	0.7	1.2	1.6	3.9

*NOTE: Analysis of a recent candidate list showed an average break rate of 1.71 p.a.

The renewals which are not carried out in the current period must be done in the next period. The value of this capital expenditure deferral, using a pre-tax real WACC of 5.8%, is \$3.0 million. As shown in Table 6-23, the operating expenditure arising from the deferral is \$0.9 million more than value of deferral.

Table 6-23: Operating, capital expenditure trade-off (\$million, 2015-16)

Scenario comparison	Amount
Increase in operating expenditure	3.9
Value of deferral	3.0
Difference	0.9

Service impact

Those customers already experiencing breaks will have more and this will lead to significantly reduced customer satisfaction⁴⁰.

Analysis of 2014–15 data shows that around 14% of breaks lead to an interruption of more than 5 hours. On average, each reticulation water main break event impacts around 40 properties. Table 6-24 shows the resulting increase in properties affected >5 hours per year.

Table 6-24: Increase in properties affected >5 hours per year

Year of deferral	2016/17	2017/18	2018/19	2019/20
Additional breaks	60	120	192	264
Properties impacted	327	653	1,089	1,525

With the recommended program cut there would be around 260 more interruption events in 2019–20, with 1,500 properties impacted. Our analysis of a five year average performance shows that there is an increased chance of an Operating Licence breach but this is relatively small.

However, the 2014–15 year performance was only 2,800 lower than the 40,000 limit for ‘Properties affected >5 hours’. If this was repeated in conjunction with the scenario above, one further critical main break could lead to a Licence breach

Given the conclusions of the example, it seems likely that this program cut will lead to:

- higher lifecycle costs
- poorer service outcomes with the increase in outages experienced by customers who have already experienced them
- increased risk of an Operating Licence breach.

Metering

Item	Details
Atkins-Cardno’s recommended reduction (excl efficiencies)	\$7.1 million from \$41.5 million
Average annual bill impact (\$)	\$0.2 per customer

⁴⁰ Previous customer surveys have shown a statistically significant reduction in customer satisfaction after more than 3 breaks in a year.

Atkins-Cardno's Rationale

- The cut to proactive customer meter replacement appears to be based on using average meter age and average throughput to conclude that our forecast is too high⁴¹.
- Analysis is not presented and we cannot reconcile the conclusions.

Our concerns

- The cut and limited explanation appears to disregard the actual drivers of investment and comments in the Atkins-Cardno report suggests that some information has been misunderstood.
- This cut increase the risk of a public health issues (via backflow protection failure)
- Our ability to comply with the National Measurement Act is at risk

Drivers of expenditure

The pro-active meter replacement program takes account of:

- The need to manage the public health impacts of backflow contamination, which can occur when backflow valves on smaller meters fail⁴².
- A Legislative obligation to comply with the National Measurement Act, which requires $\pm 4\%$ accuracy for trade.
- Customers' demand for accurate and reliable billing, as indicated in customer complaint statistics. In 2014–15 complaints related to account and meter reading adjustments was a factor of five higher than the next highest category.

Like all utility businesses, we also have to ensure that usage is measured accurately in order to collect the right amount of revenue. As mechanical water meters age, accuracy reduces and measures water usage on the low side and this has a corresponding revenue impact.

The proactive replacement program is developed through a forecasting process which considers our public health and accuracy obligations and the actual assets and their usage histories. It includes a significant element of testing.

The meter fleet is not homogenous – there are a wide range of sizes, manufacturers and designs so the process takes account of this via batch testing and analysis which determines the right investment criteria for each. These are generally based upon actual age or throughput.

Table 6-25 presents our replacement criteria for a range of meter sizes.

⁴¹ Atkins-Cardno accepted our forecast expenditure levels for both new and reactive meters

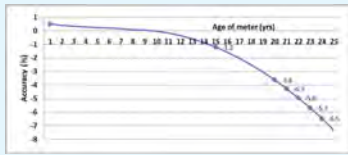
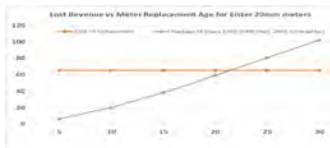
⁴² To meet NSW Health requirements for water system protection we provide dual check valves within our 20mm and 25mm meters. These can fail resulting in potential contamination in the water supply from sources on the customer side of a meter.

Table 6-25 Meter replacement criteria

Size	Age value (absolute)	Usage value (kL)	Typical age based on average yearly usage	Average yearly usage (kL)
20mm (Manufacturer A)	25	4,100	20	205
20mm (Manufacturer B)	15	3,600	15	240
32mm	25	19,500	20	975
50mm heavy	10	53,000	8	6,625
80mm	10	158,000	8	19,750
300mm	10	1,420,000	8	177,500

These are an integral part of the investment forecasting methodology which is shown in Table 6-26.

Table 6-26: Sydney Water's methodology used for planned meter replacements

Step and details	Output
<p>Meter compliance testing</p> <p>Undertaken periodically on different batches of meters to establish:</p> <ul style="list-style-type: none"> Accuracy degradation with usage and actual age Backflow protection failure risk based on both usage and age <p>The testing sets investment trigger points for each meter size and type.</p>	<p>Safety risk points on backflow – this gives a 'maximum safe lifetime'</p> <p>Accuracy decay curves, used to determine when NMA compliance is at risk. This normally sets a 'maximum lifetime throughput' value</p> 
<p>Economic analysis</p> <p>This applies the accuracy decay curves for the meter type, the throughput to-date and the typical consumption for each meter to determine when it will become unacceptably inaccurate.</p>	<p>An estimate of when the meter replacement cost is lower than the value of under-registration</p> 

Planned Replacement Forecast

The replacement criteria determined from above (i.e. age and throughput) are used to predict replacement dates for 1.3 million meters. Replacement is based upon either the actual age or usage threshold.

Estimated replacement dates for the entire meter fleet

Meter replacement financial forecast

This forecasts the cost of the replacement program and work plan based on the relevant contract rates.

Replacement program for all meters

Issues with Atkins-Cardno's method

It appears that Atkins-Cardno may have misinterpreted some of the information provided in terms of the life extension we applied to one type and manufacturer in 2012.

As a result of backflow safety testing, in September 2012 we applied an extended life to one type of 20mm meters. The lifetime was extended to 4,100 kL from 3,600 kL. Other 20 mm meter types which performed less well in those tests did not have their lives extended. This change implemented in our replacement plan at the time – it is not a new extension that will come into effect in the future price path.

It seems that Atkins-Cardno (Final Report, p150) may have assumed that the life extension applied to all meter types and would be implemented in the future:

For the future price path, the criteria for the 20mm replacement program has been extended from 3,600 KI or 15 years combined criteria to 4,100 KI, which is normally equivalent to 20 years.

Larger meters assume 10 years in the current price path.

However, the life extension was not applied to the whole 20mm meter fleet in light of the safety issues found in testing. The point on the larger meters is also inaccurate – many types do have a 'backstop' life of 10 years but they typically have shorter lives due to their faster accuracy decay, as is apparent in Table 6-25.

In reaching its conclusions, Atkins-Cardno may have assumed that average annual consumption of 210kL (for 20mm residential properties) applies to all meters. This is an average consumption which does not lend itself to forecasting meter replacement volumes across the fleet. There are some 30% of properties whose consumption varies from this by more than 100 kL per year.

In conclusion, we are unable to re-create Atkins-Cardno's analysis and our view is that it is inaccurate in light of some of the comments in the report.

Consequences

The consequence of this program reduction include:

- Increased risk of contamination if meters are left in place past the point where our testing has shown that backflow prevention fails. We note that another NSW water business has recently undertaken a major replacement program to manage this risk.
- Possible breaches of the National Measurement Act which requires utility meters used for trade to be accurate to within $\pm 4\%$. While there are potential fines for breaching this Act the damage to corporate reputation would far outweigh the financial cost.
- An increase in stopped meters will lead to an increase in reactive maintenance work with resulting higher costs and more estimated bills
- More estimated bills will result in increased customer complaints. As a result this will drive higher operational costs as we will need to investigate issues and respond to complaints

6.3.8 Capital reductions accepted but with concern

There are two programs with expenditure cuts of \$33.6 million which we accept but have outstanding reservations about. The delivery profile in both of these can be pushed back slightly with increased risks. In any event, the needs are very well defined and the renewals will need to be completed soon after 2020.

These cuts were applied to programs with well-developed business cases and a good level of supporting analysis and we were surprised that they were subject to reductions. Atkins-Cardno's analysis appears flawed in places and it appears to have misunderstood the program drivers.

Further program details are provided in Table 6-27.

Table 6-27: Details of program cuts accepted with concern (\$millions, 2015–16)

Program	Program reduction	Comments
Reservoir Renewal and Reliability	\$20.5	The business case for reservoir renewals is robust and there are independent condition assessment reports for the proposed renewals. Some reservoirs represent a high risk and their condition cannot be safely maintained. The deferred renewal candidates will need to be monitored closely.
Water Pumping Station Renewals	\$13.1	The business case for water pumping station renewals is robust. It is based on asset condition and performance although there are other benefits included. Many of the proposed pump renewals are larger than those completed in 2012–16 so the comparison made by Atkins-Cardno was not appropriate. It also means that opportunities for energy efficiency will be delayed. The program included an element of pump size optimisation and rationalisation, and the new

pumps were expected to be more energy efficient and controllable.

Total	\$33.6 million
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6.3.9 Capital reductions accepted

We have accepted program reductions totalling \$35.6 million. Details are shown in the Table 6-28.

Table 6-28: Accepted program cuts (\$millions, 2015–16)

Program	Accepted program reduction (\$million)
Critical Water Main Renewals	8.0
ERP Stage 2	8.0
Elizabeth Mac. Re-profiling	7.5
Minor Stormwater Renewals	5.3
Field Management	3.0
Energy management	2.2
Rouse Hill	1.6
Total	35.6

We have accepted these program cuts in light of more up-to-date information although many are likely to be more pressing soon after 2020.

7 Regulatory treatment of Finance Leases

Key messages

- We have significant concerns and disagree with IPART's regulatory treatment of finance leases.
- IPART's treatment optimises \$82 million of our capital asset base for the Blue Mountains Tunnel sewage transfer agreement (BMT), and our three Water Filtration Agreements (WFAs). There is no adequate rationale provided for the approach.
- IPART's optimises the finance lease asset base by
 - using the implied interest rate in the lease rather than its own regulatory WACC, without explaining why this creates an "accurate value"
 - not recognising the full value of the risks transferred to lessors, and only allowing for asset condition and performance risk without explaining why only these risks are provided for, and why this allowance is only 50%.
- IPART's approach is not in the long-term interests of customers and fails best practice regulation. A business no longer has a reasonable expectation it will recover its efficient cost from entering into an agreement of benefit to it and its customers.
- IPART's proposed regulatory treatment
 - inefficiently distorts financing decisions – the implied rate discourages regulated businesses from pursuing re-financing agreements in a low interest environment.
 - provides no clarity in the treatment of other risks – WFA renegotiations efficiently reallocate risks, yet this benefit is not appropriately accounted for.
- Sydney Water proposes that:
 - future finance leases be discounted by the equivalent regulatory nominal pre-tax WACC
 - if instead the implied rate is used, efficient risk allocation to the benefit of customers is recognised appropriately.
- Our approach is in the long-term interest of customers as it
 - is internally consistent with IPART using the WACC as the basis for the appropriate rate of return on regulatory assets
 - ensures financial neutrality from the regulatory treatment of finance leases and no distortion in financing decisions
 - promotes entering into re-negotiations that more efficiently allocates risk and shares the benefits of risk reductions with customers.

IPART's regulatory treatment of the Blue Mountains Tunnel sewage transfer agreement (BMT), and our three Water Filtration Agreements (WFAs) covering water filtration plants at Prospect, Woronora, Illawarra and Macarthur, results in a regulatory asset base (RAB) allowance that does not allow Sydney Water to recover a significant portion of its efficient finance lease charges. IPART through its regulatory treatment has effectively optimised Sydney Water's asset base relating to our finance leases. This means a business no longer has a reasonable expectation it will recover its efficient cost from entering into such agreements, and it distorts incentives for any future re-financing decisions.

We do not believe this represents best practice regulation. It does not provide Sydney Water with a predictable regime that we can base important future decisions on. We notes that the Gray review of Ofwat in 2011 highlighted the importance of predictability in the decision making of Ofwat, stating that:

...the companies should feel they are able to predict Ofwat's decisions with a reasonable degree of confidence so that they can react to changed circumstances without the need for direct regulatory approval of their actions.⁴³

...

Ideally, the companies should feel that they are able to predict Ofwat's decisions with a reasonable degree of confidence and they should not feel at risk of arbitrary action after the event.⁴⁴

Sydney Water's proposed RAB value, which accounts for the higher real post-tax regulated WACC of 4.8%⁴⁵ estimated in the Draft Determination and the use of mid-year discounting for our lease payments, results in an updated estimate of \$659.6 million (compared with the value of \$683.2 million in our Pricing Proposal). By only allowing a RAB value of \$577.6 million in its draft decision, IPART has disallowed \$82 million of the regulatory asset base. Sydney Water is being under-compensated for the amount it is paying for these leases. The shortfall arises from IPART:

- using an implied rate of return to discount the agreements, rather than the regulated WACC – \$54 million shortfall
- discounting the payment stream to the beginning of the year, rather than a mid-year discounting method to account for future lease payments – \$28.2 million shortfall.

While recognising it has no significant impact on the overall cost recovery, we also have concerns with IPART's proposed depreciation lives. This impacts the speed of our cost recovery, our cash flows and balance sheet position.

⁴³ Department for Environment and Rural Affairs (DEFRA), *Review of Ofwat and customer representation in the water sector*, A report prepared by David Gray (Gray Report), 2011, p 6.

⁴⁴ Department for Environment and Rural Affairs (DEFRA), *Review of Ofwat and customer representation in the water sector*, A report prepared by David Gray (Gray Report), 2011, p 60.

⁴⁵ This converts to a real pre-tax rate of 5.81%. If the finance lease payment stream is done on a nominal basis, then this is equivalent to a nominal pre-tax rate of 8.46% will be used

In this section we:

- contrast how Sydney Water's proposed approach compared with IPART's regulatory treatment of finance leases, better promotes the long-term interests of customers (Section 7.1)
- contrast why Sydney Water's implied rate under our finance leases will be higher than those of the Sydney Desalination Plant (SDP) (Section 7.2)
- outline why our proposed asset lives are reasonable (Section 7.3).

7.1 Sydney Water's position on the appropriate regulatory treatment

7.1.1 Principles for the regulatory treatment of finance lease

Sydney Water maintains that the appropriate principles for the regulatory treatment of finance leases by IPART must ensure that the method of converting the finance lease payments to a capital sum or RAB:

- allows Sydney Water to recover all efficient finance lease charges (in net present value terms)
- does not distort future efficient financing and re-financing decisions.

The best method to achieve the outcomes outlined above is by discounting the future finance lease charges by the equivalent regulatory nominal pre-tax WACC. The use of the regulatory WACC is internally consistent with what IPART uses as the basis for the appropriate rate of return on regulated assets. Further, to the extent IPART were to assess the efficiency of Sydney Water swapping between capex and opex for any other transaction (for example, undertaking investment in new equipment to reduce staff time), the relevant discount rate for assessing the efficiency of such a decision would be the regulatory WACC.

If however the implied interest rate of the agreement is instead used, this rate (or the RAB allowance) must be adjusted to still ensure the recovery of efficient costs. This adjustment should take into account all the risks transferred to lessors, which the lease payments had to compensate the lessors for at the time the leases were entered into.

7.1.2 Two key elements of IPART's regulatory treatment

There are two key elements that IPART's proposed regulatory treatment of finance lease arrangements affects:

- the conversion of a stream of finance lease payments (currently treated by IPART as operating expenditures) to a capital sum for inclusion in the RAB
- the re-negotiation of contracts to re-allocate and reduce risks.

The BMT is a long-term agreement that was entered into through a competitive tender process in the 1990s. The regulatory treatment of BMT does not arise from any changes to the finance lease contract. It only has the first of the two key elements. It is a direct swap of an annual operating cost stream that Sydney Water currently pays for a capital sum for inclusion into a RAB, and that arises from IPART's changed regulatory treatment of the existing contract.

The original WFAs to build, own and operate Sydney Water's water filtration plants were subject to a pricing review in 1996 and all charges were allowed by the IPART Tribunal as efficient.⁴⁶ The WFA amendments to these contracts, in contrast to BMT, involves renegotiating and extending the agreements to beneficially re-allocate and reduce risks to Sydney Water and our customers. Through this renegotiation process Sydney Water has swapped a component of the operating costs for a capital charge. The present value of the renegotiated WFA charges declined (when discounted at the expected regulatory WACC), in comparison to the charges prior to the WFA extension. IPART has adopted the approach of splitting out the opex and capex components of the finance lease derived from our accounting treatment. It has converted the finance lease component into a capital sum that does not allow Sydney Water to recover a significant portion of the renegotiated and already reduced charges.

7.1.3 IPART's versus Sydney Water's proposed approach to the regulatory treatment of finance leases

Sydney Water in its Pricing Proposal⁴⁷, and over the course of the Price Review process, has provided IPART with the outcomes of the WFA re-negotiation. This has demonstrated the benefits associated with the risk re-allocation from the extensions and amendments, and reduction of the total cost to customer in net present value terms, with the regulatory WACC used as a discount rate. Significant risks that could have materialised into cost increases under the original WFAs were transferred to the Water Filtration Plant (WFP) owners. IPART has not contested this any of the reasons provided for its current regulatory treatment. Therefore, our response focuses on IPART's proposed method of valuing finance leases for inclusion in the RAB.

The key difference between IPART's proposed approach and that proposed by Sydney Water in our Pricing Proposal and response to the Issues Paper⁴⁸, is the discount rate used for calculation of the lease value to be included in the RAB. The different positions are:

- Sydney Water has proposed to discount the future lease payment by the regulatory nominal pre-tax WACC. This is the same rate of return that the asset in the RAB will generate. SWC's proposed approach is consistent with IPART's principle of setting a regulatory WACC to provide an appropriate return on our assets. Using this approach generate financial neutrality, as it allows for the recovery of all efficient finance lease charges. It also ensures that there is no distortion in any future financing decisions.
- IPART has used the implied interest rate in the lease to calculate the finance lease value. IPART considers this generates a "more accurate" asset value in its Draft Report,⁴⁹ but does not explain why this is so. IPART also acknowledges that the interest rate may

⁴⁶ IPART, *Sydney Water Corporation, Prices of Water Supply, Sewerage and Drainage Services, Medium term price path from 1 July 1996*, 1996.

⁴⁷ This is discussed in detail in Appendix 10 of Sydney Water, *Our plan for the future: Sydney Water's prices for 2016–20 Appendices – Confidential version*, pp 210-12.

⁴⁸ Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016-20*, Sydney Water's submission to IPART's 2016-20 Price Review, Chapter 11, p 287, and Sydney Water, *Response to IPART Issue Paper*, October 2015, Chapter 3, pp 34-5.

⁴⁹ IPART, *Review of prices for Sydney Water Corporation, Water – Draft Report*, March 2016, p 95

include other risks but includes allowance only for asset condition and performance risk. It does not explain why an allowance should be provided for this risk only, and why the allowance should be set at only 50%. IPART's approach results in under-recovery of around \$54 million, which is about 8.2% of finance lease payments. Such a regulatory treatment will distort future re-financing decisions by regulated businesses. (There is also a further \$28.2 million that should be added to the RAB, which involves changing the discounting method applied to future lease payments to a mid-year discounting.)

The financial impact and the perverse outcome arising from IPART's regulatory treatment of finance leases can be demonstrated using the BMT agreement.

The BMT agreement and resulting lease payments were the outcome of a competitive tender process in the 1990s to find an efficient solution to meeting a mandatory service requirement. The contract and lease payments have not changed as there has been no renegotiation of the long-term agreement. Sydney Water must continue to make the same payments, which were previously accepted by IPART as efficient opex and included in past prices. The only change that has taken place now in relation to BMT is IPART's regulatory treatment. Payments made are no longer treated as opex, but instead an amount is added to the RAB. In principle the return on the addition to the RAB (plus depreciation) should cover the lease payments Sydney Water make. Yet as shown in Boxout 7-1, over the next four years the lease payments by Sydney Water will be \$54.8 million, but the allowed revenue from IPART will only recover \$32.5 million of these efficient costs (assuming the nominal pre-tax WACC of 8.46%). IPART's regulatory treatment has effectively resulted overall in a \$22.3 million cost recovery shortfall for Sydney Water over the next four year regulatory period.

Boxout 7-1: Under-recovery from IPART's regulatory treatment of Blue Mountains Tunnel over the next 4 year regulatory period (\$million 2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
Sydney Water's lease payments	13.3	13.6	13.8	14.1	54.8
IPART's regulatory treatment*	8.2	8.2	8.1	8.0	32.5
Cost recovery shortfall	5.1	5.4	5.7	6.1	22.3

* Return on asset, depreciation and tax allowances

IPART's regulatory treatment will:

- **Inefficiently distort financing decisions**

The use of the implied interest rate in the agreement discourages Sydney Water and other IPART-regulated entities from pursuing new public private partnerships (PPPs) involving finance leases. Unless the value of transferred risks is fully recognised and included in the RAB, adoption of the IPART proposed method means that Sydney Water or any regulated

entity has a disincentive to enter into new PPPs. Given the likelihood under IPART's regulatory treatment that a regulated utility would experience asset optimisation and not have an expectation of recovering its efficient costs of such agreements, there would be a preference for either entering into operating lease arrangements, or making large investments in capex and taking on a well-understood and known prudency risk.

It will discourage Sydney Water and other IPART-regulated entities from extending existing finance leases or switching from operating leases to finance leases when the implied interest rate is higher than the regulatory WACC. Conversely, regulated businesses will only have an incentive to convert operating leases into finance leases when the regulatory WACC is above the implied or actual interest rate. This is contrary to efficient financing strategies and not in the long term interest of customers. If Sydney Water were to follow these incentives, the total costs to customer may increase.

The regulatory treatment also means that finance lease transactions are treated differently to other transactions that trade-off up-front and ongoing costs. When Sydney Water makes a decision to invest capital expenditure instead of spending operating expenditure in other areas (e.g. investment in new equipment to reduce labour costs), the relevant discount rate is the WACC. However, for this transaction IPART proposes a different higher discount rate, the implied interest used for accounting purposes. It is not clear on why the discount rates for the two transactions should be different and the regulatory treatment should be driven by the accounting treatment.

- **Lack of clarity in regard to treatment of other risks**

A key element of the WFA renegotiation was to reduce residual risks for Sydney Water and its customers. Our proposed approach provided for a sharing of benefits of the WFA extensions with customers and ensured that as long as the WFA extension transaction was economically beneficial, Sydney Water would be able to recover the renegotiated charges. IPART's treatment does not provide such an assurance.

IPART has accepted that the implied discount rate should be adjusted to take into account other risks. However, IPART only provides an allowance for the reallocation or reduction of some of the risks, and the underlying principles it has used to make this decision are not clear. This creates significant risks for Sydney Water and other regulated utilities. It creates a strong disincentive to enter into refinancing and contract renegotiations that efficiently apportion risk and that would otherwise be in the interest of both Sydney Water and our customers.

If IPART's objective from its regulatory treatment is to discount the payment at the pure finance costs, the relevant risks are the risks for the lessor at the time of the negotiation of the contract. Sydney Water provides additional details on risk allocation in the confidential Appendix to this submission.

We believe that:

- our lease charges are efficient
- the regulatory treatment should in principle allow us to recover all our efficient finance lease charges (in net present value terms).

To achieve this outcome IPART should use an equivalent nominal pre-tax WACC (to the regulated real post tax WACC) to establish the RAB value for the finance lease agreements. This approach is in the long-term interests of customers as it:

- is internally consistent with IPART using the WACC as the basis for the appropriate rate of return on regulatory assets
- ensures financial neutrality from the regulatory treatment of finance leases and no distortion in financing decisions
- promotes entering into re-negotiations over contracts to the extent that more efficiently allocate risk and share the benefits of risk reductions with customers

7.1.4 Outcomes from Sydney Water's proposed approach

Under Sydney Water's proposed approach, IPART should increase our allowed RAB from the finance leases for the four agreements by \$82 million, from \$577.6 million to \$659.6 million. The \$82 million increase arises from:

- a \$54 million increase from using the real post tax WACC of 4.8% (5.81% real pre-tax or 8.46% nominal pre-tax WACC) to establish the RAB value. Alternatively, if IPART were to still use the implied rate in the agreement as its discount rate, then it would still derive a figure of \$54 million through:
 - \$18.7 million increase to fully compensate the operating risks transferred to the lessors (4 leases)
 - \$35.3 million from compensating for other risks embedded in the charges
- A \$28.2 million increase from IPART adopting a mid-year discounting method to account for future lease payments, rather than discounting the payment stream to the beginning of the year. We believe this better aligns with the monthly nature of the finance lease payments for the WFAs and the quarterly payments for BMT. Further detail of this modelling issue (and other modelling issues) can be found in Appendix D.

To assist IPART with further consideration of this matter, Sydney Water provides greater detail on its finance lease arrangements, which due to the commercially sensitive nature, are provided in a separated confidential appendix.

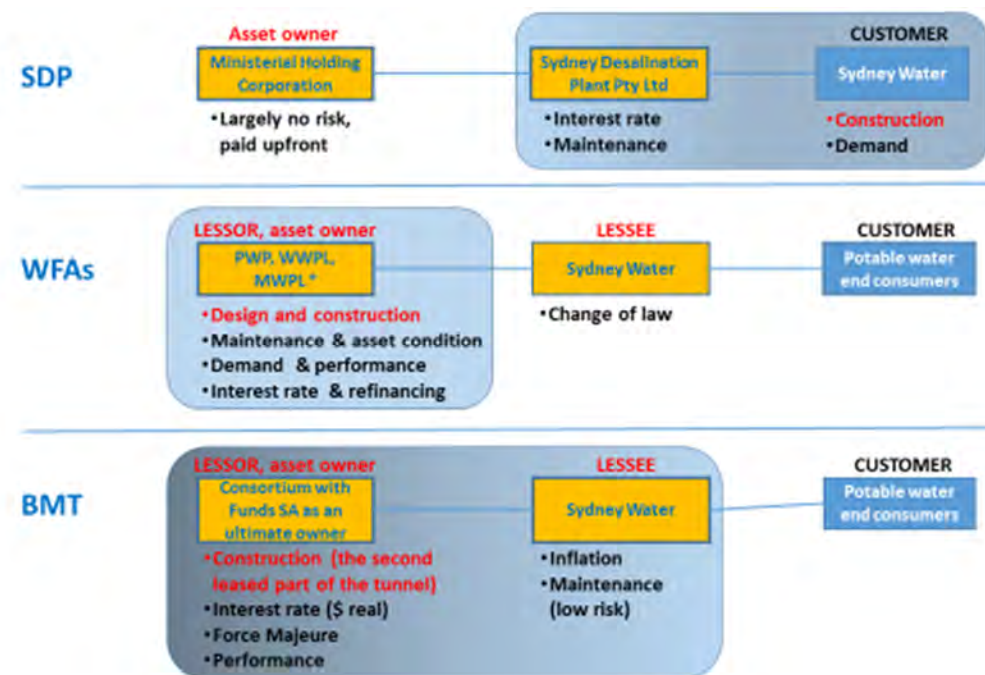
7.2 Comparison of Sydney Water's leases with the Sydney Desalination Plan

Sydney Water believes that justification for a higher implied rate than the WACC in our finance leases agreements, is demonstrated through contrasting the risk associated with agreements we have entered into versus those of the Sydney Desalination Plant (SDP). Figure 7-1 illustrates the difference between the agreements and the risks associated with them.

The diagram shows that in contrast to the WFAs and BMT lessees, SDP may be willing to accept a lower rate of return based on the WACC without any additional risk premium, because SDP and the asset owner face considerably lower risks. In particular:

- the SDP arrangement was entered into after the construction and successful commissioning
- the asset owner was paid in full upfront, and is therefore not exposed to any construction, regulatory pricing or demand risk, achieving a profit as would be expected for any commercial party
- the charge structure is such that it protects SDP from exposure to the changes in demand
- IPART allowed SDP an additional risk insurance allowance to cover replacement and business interruption costs.

Figure 7-1: Risk allocation - SDP comparison with the WFAs and the BMT



* private sectors owners

In contrast, Sydney Water has transferred considerable risks to the WFAs and BMT lessors. The implied rate in the finance lease charges reflect this risk transfer. Further detail is provided in Chapter 10 Appendices.

7.3 Assets lives

IPART's Draft Report outlines that IPART has adopted the asset lives recommended by Atkins-Cardno, in preference to those provided by Sydney Water.

The Atkins-Cardno asset lives are higher than those proposed by Sydney Water and IPART states that it is concerned with the:⁵⁰

- relatively low asset life for civil assets for the water finance leases. The rates originally proposed by Sydney Water and the rates that IPART intends to adopt are contrasted in Table 63.7 on page 101 of the Draft Report.
- electrical and mechanical asset lives for Macarthur WFP.

7.3.1 Sydney Water's response – civil assets

For the Prospect and two Wyuna water filtration plants (WFPs) Sydney Water engaged external professional engineering consultants who determined modern equivalent replacement cost and depreciated replacement cost values for all three WFPs. As these WFPs had not been constructed by Sydney Water, the consultants were requested to apply professional expert judgement and determine appropriate asset lives for the purpose of depreciating the WFPs. The life applied to civil components at all three WFPs was 70 years from date of construction with a remaining life of 50 years for the Prospect WFP and 51 years for the two Wyuna WFPs. As these assets lives were based on actual physical inspection of the three WFPs, they should also be considered the most accurate and reliable assessment for any regulatory purposes.

For the Macarthur WFP, the civil rate of 70 years was based on dissecting the value applicable to components of the plant that were made available to Sydney Water at the time it entered into a finance lease with the operator. The lower rate is a weighted average of the remaining life of 70 years (rather than 80 years), and recognises the shorter lives applicable to pipework, fencing and roads, separate from the core plant. This shorter life has also been supported by the incidence of plant failures and rectification works since Sydney Water entered into this finance lease in 2011.

We believe it is clearly preferable for IPART to adopt our asset lives and resulting depreciation rates, than those assumed by Atkins-Cardno's. In contrast to Atkins-Cardno's figures, which are based on benchmarks and desktop research, our asset life figures are based on superior evidence and analysis. Our asset lives are derived from a more accurate representation on the actual state of the physical assets being acquired.

7.3.2 SWC response – electrical and mechanical (Macarthur WFP)

The rates proposed by Sydney Water (and all the other WFPs) for the relatively shorter lived asset components was to depreciate them over the remaining life of the finance lease. While this approach appears to have been accepted by IPART for the Prospect and Wyuna WFPs, it has not been accepted for the Macarthur WFP.

The asset lives adopted by IPART for electronic and electrical components of 14 years is equivalent to the remaining lease term of 14 years (to August 2030). However, mechanical assets were given a longer life of 19 years based on estimates made of renewals over the lease term. These rates are considered to be reasonable estimates of the period of time that the costs of these capital investments should be recovered from customers.

⁵⁰ IPART, *Review of prices for Sydney Water Corporation, Water – Draft Report*, March 2016, pp 100-101.

8 Weighted average cost of capital and financeability

Key messages

- IPART's approach to estimate the 4.8% real post-tax weighted average cost of capital in the Draft Determination represents a robust methodology for estimating the regulated rate of return.
- We believe IPART has undertaken a comprehensive assessment of key parameters of the weighted average cost of capital and the arguments we have raised. We note that there are some minor issues of misinterpretation in IPART's assessment that we seek to clarify.
- There are minor issues with IPART's estimated financial ratios in its financeability test. We are concerned with IPART's analysis of these ratios, which presents an overly optimistic financial outlook for Sydney Water.
- IPART has not taken into account that in March 2016 Sydney Water's credit rating outlook has changed from stable to negative. Our forecast ratios based on the Draft Determination period are also lower than forecast in Sydney Water's pricing proposal.
- We still expect to retain an investment grade credit rating over 2016–20.

Sydney Water agrees, in principle, with IPART's objective that the regulatory weighted average cost of capital (WACC) should be set at a level that reflects the efficient cost of capital for a benchmark utility. An appropriately set regulatory WACC, provides a sufficient return to service ongoing debt requirements and a returns for shareholders. This is in the long-term interests of customers, as it allows a regulated business to generate sufficient returns to remain viable over the long term and sustain the ongoing investment in infrastructure required to deliver the desired services levels.

In setting the 4.8% real post-tax WACC in the Draft Determination, IPART has employed the methodology it established in December 2013⁵¹. Sydney Water was actively involved in the process that put the current IPART's WACC methodology in place in 2013. We made four submissions⁵² and engaged experts to provide independent advice and three expert reports in support of our submissions. We also participated in IPART's WACC workshop held in March 2013. Some of our proposals, including substantial changes to the new entrant principle and assumed term-to-maturity have been adopted.⁵³ We have consistently recognised IPART's current

⁵¹ IPART, *Review of WACC Methodology, Research-Final Report*, December 2013.

⁵² Sydney Water's submissions: (1) *Sydney Water submission to IPART discussion paper*, 15 March 2013, (2) *Sydney Water follow up submission to IPART discussion paper*, 28 March 2013 (3) *Sydney Water submission to IPART Interim Report*, 29 July 2013 (4) *Sydney Water submission to IPART Draft Report*, November 2013.

⁵³ IPART, *Review of WACC Methodology, Research-Final Report*, December 2013, pp 9-10 and 11-12

methodology represents an innovative approach and a significant improvement on the methodology employed in the previous determination.⁵⁴ It also reduces the likelihood that a business will be impacted or exposed to short-term financial market volatility.

IPART's analysis in the Draft Report (page 242-246) on the use of the 50:50 short- and long-term combination is comprehensive. In our Pricing Proposal we questioned whether this is appropriate. However, based on IPART's analysis we now support the use of the 50:50 short- and long-term combination.

Financial sustainability, also known as financeability, is the capacity of our business to maintain good financial performance so that we can access funds to invest at the lowest possible costs. We recognise that IPART was the first regulator in Australia to introduce this test for water pricing determinations⁵⁵. Along with the December 2013 WACC methodology, Sydney Water considers the introduction of this test as a key enhancement to the regulatory framework for the NSW urban water market.

Sydney Water has assessed IPART's financeability estimates based on the Draft Report and notes there are some minor discrepancies in the estimates. More significantly, we believe that IPART is overly-optimistic in its assessment of Sydney Water's financial metrics and our ability to maintain our current credit rating over the next period. The analysis also does not recognise that our credit rating outlook has changed from stable to negative.

8.1 WACC

The real post-tax WACC of 4.8% in the Draft Report is higher than the 4.6% WACC we used in our Pricing Proposal that was submitted 30 June 2015.

Sydney Water's 4.6% WACC estimate was our best estimate as at February 2015 of the likely WACC that would apply on 1 July 2016 when our Price Determination will come into effect. This required us to forecast plausible values for the key parameters such as the risk free rate, the market risk premium and the debt margin. The estimate was also based on a 60:40 weighting of long- and short-term debt. If we had instead used the 50:50 mix of long- and short-term debt we now support, our WACC estimate would have been 4.5%. We have contrasted our estimate with IPART's Draft Report estimate in Table 8-1.

⁵⁴ Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016-20*, June 2015, pp 219-21 and Sydney Water, *Response to IPART Issue Paper*, 7 September 2015, pp 36-38.

⁵⁵ IPART, *Financeability tests in price regulation, Research-Final Decision*, December 2013.

Table 8-1 WACC in the Draft Determination vs Sydney Water's Price Proposal

	Draft Determination		SW submission	
	ST	LT	ST	LT
Risk free rate	2.8%	4.6%	2.4%	4.5%
Inflation	2.5%	2.5%	2.5%	2.5%
Debt margin	2.8%	2.9%	2.5%	3.0%
Gearing	60%	60%	60%	60%
Market risk premium	8.5%	6.0%	8.2%	6.0%
Equity beta	0.7	0.7	0.7	0.7
Cost of equity (nominal post-tax)	8.8%	8.8%	8.2%	8.7%
Cost of equity (real post-tax)	6.1%	6.1%	5.5%	6.0%
Cost of debt (nominal pre-tax)	5.6%	7.5%	5.0%	7.4%
Nominal Vanilla WACC	6.9%	8.0%	6.2%	7.9%
Post-tax real WACC	4.3%	5.4%	3.6%	5.3%
Post-tax real WACC (mid-point)	4.8%		4.5%	
Post-tax real WACC (mid-point) (60:40 LT:ST debt mix)			4.6%	

Notes: ST- short-term LT- long-term

In assessing our WACC estimate and the arguments we put forward, the Draft Report (page 97) stated that we updated our WACC estimate in response to the IPART Issues Paper to 4.97%. This is not correct, as Sydney Water has not over the course of the price review period update its WACC estimate of 4.6%. We believe this has resulted from a slight misinterpretation by IPART of the analysis provided in our response to the Issue Paper (page 56).

Below we provide some minor comments on the extensive analysis done by IPART on a number of key issues.

Equity beta

We are satisfied that IPART has undertaken a rigorous analysis to assess the appropriate equity beta to apply for the water industry. We support the current position to use an estimate of 0.7 which was the figure used in our Pricing Proposal. Our position was supported by an independent report by HoustonKemp that estimated a plausible range of 0.7 to 0.8⁵⁶.

Maturity matching principle

IPART's WACC methodology calculates two WACC estimates, one based on a 10-year average and the other on a 40-day average, both targeting the 10-year term-to-maturity. IPART suggests in the Draft Report (page 245) that we have misunderstood the methodology it uses. Sydney Water understands the methodology well, as noted earlier, through our extensive involvement in the process of developing this approach. However, we accept that arguments in the Pricing Proposal and in the supporting evidence presented in that submission have confused issues around term-to-maturity and the weighting of short- and long-term estimates.

Market volatility

IPART has done a thorough assessment of market volatility in the Draft Report. We are aware that IPART uses four input measures in its Uncertainty Index, of which the ASX 2000 VIX Index (A VIX) is one of them. After raising our concerns about trends in the A VIX data in our submission to the Issues Paper in October 2015 which pointed to increased market volatility, we appreciate IPART in February 2016 subsequently provided stakeholders with a fact sheet and access to the uncertainty model⁵⁷. We also agree with IPART's assessment that the trend we observed at that time has not continued.

⁵⁶ Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016-20*, June 2015, p 227 and the appendix 7: HoustonKemp Economist, *Equity Beta for a Benchmark Australian Water Network Service Provider, A report for Sydney Water*, June 2015

⁵⁷ IPART, Fact Sheet, *WACC Biannual Update*, February 2016 and IPART, Fact Sheet, *Guide to IPART's Uncertainty Index Model*, February 2016 and model.

8.2 Financeability – Draft determination outcome

Table 8-2 shows that our forecast financial ratios under the Draft Report for the next regulatory period are:

- weaker than forecast in Sydney Water's pricing proposal as a result of a lower revenue outcome
- marginally higher than forecast by IPART in Table 11.7 of its Draft Report, reflecting differences in underlying modelling assumptions and methodology.

Table 8-2 Sydney Water's calculation of financial ratios based on the Draft Determination

Ratio	2015-16	2016-17	2017-18	2018-19	2019-20
FFO Interest Cover	2.3	2.1	2.0	2.0	2.1
Debt/RAB	55.1%	55.7%	56.2%	57.3%	56.7%
FFO/Debt	8.0%	6.2%	6.1%	6.0%	6.4%

Sydney Water's financial ratios in 2015–16 are forecast to be weaker than the ratios calculated by IPART for 2015–16. We have compared our current forecast financial ratios for 2015–16 with those in the 2012 Determination.

While our current forecasts are higher than the forecasts in the 2012 Determination, they are not as high as IPART's forecasts in Table 11.7 of the Draft Report (page 191). IPART's forecast for 2015–16 are higher largely because IPART has incorrectly attributed the balance sheet changes in long-term employee provisions and other liabilities as additional cash flow, hence increasing FFO and FFO-based ratios. If these effects were removed, IPART's ratios and our calculations would only be slightly different to Sydney Water's forecasts.

The step-down in ratios going into the 2016 determination period is due to the financial performance and position arising from IPART's recommended reduction in the notional revenue requirement in the Draft Report. The current step-down continues the downward trend in Sydney Water's financial ratios that have taken place following each Determination.

Of concern to Sydney Water is IPART's assessment that the financial ratios it has calculated are in line with the forecast ratios calculated for the 2012 determination period.

In the 2012 Determination all of the forecast ratios were above IPART's financial ratio benchmarks for water utilities. IPART's financial ratios in Table 11.7 of the Draft Report include sub-benchmark FFO/Debt ratios. Sydney Water notes that if IPART's estimated FFO/Debt ratio was the basis for Sydney Water's credit rating assessment, we would expect Moody's to downgrade our credit rating to Baa3. This is just one notch above sub-investment grade. This rating would not provide a buffer to absorb financial risks highlighted in detail in our Pricing Proposal (page 112-4) that might arise from such things as a fall in demand, an increase in credit margins and unexpected cost increases. We believe IPART in drawing conclusions about our financial performance, should take into account and not disregard a sub-benchmark FFO/Debt ratio.

8.3 Sydney Water's credit rating

The position stated in our Pricing Proposal that “based on our pricing proposal and the key credit metrics, in the worst case, we will maintain our current credit rating” (quoted in section 11.5.2 of the Draft Report) is no longer correct. While we still expect to maintain our investment grade credit rating, Moody's in its March 2016 credit opinion, changed Sydney Water's outlook to negative from stable⁵⁸. Moody's stated that this was due to the forecast deterioration in Sydney Water's credit metrics, in particular, the FFO/Debt ratio. All of Sydney Water's financial metrics, other than Debt/RAB, are currently sub-investment grade and are forecast to worsen over the next determination period.

Based on the outcomes of the Draft Report, Moody's forecast credit metrics will be lower than previously estimated for the 2016–20 period. It is possible therefore that Sydney Water's credit rating could as a result be downgraded from our current Baa1 rating to Baa2.

One of the factors that recently supported the increase in Sydney Water's credit rating to Baa1 was Moody's recognition of the improvement in the transparency of the regulatory framework. In December 2014 Moody's upgraded the “Stability and Predictability of Regulatory Regime” factor from A to Aa. Moody's stated that:⁵⁹

We believe that IPART has been improving the transparency and predictability of its revenue decisions, and these improvements have been providing support for Sydney Water's credit profile, and strengthening the utility's position in its rating.

This uplift in credit rating could however be eroded by deteriorating sub-investment grade credit metrics or changes to the regulatory framework that reduce transparency or predictability.

We would also like to alert IPART to the recent change in Moody's rating methodology⁶⁰. Moody's has made a number of changes to its methodology including the weights which it applies to the financial ratios. The FFO Interest Cover and FFO/Debt financial ratios now have the highest weights of 12.5% each. It was previously 15% for FFO Interest Cover and 5% for FFO/Debt. Debt/RAB is now weighted at 10%, whereas it was previously 15%.

The change in weighting implies that a poorly performing highly-weighted FFO/Debt ratio (which is sub-benchmark), will potentially drag the overall credit rating down to Baa3. This is particularly in the first half of the determination period. A credit rating of Baa3 would leave Sydney Water vulnerable to the effects of unexpected financial shocks, including increases in the cost of borrowing.

⁵⁸ Moody's Investors Service, “*Moody's revises Sydney Water's outlook to negative from stable, affirms Aa3 rating*”, Global Credit Research, 2 March 2016, available at https://www.moodys.com/research/Moodys-revises-Sydney-Waters-outlook-to-negative-from-stable-affirms--PR_344573

⁵⁹ Moody's Investors Service, *Moody's Investors Service Credit Opinion: Sydney Water Corporation*, December 2014.

⁶⁰ Moody's Investor Service, *Moody's Investors Service Rating Methodology, Regulated Water Utilities*, December 2015.

9 Modernising regulation

Key messages

- We share a common objective with IPART of wanting to ensure regulation promotes an efficient and sustainable business for the long-term interests of customers.
- Our proposed changes aimed to promote efficiency and a more targeted and proportionate approach to regulation.
- With regard to pricing flexibility, we:
 - acknowledge IPART's consideration of our proposal and its openness to allowing some form of pricing flexibility
 - maintain our preference for a Weighted Average Price Cap
 - do not support IPART's draft decision to allow for unregulated pricing agreements for some large non-residential customers
 - would like to continue to work with IPART to consider this issue.
- With regard to incentive schemes, we:
 - acknowledge IPART's consideration of our proposal for an Efficiency Benefit Sharing Scheme
 - accept IPART's draft decision to implement an Efficiency Carryover Mechanism
 - request IPART consider amending the an Efficiency Carryover Mechanism to include temporary cost changes and capital expenditure
 - request IPART review the effectiveness of the an Efficiency Carryover Mechanism as part of the next price review.
- With regard to cost pass-through arrangements, we:
 - accept IPART's draft decision to broadly maintain existing cost pass-through arrangements
 - would prefer a wider application of cost pass-through arrangements
 - request IPART consider a cash flow adjustment to compensate for the range of expected costs associated with uncertain events and ensure the recovery of efficient costs, as part of the next review of the IPART Act.
- We strongly support IPART's draft decision to work with regulated businesses in NSW and regulators in other jurisdictions to develop a performance benchmarking capability to inform future prices reviews. If done well, this could enhance the regulatory process and may improve the quality of future expenditure reviews.

IPART, Sydney Water and our customers have a common objective in modernising regulation. That is, to promote the efficient provision of services of the quality that is desired by customers while meeting community and environmental requirements, as set out in our Operating Licence, the *Public Health Act 2010* and our Environment Protection Licences. In making our proposals we sought to balance these objectives and share risks between Sydney Water and its customers in a way that allows us to maintain our current performance in controlling costs and increasing customer satisfaction.

In particular, we aimed to promote improved incentives to increase efficiency and a more targeted and proportionate approach to regulation. We believe this to be in the long-term interests of Sydney Water, our customers and the regulator. We note the schemes proposed in our Pricing Proposal for modernising regulation are well established in other industries (including those regulated by IPART) and jurisdictions.

This section responds to IPART's draft decisions on the following regulatory framework issues:

- Pricing flexibility
- Incentive schemes
- Cost recovery schemes
- Performance benchmarking.

9.1 Pricing flexibility

We appreciate IPART's consideration of our proposal for a Weighted Average Price Cap (WAPC) and its openness to allowing some form of pricing flexibility. We also acknowledge that it would have been preferable if our proposal had been made earlier in the price review process. However, we consider that IPART's draft decision to allow unregulated price agreements would result in a loss of some of the safeguards that exist under the current regulatory framework.

We are concerned that the incentive for parties to enter into unregulated price agreements would be limited, especially if there is no guarantee that agreements can span more than one regulatory period. We are also concerned about meeting the requirement to ring-fence changes in costs arising from entering into unregulated price agreements. Finally, we believe we have addressed the arguments made by IPART against adopting a WAPC.

In summary our preference is to implement our proposed WAPC. If IPART does not adopt a WAPC:

1. IPART should not proceed with the 'opt-out' alternative proposed in its draft decision
2. Existing regulatory arrangements should be retained for the next regulatory period

During that period we would seek to work with IPART and our customers to investigate how pricing flexibility could be implemented in future determinations.

9.1.1 Our proposal and IPART's draft decision

In our January 2016 submission on pricing flexibility, we proposed to use the next regulatory period to consult with our large non-residential customers and run pilot programs or trials of pricing

flexibility with specific customer groups. The trials would be used to investigate if there is an alternative pricing structure that is broadly favoured by each individual group. Through this we hoped to demonstrate that the benefits of pricing flexibility significantly outweigh the risks, and we would look to apply pricing flexibility to a wider customer base as part of our 2020 pricing submission.

We began considering which of our customers would be best suited to trialling pricing flexibility. Initially we looked to identify different groups of customers who are likely to be early adopters and where usage patterns are relatively homogenous within the particular group. We considered that these characteristics make it more likely that we can find an alternative preferred price structure for the individual group. Therefore, our proposal was to apply a WAPC to the water and wastewater prices applying to a subset of our customers in the 2016 Determination. We identified four individual customer groups, totalling around 370 customers and with revenue of around \$70 million a year. We also proposed Pricing Principles (consistent with our June 2015 Pricing Proposal), which we understood may form part of the Determination.

Given the small scale of our proposal, the degree of cost reflectivity of existing charges, and the fact that we would only change price structure and levels with the broad consent of an individual group, we did not propose side constraints on changes to individual tariff components under the WAPC. If IPART considered that side constraints were warranted, then we proposed a constraint on overall bill changes, rather than constraints on individual tariff components. We set out how this approach could work in practice. We also suggested items for inclusion in the 2016 Determination to implement our pricing flexibility proposal. These items included a WAPC formula, the level of the cap and a compliance process.

IPART did not accept our proposal. Instead, IPART's draft decision proposes to allow some large customers to opt out of the regulated price regime and negotiate prices directly with us.

9.1.2 Loss of regulatory safeguards

We proposed a WAPC to provide us with pricing flexibility that would make it easier to adjust prices to provide more innovative pricing and (potentially) better reflect the costs of serving different customer classes/types. In contrast, IPART has focused on customer-by-customer negotiation to better reflect individual customer's preferences.

A WAPC would give us the ability to set some prices within an overall regulatory constraint; IPART's proposal would effectively remove this regulatory oversight. While we acknowledge there is some merit in the concept of negotiated prices, we consider that this could create substantial risks for the business and the credibility of the regulatory regime.

The regulatory framework provides protection to consumers through ensuring they are charged prices that reflect no more than the efficient costs of service provision. This recognises that the Government wishes to offer regulatory protection to customers. (It is generally accepted that such pricing protection is effected by reflecting the efficient costs of service provision.) The regulatory framework also promotes the financial viability of regulated businesses, by providing them with a reasonable opportunity to recover the efficient costs of service provision. This recognises that the business should be financially sustainable, which includes being able to raise finance and being allowed a return on its business commensurate with the risks involved in providing the services. By

taking some customers outside the regulatory regime, and promoting direct negotiation with large customers, IPART's proposal by-passes these important safeguards.

Given regulated prices are set to recover costs, we believe non-residential customers would only choose to opt out of prices set by the regulator if a different tariff structure would save them money. (A competitive provider would not offer customers a menu of more and less efficient prices for the same product and allow customers to cherry pick unless they wished to loss lead.) If such an approach were agreed to, it would leave an efficient business at risk of not being able to recover its long-term costs.

9.1.3 Limited incentives for parties to sign unregulated pricing agreements

We recognise that we do not have the capability at present to manage a wide-scale implementation of pricing flexibility across our whole customer base. This is one of the reasons we proposed starting with pilot programs or trials with specific customer groups. We consider that we are most likely to have revised price offerings around the middle of the 2016 Determination period. We are concerned that this timing, coupled with the fact that we cannot guarantee to customers that unregulated price agreements will be rolled over into future determination periods, will limit the incentive for customers to make any on-site investments and changes to production processes that may be required to benefit from the negotiated price. Alternatively, the ability for prices to be 're-regulated' creates the potential for customers to make inefficient investments. We further note that regulation often seeks to replicate competitive market outcomes. Contracts entered into in competitive markets would bind across regulatory periods.

Under IPART's draft decision an unregulated price agreement has to be between Sydney Water and the owner of the property. We note that not all (eligible) large non-residential customers own the property they occupy, further limiting the potential number of these agreements.

9.1.4 Administrative complexity

IPART's draft decision requires us to 'ring-fence' any change in costs resulting from unregulated price agreements. We agree with the principle underlying IPART's position, ie that we should distinguish between changes in costs due to an unregulated price agreement and a change in costs due to a change in efficiency. However, we note that, at present, it would be difficult to report costs on an individual customer basis, let alone any potential change in costs due to a change in how they are serviced.

We understand that IPART envisages that a change in costs as a result of an unregulated price agreement could be either a decrease or an increase. However, we question whether we would be prepared to incur a cost increase without the ability to pass cost increases through to customers and with no guarantee that agreements will be rolled over into future determination periods.

9.1.5 IPART's arguments against a WAPC

We consider that we have addressed the arguments made by IPART against adopting a WAPC. That is:

- It creates the potential for cross-subsidies and wealth transfers. We consider that our proposed pricing principles would assisting in mitigating this risk.

- In the absence of competition, unilateral decisions create winners and losers. We note that IPART applied our proposed approach while it was regulating retail energy prices in the lead up to full retail competition/deregulation, ie IPART imposed a WAPC with an overall bill constraint.
- Lack of competition means a WAPC would require strong regulatory controls. In our view this has not been an issue either in network industries (where there is no competition) or other jurisdictions where a WAPC has been applied to water prices (eg England and Wales, Victoria).
- A WAPC allows the ability to generate excess profits. The AER highlights this as reason for moving to revenue caps for energy distributors. We indicated that we would provide actual outturn volumes so that IPART could monitor profitability. Also, we note that the AER still allows distributors to set prices within the overall revenue cap. That is, the AER does not restrict distributors' pricing powers and seek to set specific tariffs – the key point at issue here. (As set out in Chapter 4, if IPART remains concerned about over- or under-recovery of revenue due to demand uncertainty it may wish to consider setting a revenue cap.)

9.1.6 Proposed way forward

IPART's draft decision anticipates that unregulated price agreements will be entered into where it is in both parties' interests. However, if prices can be 're-regulated' and there is uncertainty around our ability to pass through increased costs, we consider it unlikely that we would develop an 'enhanced' service for which customers would pay more than the determined price.⁶¹ Therefore, any unregulated price agreements are likely to involve customers paying less than the determined price.

The right to negotiate lower prices currently exists, however, if prices are negotiated that are lower than the determined prices, then the Treasurer's approval to charge these prices would be required.⁶² If the expectation is that unregulated price agreements will apply to only a small number of large customers, then we would prefer the transparency of the current regime.

In summary, our preference is to implement our proposed WAPC. However, if this is not adopted, we would rather retain the existing regulatory arrangements than implement IPART's draft decision. We would consult with customers and work with IPART to investigate how pricing flexibility could be implemented in future determinations. We might also look to apply a WAPC to the prices for miscellaneous and ancillary services and/or trade waste services. This - would reduce the regulatory burden and administrative complexity associated with having these 90 charges regulated.

⁶¹ We also note that we already have the ability to provide enhanced or additional services separately as unregulated products, for example, our WaterFix service.

⁶² Under section 18(2) of the IPART Act "The approval of the Treasurer must be obtained if another Minister, an official or an agency fixes (or takes action to fix) the price below the maximum price determined by the Tribunal or calculated in accordance with the determination of the Tribunal."

9.2 Incentive schemes

We appreciate IPART's consideration of our proposal for an Efficiency Benefit Sharing Scheme (EBSS) and its draft decision to implement an Efficiency Carryover Mechanism (ECM). We consider that IPART's draft decision is a significant advance on the model proposed in its Issues Paper, although we maintain that the inclusion of temporary cost changes and the adoption of a capital expenditure scheme would be preferable. Nonetheless, the proposed ECM provides a platform for further enhancement in the future.

9.2.1 Our proposal and IPART's draft decision

We proposed an EBSS with the following features:

- It would apply to controllable operating and capital expenditure on critical water mains and reticulation renewals and electricity. This comprises 9.5% of our total forecast capital expenditure over the 2016–20 period.
- It would allow us to retain any cost reduction (compared to allowed costs) for five years before it was passed on to customers
- It would require us to incur any cost increase (compared to allowed costs) for five years before it was passed on to customers.

IPART's draft decision is to implement an ECM that:

- applies to controllable operating expenditure only
- allows us to retain any permanent cost reduction (compared to allowed costs) for four years before it is passed on to customers
- requires us to incur permanent cost increases (compared to allowed costs) until IPART's assessment at the next price review
- excludes temporary increases/decreases in costs (compared to allowed costs). These are incurred/retained by the business.

The Draft Report states that:

Temporary over and under spends are retained by the business. This is the major difference between the ECM and the modified EBSS and directly addresses Sydney Water's concern with the modified EBSS.⁶³

We do not consider that this is an accurate reflection of our submission on the modified EBSS. Our concern was that the modified EBSS would introduce asymmetry and additional expenditure risks for Sydney Water (compared to our proposal) by not including losses in general. We have always maintained the view that temporary cost changes (whether increases or decreases) should be included in any scheme.

⁶³ IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Draft Report*, March 2016, p 218.

9.2.2 Exclusion of temporary cost changes

IPART states that the 'objective of the ECM is to equalise the incentive to make permanent efficiency savings regardless of when they are made'⁶⁴ and that exposing the business to temporary cost changes 'provides an incentive for the business to manage within its budget'.⁶⁵ While we agree that providing an incentive for permanent reductions in costs is important, we consider that it is also important that the business bears an appropriate incentive in relation to transitory costs.

The exclusion from the ECM of temporary cost changes fails to recognise that:

- expenditure may be required to realise efficiency gains. Any permanent efficiency saving is the combination of the decrease in costs achieved and any expenditure required to facilitate this. It is this net outcome that should be reflected in prices.
- there are opportunities to substitute between operating and capital expenditure to achieve a lower cost result overall. In particular, if the business bears all consequence of a transitory increase in costs, the incentive to increase operating expenditure to defer capital expenditure may be diminished substantially for part of the regulatory period.

In our view the exclusion of temporary cost changes limits the incentives under the ECM by limiting the opportunity for a business to recover the efficient costs of service provision. In addition, there are random effects that vary expenditures from year-to-year, for example, weather-related effects. Sustained dry weather will increase the number of pipe breaks and blockages, whereas very wet weather increases water treatment needs. Significantly, either leads to higher costs than under our base assumptions of average weather conditions for forecasting operating and capital expenditure.

9.2.3 No capital expenditure scheme

We acknowledge that we are not in a position to adopt an EBSS across our whole capex program at this time. However, excluding a capex EBSS prevents us efficiently substituting between opex and capex once expenditure allowances have been set, again increasing the risk that we would not recover the efficient costs of providing services. For this reason we would prefer to have a capex EBSS for areas/projects where we know there are opex-capex trade-offs, such as water reticulation and critical water mains, energy, and (in the future) information technology, for example, there will be increased scope to choose between cloud and hardware IT solutions in the future, our implementation of ERP will allow us to take advantage of this.

We note that, in rejecting a capital expenditure EBSS, IPART states that it agrees with CEPA's findings that our proposed application of the capital expenditure EBSS to 9.5% of capital expenditure limits opportunities for substitutability between operating and capital expenditure. However, what CEPA actually said was that it supports in principle adopting a similar mechanism for capital expenditure, which would remove the timing distortion for capital expenditure and potentially allow the incentives to make efficiency saving to be equalised between operating and

⁶⁴ IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Draft Report*, March 2016, p 37.

⁶⁵ IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Draft Report*, March 2016, p 38.

capital expenditure, but not at this stage in the current price determination process. CEPA's argument is that our proposal would add significant complexity to the price control without much benefit if the capital expenditure covered is only 9.5%. CEPA's view is that a capital expenditure scheme will be of greatest value if there are material opportunities for substitution between operating and capital expenditure options to address network requirements.

We also consider that we have addressed the arguments made by IPART against adopting a capital expenditure EBSS:

- Additional complexity. While we acknowledge the view that capital expenditure schemes are more difficult to apply than operating expenditure schemes, we consider that there are material costs of not applying them. This is because, in the absence of such a scheme, the incentive to reduce costs declines over the regulatory period and excessive incentives are created with respect to transitory costs that can encourage inefficient choices between operating and capital expenditure where there is a trade-off. We further consider that the potential deficiencies in the capital expenditure scheme are manageable, given the classes of capital expenditure that we propose to apply the scheme to.
- Additional risk of unintended consequences (ie incentive to over-forecast, incentive to defer capital expenditure). We recognise that under the existing regulatory regime there is an incentive to over-forecast capital expenditure and that this may be exacerbated by introducing a capital expenditure EBSS. However, we note that under our proposed EBSS, the existing approach to assessing forecast capital expenditure would still apply. That is, there would be an ex-ante review of forecast expenditure to check for over-forecasting during future price resets. Furthermore, we have proposed only a modest program of capital expenditure be covered by an EBSS in the first period. While we acknowledge the concerns around deferrals, we reiterate that the categories we have proposed for inclusion in the capital expenditure EBSS are where expenditure is largely recurrent and/or there is an opportunity to substitute with operating expenditure. We consider that this approach minimises the risk that deferrals are inefficient.
- Limited opportunities to substitute. We have restricted our proposed capital expenditure EBSS to areas where there are clear opportunities for substitution between operating and capital expenditure solutions. This is the case for our decisions on critical water mains and water reticulation, and in meeting our electricity requirements. For electricity, through our contracting arrangements we have comparatively low operating expenditure. If the incentives are equalised through inclusion of a capital expenditure EBSS, we would only adopt a capital expenditure solution where it was efficient and delivered the lowest social cost.

As with the exclusion of temporary cost changes, the absence of a capital expenditure scheme limits the incentives under the ECM by limiting the opportunity for a business to recover the efficient costs of service provision.

9.2.4 Weaker incentives and increased administrative complexity

We note that the incentives under the proposed ECM are weaker than those under our proposed EBSS due to the:

- exclusion of temporary cost changes and a capital expenditure scheme

- requirement that permanent cost increases are subject to scrutiny by IPART
- inability to bind a future Tribunal to implement the scheme
- choice of a four year holding period (compared to our proposal for five years).

We also have concerns about the proposed ECM's administrative complexity and the potential increase in regulatory burden in terms of the reporting and analysis of costs. We consider this to be a particular risk if an application for a carryover will be assessed as part of the expenditure review by external consultants.

9.2.5 Proposed way forward

The proposed ECM is a significant advance on the modified EBSS presented by IPART in its Issues Paper. If IPART makes a final decision to adopt the ECM we would like it to consider two implementation proposals.

Firstly, we believe that the definition of 'controllable costs', ie those costs covered by the ECM, should be agreed up front before the scheme begins on 1 July 2016. Secondly, we do not consider that the year 2015–16 should be included in the initial application of the ECM. We understand that IPART may prefer a consistent application of the ECM over time, ie to 'look back' at four years at each price review, however the ECM cannot provide incentives retrospectively. Accordingly we consider that the ECM should apply from 1 July 2016⁶⁶.

Finally, we note that Ofwat employed a similar model to the proposed ECM, but also had more comprehensive data collection and ultimately replaced the scheme. If after four years the ECM is not producing the intended outcomes, or there is difficulty in distinguishing between one-off and permanent changes in costs, then we suggest that IPART consider either implementing our proposed model or moving to a totex approach. We note that CEPA encouraged IPART to explore alternative options such as totex or menu regulations and whether they could be introduced at future price reviews.

9.3 Cost pass through

IPART's draft decision is to broadly maintain the existing cost pass through arrangements. The coverage of these mechanisms is narrower than our proposed cost recovery schemes, which we consider are consistent with regulatory best practice in other industries and jurisdictions. We maintain our position that, in the absence of IPART being able to implement such schemes under the IPART Act, a cash flow adjustment should be considered to compensate for the range of expected costs associated with uncertain events during the 2016 Determination period (eg in relation to complying with environmental regulations) and ensure we can recover efficient costs.

⁶⁶ We also note that Atkins-Cardno's recommendations on our efficient operating expenditure for the 2016 Determination were made by considering forecast 2015–16 expenditure and on the basis that there is no incentive scheme in place. Thus we expect that any permanent efficiency savings we are on track to make in 2015–16 will be reflected in our operating expenditure allowance going forward, and it would not be appropriate to apply the ECM to 2015–16.

We would encourage any future review of the IPART Act to ensure that such schemes could be implemented in future.

There is always a risk that actual expenditure and/or actual demand within the regulatory period will deviate from the forecasts used to set prices. Under the Draft Determination IPART is requiring us to bear expenditure risk but proposes to address demand risk by amending future revenue and prices if actual demand is different to forecast. We do not consider that IPART has demonstrated that this approach is appropriate given the way we operate our business, the nature and significance of these risks, and our capacity to bear them.

9.3.1 Our proposal and IPART's draft decision

We proposed to include a framework in the price determination that would address specific expenditure risks and manage unforeseen events. The framework would support:

- cost pass through mechanisms – used to pass through to customers the costs of events, fully or partially unknown at the time of the price review submission, which occur within the determination period, have a material cost implication for the business, and have not been included in prices. These events can then be considered without re-opening the determination.
- cost contingency schemes – applied to materially large projects where the requirement, timing or costs of the project are uncertain at the time of the price review submission. IPART would pre-approve the projects, which would have a trigger event within the determination period for us to incorporate the efficient costs of the projects into prices.

Our proposed cost recovery schemes align with regulatory best practice and are commonly used by regulators in most regulated industries (for example the Australian Energy Regulator (AER) in Australia and Ofwat and Ofgem in the UK). IPART's draft decision is to retain the existing arrangement for the pass through to customers of costs incurred by Sydney Water in relation to Sydney Desalination Plant.⁶⁷ In addition, a mechanism will be introduced to pass through to customers any costs incurred by Sydney Water in relation to transfers from the Shoalhaven by WaterNSW⁶⁸.

9.3.2 Implications of retaining the existing arrangements

In taking the position to broadly retain the existing cost pass-through arrangements, IPART has fully exposed Sydney Water to risks that are largely beyond our control. IPART considers that cost pass through mechanisms “should only be applied in exceptional circumstances”⁶⁹. We agree with this as an objective for applying cost recovery schemes. However, we consider that our proposal

⁶⁷ With the exception that SDP's additional variable costs are passed through to customers in the water usage charge as they are incurred.

⁶⁸ This will replace the existing arrangement under which the expected costs of transfers from the Shoalhaven are included in our operating expenditure allowance.

⁶⁹ IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Draft Report*, March 2016, p 42.

meets this objective and we are concerned about IPART's definition of the circumstances when a cost pass through mechanism would apply⁷⁰. For example:

- that the resulting efficient cost associated with the trigger event can be fully assessed, including whether there are other factors that fully or partially offset the direct cost of the event. We believe this is an impractically high standard
- that the regulated business cannot influence the likelihood of the trigger event or the resulting cost. Again, we consider this is too high a standard and that often circumstances are not as absolute as this.

IPART has argued that it is efficient for a business to be at least partially exposed to risks that it has some ability to control or influence. We agree with this principle. The key point is the extent of the exposure.

IPART has also argued that it is efficient for a business to have an incentive to influence costs as a result of a legislative, legal or regulatory development. Again, we agree with this principle but we note that the absence of a cost recovery scheme potentially puts our proposed expenditure in relation to environmental compliance at risk. In assessing our required environmental expenditure and proposing our capital expenditure program for the next regulatory period, we have assumed the best feasible outcome on environmental regulation. There is a risk that we will not achieve this, despite our best endeavours, which means we may require a much larger level of expenditure.

IPART's exclusion of the proposed cost recovery scheme for environmental standards creates a significant negative asymmetric regulatory risk for us. It exposes us to a significant risk (that we cannot control) that we will not be able to recover the efficient costs of providing services to the required standard (see Boxout 9-1). In the absence of an appropriate cost recovery scheme, we consider that IPART should include this risk in our cash flows on an ex-ante basis (similar to the existing arrangements for the costs associated with transfers from the Shoalhaven by WaterNSW).

Boxout 9-1: Costs of wet weather overflow abatement

As set out in our Pricing Proposal, Sydney Water has been working since 2012 on a potential Environment Protection Licence (EPL) revision for wet weather overflow abatement (WWOA) requirements. The aim is to develop targets to replace the current 'frequency targets' that generally require large containment solutions, but may not provide the best environmental and community outcomes.

Sydney Water submitted a proposal to the EPA in December 2015 with alternative licence requirements. The EPA requires that the proposal demonstrate how our new approach will provide the same or better environmental and community outcomes by 2021 as the existing frequency targets. We are proposing to develop an alternative regulatory measure that:

- supports a risk-based approach to assessing wastewater ecosystem and public health, and aesthetics
- maximises environmental and community benefits

⁷⁰ IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Draft Report*, March 2016, p 43.

- drives more cost-effective solutions.

The timing of this program is not aligned with our Pricing Proposal. However, the forecast costs included in the submission (\$127 million, \$2015–16⁷¹) is our current estimate of the cost of work required over the next price path, if the EPA accepts our proposal.

Sydney Water estimated in 2012 that to meet the frequency targets, we would require \$5.5 billion worth of additional expenditure, increasing existing wastewater customer bills by over a third for at least the next 50 years.

We do not believe that the ability to seek an early price determination is an adequate mechanism to manage the risks of major unforeseen events. We prefer IPART to explicitly recognise this risk in the price determination.

Finally, we query IPART's view that we could use a broader cost pass through mechanism to retain upside risk and pass downside risk onto customers. As set out above, we are not proposing that any costs above our expectations be passed through to customers. We are proposing to include a framework in the price determination that would address specific expenditure risks and manage unforeseen events to the extent they are material.

We note IPART's view that, under the IPART Act, the determination must specify the costs to be passed through. Sydney Water is of the view that, provided a sufficiently precise methodology for fixing a maximum price can be designed (that includes a mechanism for assessing the efficiency of contingent expenditure), IPART has jurisdiction to set that methodology to fix the maximum price without the need to reopen the pricing determination during the regulatory period. However, if there are legal impediments to establishing cost recovery schemes, they should be removed as part of the next IPART Act review.

9.4 Performance benchmarking

We welcome IPART's draft decision to work with regulated businesses in NSW and regulators in other jurisdictions to develop a performance benchmarking capability to inform future prices reviews. That IPART has signalled a change in approach highlights that the current way of assessing efficient costs is not regulatory best practice (this is neither IPART nor its consultants fault but a result of a flawed process). We agree that the incorporation of performance benchmarking into the regulatory framework is a good approach and we consider it to be a positive development. We are willing to assist in establishing performance benchmarking. This should help reveal catch up and continuing efficiencies and identify areas for further investigation, resulting in a more targeted and less onerous expenditure review. It would also complement the proposed ECM.

We would be concerned if benchmarking was not undertaken in a transparent, consultative manner and the results were used in a way that did not adequately take into account the limitations of the data and models. However, we expect IPART to carry out consultation and a public process to decide on the appropriate benchmarks and, in particular, how various models would be used.

⁷¹ Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 204.

We consider that it is important that we have clear guidance around what IPART intends to do with any benchmarking analysis.

9.4.1 A best practice approach to benchmarking

As set out previously, Sydney Water is supportive of the concept of performance benchmarking as an expenditure review tool if it is developed and applied in line with good regulatory practice:

- methods and data sources are transparent and have been reviewed by the regulated businesses
- conclusions are drawn based on a range of analyses
- the results of benchmarking analysis are validated by cross-checking against other analyses
- The circumstances and characteristics of different businesses are accounted for.

We are encouraged that IPART plans to consider and develop a number of approaches to performance benchmarking (cost driver and activity benchmarking, productivity index analysis and efficient frontier analysis). The intention to use multiple approaches aligns with the recent decision by the Australian Competition Tribunal (ACT) on the application of benchmarking by the AER. The ACT rejected the AER's narrow use of benchmarking to determine efficient costs and in particular the reliance on a single model and the exclusion of a wider set of benchmarking models including 'bottom up' cost reviews.

The ACT also ruled that, even with a transparent model, reducing expenditure allowances without cross-checking against other analyses is not reasonable.⁷² The ruling highlights the problems with excessive reliance on benchmarking in setting efficient costs. IPART's approach to performance benchmarking should align with the ACT's findings.⁷³

As recognised by IPART, collecting consistent data sets is a major challenge in undertaking performance benchmarking. This can be achieved through data templates with clear regulatory rules and detailed reporting guidelines. There should also be a clear distinction between controllable/uncontrollable and regulated/unregulated costs and activities.

Any benchmarking exercise should start with consideration of the cost drivers of the businesses (eg regulatory requirements, operating environment, input prices) and the range of options to measure these. It is important to control for all material cost drivers either by including them as cost drivers in the modelling or by making 'special factor' adjustments. To the extent there is a need to make special factor adjustments, businesses should be consulted on which factors are important, how these can be measured, and the magnitude of the required adjustments. If the use of international data is thought to be necessary (eg to find peers for the smallest and largest businesses) this would need to be exercised with caution.

⁷² We also note that Ofgem uses three different models to cross-check/reconcile benchmarking results.

⁷³ The ACT identified other issues with the AER's application of benchmarking including limitations with Australian data and the pooling of Australian and international data, a failure to account properly for large differences between Australian networks and inadequate analysis underpinning the adjustments for 'operating environment factors' and a limited opportunity for external review.

We note that it is not uncommon for different benchmarking approaches to provide different results. A regulator should examine the reason for the differences between the approaches, rather than necessarily selecting the results from one approach as the basis for setting expenditure allowances. If there is a significant element of uncertainty in the benchmarking results they need to be applied carefully. A mechanistic approach to setting expenditure allowances should be avoided and, rather than setting a 'frontier' based target, there may be a more suitable approach when applying benchmarking for the first time (eg using average rather than frontier performance). Finally, there is a need to consider the appropriate amount of weight to be applied to benchmarking compared to other evidence.

Sydney Water would be pleased to work with IPART and other stakeholders to develop a performance benchmarking capability. Our understanding of the cost drivers of water businesses and the impact of operating environments can help to:

- ensure the models are well-founded
- reduce the risk of data errors
- ensure the limitations of different models are better understood.

We recognise that successful implementation of performance benchmarking requires a long-term data set and significant and consistent cooperation across jurisdictions and businesses. However, if this could be achieved, benchmarking could be a useful tool for businesses and regulators as part of a broader analysis to assess the efficient costs and identify areas for potential improvement.

10 Appendices

Appendix A Implementation issues and corrections

Sydney Water has outlined below a number of implementation issues or corrections for the Draft Determination and report. We would be pleased to discuss these further with IPART.

Draft Determination

Issue	Comment	Proposed amendment (if applicable)
1. Individual Meters within a Multi Premises Schedule 1 & 2, clause 2(a)	Sydney Water accepts the changes to the terminology for individual meters within a multi premises. However we are concerned that it may be difficult for our customers to determine their prices.	We would be pleased to discuss further with IPART how the wording could be clarified to assist customers.

Issue	Comment	Proposed amendment (if applicable)
2. Dual occupancies Schedule 1 and 2, clause 2(b)	<p>We accept IPART's draft decision to charge dual occupancies based on the number of meter connections. While IPART has not accepted our proposal to charge dual occupancies as a standalone, single residential property, its draft decision does overcome our difficulty in identifying these types of customers in the current planning environment.</p> <p>We believe a change in the wording would simplify the matter.</p>	<p>We propose that the explanatory note on dual occupancies in clause 2(b) of both Schedules 1 and 2 of the determination be amended as follows:</p> <p>Note: Each Residential Dual Occupancy Property, also known as two flats, on the same premises that is serviced by one or more Individual Meters is to be treated as a single Metered Residential Property.</p>

Issue	Comment	Proposed amendment (if applicable)
3. Joint Services	<p>We believe the wording in the Draft Determination does not capture the existing suite of current charging arrangements for joint services</p>	<p>We are happy to work with IPART to ensure that the determination accurately reflects IPART's final decision.</p>

Issue	Comment	Proposed amendment (if applicable)
4. Common meters and multi-meters Schedule 1 and 2	<p>The Draft Report states in section 8.3.1 that in rebasing the water and wastewater service charges on a 20mm meter scale, IPART has deemed all residential dwellings (regardless of type) to have a 20mm meter to ensure that all flats and houses are still charged at the same rate. IPART then notes in footnote 293 of the Draft Report that non-residential occupancies in mixed multi-developments are also deemed to have a 20mm meter to ensure that they are charged the same as residential dwellings.</p> <p>However, we do not believe this is accurately reflected in Schedules 1 and 2 of the Draft Determination. These schedules do not reference Mixed Multi Premises with common meter arrangements.</p> <p>We suggest IPART clarify how both, 'Multi Premises properties' and 'Mixed Multi Premises properties' with common meter arrangements are to be treated for charging purposes.</p>	<p>In order to ensure consistency between the report and determination, and to reference Mixed Multi Premises with common meter arrangements we suggest the following changes:</p> <p>Add to clause 2 of both Schedule 1 and 2:</p> <p>(f) All residential dwellings (regardless of type) are deemed to have a 20mm meter. This is to ensure that flats and houses are still charged at the same rate. Non-residential occupancies in mixed multi-developments with a common meter are also deemed to have a 20mm meter to ensure that they are charged the same as residential dwellings.</p> <p>Add to Tables 1 and 6 the following explanatory note:</p> <p>Note: All residential dwellings (regardless of type) are deemed to have a 20mm meter. Non-residential occupancies in mixed multi-developments with a common meter are also deemed to have a 20 mm meter.</p> <p>We would be pleased to discuss this further with IPART.</p>

Issue	Comment	Proposed amendment (if applicable)
5. Maximum water usage charge Schedule 1, clause 5(c)	We do not consider that some of the wording in Schedule 1, clause 5(c) is correct. Sydney Water charges the maximum water usage price on the common meter on the first mentioned property. We would request an amendment to the wording.	<p>We suggest the following amendment:</p> <p>(c) The water usage charge for a Property serviced by one or more Common Meters (other than a Property that receives Joint Water Supply Services) is to be levied on:</p> <ul style="list-style-type: none"> (1) in the case of a Strata Title Building, the Owners Corporation of that Strata Title Building; or (2) in the case of a Community Parcel, the owner of that Community Parcel; or (3) in the case of a Company Title Building, the owner of that Company Title Building; or (4) in the case of any other type of Multi Premises, the owner of that Multi Premises. <p>and, in each case where the Common Meter that serves the first mentioned Multi-Premises also serves another Multi-Premises, the water usage charge is also to be levied on each Property within that other Multi-Premises in accordance with the above provisions.</p> <p>We would be pleased to discuss this further with IPART.</p>

Issue	Comment	Proposed amendment (if applicable)
<p>6. Maximum sewerage usage charge</p> <p>Schedule 2, clause 5(b)</p>	<p>We do not consider that some of the wording in Schedule 2, clause 5(b) is correct. Sydney Water charges the maximum sewerage usage price on the common meter on the first mentioned property. We would request an amendment to the wording.</p>	<p>We suggest the following amendment:</p> <p>(b) The sewerage usage charge for a Non Residential Multi Premises serviced by one or more Common Meters (other than a Non Residential Multi Premises that receives Joint Sewerage Services) is to be levied on:</p> <p>(1) in the case of a Strata Title Building, the Owners Corporation of that Strata Title Building;</p> <p>(2) in the case of any other type of Multi Premises, the owner of that Multi Premises.,</p> <p>and, in each case where the Common Meter that serves the first mentioned Multi Premises also serves another Non Residential Multi Premises, the sewerage usage charge is also to be levied on the owner of that other Non Residential Multi Premises in accordance with the above provisions.</p> <p>We would be pleased to discuss this further with IPART.</p>

Issue	Comment	Proposed amendment (if applicable)
<p>7. Applicable 'Period' reference in formulas</p> <p>Schedule 1, Clause 9 and 10</p>	<p>We note that IPART has included a period reference of '1 July 20xx to 30 June 20xy' in the charge adjustment formulas in clauses 9 and 10 of Schedule 1.</p> <p>In practice, for calculating the adjustment to the water supply service for charges paid to the SDP, Sydney Water has included forecast costs payable to the SDP in its calculation.</p> <p>There is likely to be timing and/or practicality issues for Sydney Water to implement the adjustments in order to effect price changes starting from 1 July in each year. Sydney Water begins the process of incorporating the adjustments for the SDP costs pass-through in May each year, to enable us to implement the adjusted price from 1 July. This allows sufficient time to collate data, calculate the new price adjustments and quality assure, and update the billing system and website. In order to do this some forecast costs for May and June are used.</p>	<p>We propose that the way we calculate the adjustment in clauses 9 and 10 be modified to reflect the current practice. For example in clause 9 we would suggest:</p> <p>$X_{2016-17}$ = the charges paid, or forecast to be paid, by Sydney Water to DSP under the DSP Determination for the Period 1 July 2016 to 30 June 2017.</p> <p>We would be pleased to discuss this further with IPART.</p>

Issue	Comment	Proposed amendment (if applicable)
<p>8. Timing of SDP Pass through</p> <p>Schedule 1, clause 9(a) - ΔSC for SDP = 0</p>	<p>We note that the Draft Determination has a pass through of 2015–16 actual SDP Costs into our 2016–17 water service charge prices.</p> <p>Sydney Water begins the process of incorporating the adjustments for the SDP costs pass-through in May each year, to enable us to implement the adjusted price from 1 July. This allows sufficient time to collate data, calculate the new price adjustments and quality assure, and update the billing system and website. In order to do this some forecast costs for May and June are used.</p> <p>With the timing of the release of IPART's Final Report and Determination in June 2016 we will not be able to perform the price adjustment calculation and other necessary processes in time to implement the price implementation from 1 July 2016.</p> <p>Sydney Water understands from previous discussions with IPART, and confirmed by IPART in its Draft Report (page 70), that the water prices to be published by IPART in mid-June 2016, will incorporate the necessary adjustment for SDP cost pass-through.</p>	<p>Sydney Water assumes that we can apply these final determined prices from 1 July 2016, without further adjustment. We would be pleased to work with IPART to confirm this assumption.</p>

Issue	Comment	Proposed amendment (if applicable)
<p>9. A new combined Residential sewerage service charge table</p> <p>Schedule 2, clause 3.2</p>	<p>We note that it would be helpful for our residential customers to have a reference table showing a single chargeable rate (as defined in clause 3.2 of Schedule 2). This would avoid customers having to calculate their charge from two tables (Table 6 & 7).</p>	<p>In the absence of a simplified outline being included in the Determination, we propose that a new table be included (to be shown after Table 7) that shows the residential wastewater service charge as one chargeable rate as follows:</p> $\text{Charge} = (\text{MC charge for a 20 mm meter in Table 6} \times 0.75) + (\text{DU in Table 7})$ <p>i.e Charge = \$581.35</p> <p>And include the following in clause 3.2 to refer customers to the new table:</p> <p>The maximum price that Sydney Water may levy for supplying Schedule 1 services to each Property under clause 3, as shown in Table X, is the sum of:...</p>
<p>10. Residential low impact stormwater charge</p> <p>Schedule 3, Table 8</p>	<p>If IPART does adopt its draft decision to introduce residential low impact stormwater charge, contrary to Sydney Water's preference, we would need to develop an appropriate set of criteria and internal processes to deal with potential applications. Accordingly, we request a period of one year to develop the scheme. This is in line with IPART's approach in 2012 for non-residential properties.</p>	<p>If IPART does adopt its draft decision to introduce residential low impact stormwater charge, contrary to our preference, we propose a starting date of 1 July 2017.</p>

Issue	Comment	Proposed amendment (if applicable)
11. Rouse Hill Stormwater Drainage Services - Reference to land size Schedule 4, Clause 2.2	In clause 2.2 of Schedule 4, the reference to the “relevant Land Size” could be confusing for customers, as land size is not relevant to all property types with this charge.	<p>To clarify, we suggest the following addition:</p> <p>Subject to clause 3 of schedule 4, the maximum price that Sydney Water may levy for supplying Rouse Hill Stormwater Drainage Services to each Property under clause 2, for each Period, is the Rouse Hill stormwater drainage charge in Table 9, corresponding to the applicable Period, Property type and relevant Land Size in that table.</p>
12. Remote read meter Schedule 7, Table 19, No 40	We are concerned that the current wording of the Draft Determination will not allow us to levy the remote read meter fee in all necessary scenarios. It is our intention to levy the fee in accordance with both Clause 10.1 and 10.4 of the Customer Contract.	<p>We suggest the following amendment to Item 40 of Table 19:</p> <p>This charge recovers the cost of fitting and servicing an automatic Meter reading device. Consistent with the Customer Contract, Sydney Water may only levy this charge where:</p> <ul style="list-style-type: none"> • where the customer’s existing Meter has been made inaccessible on two or more occasions after 1 July 2016 on two or more occasions; or • where the customer is installing a new Meter in an inaccessible location; or • at the customer’s request; <p>and in each instance the customer has granted permission for the installation of the device. The fees for installing Meters of the following sizes are set out below: ...</p>

Issue	Comment	Proposed amendment (if applicable)
13. Definition of Large Non-Residential Property Schedule 9	<p>Our preference is that IPART retain the existing regulatory arrangements for price flexibility, rather than implement the draft decision.</p> <p>If, contrary to our preference, IPART does adopt its draft decision on price flexibility, we note that there are differences between the Draft Report and Determination around the definition of a large non-residential customer. The Draft Determination requires agreement between Sydney Water and the non-residential <i>property</i>, whereas the Draft Report discusses agreement with the non-residential <i>customer</i>. This is inconsistent.</p>	<p>For discussion with IPART. In the event that IPART does adopt draft decision 1 we would be pleased to assist IPART with this definition.</p>
14. Alphabetical order of definitions Schedule 9	<p>Issue with alphabetical order of definitions</p>	<p>Check order of definitions of Metered Property and Meter Reading Period.</p>
15. Rouse Hill Stormwater catchment area Schedule 9	<p>The definition of the Rouse Hill Stormwater Catchment Area in the Draft Determination excludes properties in the Kellyville Village Area.</p> <p>Sydney Water would be happy to work with IPART to clarify who should be included in the catchment area, to ensure that those who receive a stormwater service from Sydney Water are charged an appropriate fee for that service.</p>	<p>If IPART accepts Sydney Water's position that those who receive a stormwater service pay an appropriate fee for that service, the definition of the Rouse Hill Stormwater Catchment Area will need to be amended.</p> <p>If needed, Sydney Water is able to provide IPART with an amended map of the stormwater catchment area to be included in Appendix A.</p>

Issue	Comment	Proposed amendment (if applicable)
16. Wholesale water supply and sewerage services Schedule 9	Sydney Water supports the exclusion of wholesale water supply and sewerage services from the Draft Determination. However, we have some concerns that the definitions may not cover all circumstances that IPART intends to exclude.	Due to the technical nature of the drafting, we would be pleased to assist IPART with this definition.

Draft report

Issue	Comment	Proposed amendment (if applicable)
1. Typographical error in draft decision	There is a typographical error in draft decision 29 (pages 25 and 161 of the Draft Report), which refers to the Rouse Hill Area map, rather than the <i>Stormwater Catchment Area</i> map.	We proposed the following amendments to the decision: Include the Rouse Hill Stormwater Catchment Area map in the 2016 Determination.
2. Forecast residential customer numbers over the 2016 determination period Table 7.4 of the Draft Report	We do not believe that Table 7.4 (page 115-116 of the Draft Report) reflects that unmetered water and wastewater customer numbers do not relate solely to residential customers, but includes unmetered non-residential customers.	We suggest the following amendments: 1. For unmetered water: include a note that this is the total combined number of residential and non-residential properties, which are charged in accordance with Table 2. 2. For unmetered wastewater: include a note that this represents the number of unmetered non-residential properties. Non-residential and residential unmetered properties are charged in accordance with clause 3 of Schedule 2.
3. Price levels – service charges	We believe that the commentary in the Draft Report on page 135 regarding the introduction of a residential wastewater usage discharge factor contains some errors. IPART states that it is applying a discharge factor to residential dwellings to ensure consistency in the treatment of residential and non-residential customers, where the latter have a discharge factor applied to their wastewater service charges (<i>where their connections are greater than 20mm</i>). This is not correct as all non-residential customers	We suggest the following amendments: 1. To paragraph 1 on page 135: This ensures consistency in the treatment of residential and non-residential customers, where the latter have a discharge factor applied to their wastewater service charges (where their connections are greater than 20mm). 2. Remove footnote 301 on page 135.

have a discharge factor applied to their wastewater service charge, regardless of the size of their meter.

The Draft Report is inconsistent with both the existing and the Draft Determinations under which a non-residential customer pays the residential wastewater service charge as a minimum charge. Under the Draft Determination a non-residential customer with a 20mm meter will face the *higher* of either the 20mm equivalent charge multiplied by their own discharge factor or the residential service charge with a 75 per cent discharge factor.

Also we consider that it is inaccurate that the rebasing will reduce the sewerage service charge for non-residential customers with a 20mm meter.

4. Remote read meter

We note on page 153 of the Draft Report that the name of the remote read meter fee is slightly different between the report and the Draft Determination. Our preference is for the report to be amended to reflect the wording in the Draft Determination.

We propose the following amendment:

Remote ~~read~~ meter ~~read~~ fee

5. Inaccessible meter fee

We accept the conditions IPART has incorporated in the description of the inaccessible meter fee charge in the Draft Determination.

We note on page 154 of the Draft Report that the name of the fee is slightly different to the wording in the Draft Determination. Our preference is for the report to be amended to reflect the wording in the Draft Determination.

We propose the following amendment:

Inaccessible meter ~~read~~ fee

6. Late Payment fee

As discussed in Section 5.7.3, in general we support IPART's new conditions on the late payment fee. However,

We would request the following amendments:

	the current wording raises some technical and implementation difficulties.	<ol style="list-style-type: none"> 1. if the customer has been notified in advance of the late payment fee and the circumstances in which it may be levied, and 2. 7 business days after the due date.
7. Reference in the Draft Report to trunk drainage services in the Draft Report	<p>There is a reference in footnote 371 in the Draft Report (page 161) to Sydney Water managing flood-prone land owned by other parties in Rouse Hill. We note that it was our intention in 2012 to do this.</p> <p>However, we currently have no ability to manage flood-prone land owned by other parties. In the absence of a physical stormwater asset, Sydney Water is wholly reliant on ownership or a specific interest in the land for such rights. Sydney Water now intends to only acquire the trunk drainage land containing physical assets, and where physical works are required in order to stabilise the land (ie along some sections of the Strangers Creek, Elizabeth Macarthur Creek and Second Ponds Creek corridors).</p> <p>We have been unable to negotiate with the Department of Planning and Environment the necessary arrangements (implemented through land use zoning and controls) to enable Sydney Water to enter onto and maintain other land for trunk drainage purposes.</p>	We suggest that the footnote be removed as it is not correct.
8. Typographical error in Draft Report	There is a typographical error in the final paragraph on page 79 of the Draft Report.	<p>We propose the following amendment to the wording:</p> <p>As such, it has recommended reducing expenditure on the program to \$10 million, and rephrasing rephrasing the expenditure with less expenditure in the first two years and more in the last two years of the 2016 determination period.</p>

Appendix B Modelling issues

Notional / Target Revenue Requirement

Findings / Issues - IPART's pricing models	Comments	Impacts
1. Stormwater capex - actuals		
In 2015-16, \$12.9m was added to civil assets in the main pricing model, with a note stating - "Effect of updating Rouse Hill project".	Issue (1) - Suspect there is a double count of \$12.9m RH capex. Rouse Hill stormwater capex (ie land and civil works) is normally dealt with separately from the "main CAPEX", and its costs recovery is through RHLand Charge and/or allows partially through including in the wastewater CAPEX. The adjustment of \$26m (see Item 3) below, would have accounted for the proportionate land and civil capex determined by IPART (in its draft decision) as the amount allowed for pass-through to wastewater CAPEX. Suggest the adjustment of \$12.9m made by IPART re stormwater capex should be taken out.	IPART's adjustment in the pricing model increases the opening RAB by \$12.9m, thus favours SWC.
	Issue (2) - Adjustment for any RH's capex, should not be included as part of main stormwater capex; instead adjustment (if any) should be made in relation to wastewater capex.	

Findings / Issues - IPART's pricing models	Comments	Impacts
2. Corporate capex - prudence adjustment		
'The \$24.8m prudence was deducted from 2017-18 as negative capex in electronic assets. However, no adjustment to the overall capex total was made to reflect this adjustment; as mechanical assets is a balancing item in the model, the corporate mechanical assets was incorrectly increased by \$24.8m	From purely modelling mechanics perspective, this is equivalent to no adjustment for prudence reduction. Note that in Sydney Water's response to the IPART's draft decision, Sydney Water will be challenging the rationale for the prudence reduction.	This is equivalent to no \$24.8m of prudence reduction, thus favours SWC.
3. Wastewater capex - Rouse Hill capex adjustments		
A total of \$26m (\$13m was added to civil opening RAB and another \$13m added to non-depreciating opening RAB of 2016-17) for adjustment of Rouse Hill stormwater capital expenditures.	This is based on the assumption that the RH land charge will recover 50% of Sydney Water's efficient capital costs in RH over 2012-13 to 2025-26, with the remaining 50% (ie \$26m) to be recovered through the wastewater RAB.	
However, IPART has accepted SWC actual/forecast capex in SIR. The numbers in SIR (re wastewater capex) has included Rouse Hill stormwater civil works.	In Sydney Water's 2016 pricing proposal & the related AIR/SIR submissions, it was assumed in SIR that costs related to RH civil works is part of the wastewater capex. Analysis of RH capex costs into various components (ie land and civil) was included in SIR. Note that in Sydney Water's response to the IPART's draft decision, Sydney Water will be challenging	Rouse Hill stormwater civil works capital expenditure could be double counted, thus favours SWC.

Findings / Issues - IPART's pricing models	Comments	Impacts
	IPART's draft 50%:50% recovery allocation decision through RHLC: wastewater RAB.	

4. Stormwater capex - Atkins Cardno review

There is an over deduction of about \$9.1m from stormwater capex, due to the inclusion of capex relating to Rouse Hill. For price modelling, IPART's adjustment of AC's recommendation for a reduction in stormwater cost was made to SWC's SIR data. The SIR data for stormwater would not have included any land capex relating to RH (see Item 1 above). However, the AC adjustments for a reduction in stormwater costs include the re-profiling of Rouse Hill stormwater capital expenditure (especially land) costs.	The AC's recommended capex reduction that was deducted from stormwater SIR capex, was overstated by \$9.1m. The recommended reduction includes the re-profiling land costs relating to RH, which would have been separately dealt with/modelled through a separate RH cost recovery mechanism (see Item 3 above).	Stormwater capex cost is over deducted, thus has an adverse impact on SWC
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5. Tax depreciation - forecast

IPART accepted SWC forecast of tax depreciation in SIR. This tax depreciation forecast was based on the forecast capex in our 2016 pricing proposal. However, the capex has been adjusted since (eg the \$420m reduction in 4 years due to AC review), and the correspondingly forecast tax depreciation should also need to be adjusted/amended	Due to relatively high proposed capex cut (eg from AC's review) and the subsequent update of the 2014-15 capital expenditure post the provision of the initial tax depreciation forecast, the forecast tax depreciation (now under the accelerated method) will be reduced substantially, estimated to be on average \$37.6m less pa over the 2016-17 to 2019/20 period. See attached sheet for further information. This latest tax depreciation	Lower tax depreciation will result in higher tax allowance, hence higher revenue requirement. The current modelling assumption of no adjustment to tax depreciation (despite a substantial reduction in actual and forecast CAPEX) has an adverse impact on SWC.
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Findings / Issues - IPART's pricing models	Comments	Impacts
accordingly (ie lower with lower forecast capex) to reflect or match the changes.	based on the appropriate parameters will need to be reflected in the updated price modelling.	

6. Finance Lease (RAB value) - discounting of payment stream

Sydney Water discounts the stream of lease payments to the end of the financial year vs IPART discounts the payment stream to the beginning of the year.	Since the WFAs' (water filtration agreements) lease payments are made monthly, and BMT's (Blue Mountain Tunnel) quarterly, it may be appropriate to use the mid-year discounting for these finance lease payment streams, to establish a RAB that will be incorporated in the 2016-17's RAB (separate Finance Lease RAB) and be indexed up accordingly to the \$2016-17 when the RAB is rolled over subsequently.	The current IPART's treatment has adverse impact on SWC. With the adjustment to mid-year discounting, we estimated that the total finance lease RAB value would increase by about \$28m.
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Pricing

Findings / Issues - IPART's pricing models	Comments	Impacts
7. Dual Occupancy		
Due to IPART's decision on dual occupancy, 4085 properties were adjusted (added back to "Flat"). The number was calculated as (13616×0.3) , where 13616 was SWC's proposal.	Not sure where "0.3" was from. The number of 4085 is a little bit different from latest SWC's data, which is 4235. But the impact should be very minor.	Minor, Sydney Water will accept IPART's estimate.
8. Joint Service		
Due to IPART's decision on joint services, 544 properties were adjusted and deducted from 20mm non-residential common/multi meter count.	As SWC proposed the 544 properties to be charged with both water & wastewater base charge, it was included in residential, not in non-residential meter counts. So it should be deducted from residential dwelling counts. For water, 20mm non-residential is the same charge as residential, no impact on pricing. For wastewater, non-residential has no direct link to residential, the adjustment creates difference.	The property adjustment originally made by Sydney Water should be reversed from residential dwelling count, not in the adjusted 20mm non-residential. Otherwise, it will create inconsistencies in the property or meter count numbers. However, from revenue perspective, we expect no impact in water revenue, but some minor difference in wastewater revenue due to different charges applied (based on applicable DFs).
9. Non-residential wastewater charge - deemed sewerage usage charge		
Based on Schedule 2, clause 4, the deemed sewerage usage charge (DU) should be applied to property (not to meter). However, IPART forecast the deemed sewerage usage revenue by using total meter counts.	The deemed sewerage usage revenue is over estimated, therefore lower sewer service charge. This difference amount to a \$1.3m revenue variance to Sydney Water. See attached list for our calculation and the	Revenue based incorrectly on higher meter count number will artificially inflate the deemed sewerage revenue. This will result in an adverse revenue impact of about \$1.3m pa to Sydney Water.

Findings / Issues - IPART's pricing models	Comments	Impacts
	applicable number of properties to be used. Note that IPART would not be able to obtain these appropriate figures from the AIR information.	
10. Rouse Hill Land Charge (RHLC) - start date for revised charges		
The draft determination (page 161) and the RH model points to the recovery of RH costs, where RHLC at \$432.89 (in real terms) is to apply to new properties that connect (or have connected) to Sydney Water's system between 1 July 2012 and 30 June 2026.	Unsure if the draft decision in the draft determination is for this higher charge of \$432.89 to apply from 1 July 2016, or retrospectively to apply from 1 July 2012?? Note that in Sydney Water's response to the IPART's draft decision, Sydney Water will be challenging IPART's draft 50%:50% recovery allocation decision through RHLC: wastewater RAB.	Chargeable RHLC will vary, depending on the intention of the draft decision; RHLC will go up if the applicable start date for the revised RHLC determined to be 1 July 2016 instead of 1 July 2012. Retrospective charging will create issues.

Appendix C Detailed comments on the Frontier Company Method and Sydney Water's Indicative TFP performance

This appendix outlines our specific concerns with the Atkins-Cardno's use of the Frontier Company Method to recommended reductions for operating and capital expenditure and Sydney Water's indicative Total Factor Productivity (TFP) estimates which contradict Atkins-Cardno's frontier benchmarking results.

Our key concerns are the apparent arbitrariness of both the quanta of the adjustments derived from the Frontier Company Method and how adjustments are applied. Quanta are derived from the frontier company methodology discussed in section 6.2 of Atkins-Cardno's Final Draft Report, which we believe to be based on inappropriate and incorrect benchmarking leading to an inappropriate quanta of reductions which are applied. On the latter issue of how adjustments are applied, particularly for capital expenditure, there is in our view a potential for double counting across catch-up efficiencies and program specific adjustments (detail of which have been discussed in the main body of the report this appendix compliments).

Benchmarking of Sydney Water against other firms

In Section 6.2, specifically Figures 6.4, 6.5 and 6.6, of the Final Draft Report, Atkins-Cardno compares Sydney Water's expenditure against other water utilities in Australia, the UK and Europe to "*show its position in relation to best performing companies*"⁷⁴. The specific comparisons include:

- comparisons of unit operating costs per property and per unit volume across Australian water utilities
- comparison of total expenditure (totex) per property and per unit volume with the 2014 Determinations for water companies in England and Wales
- using European Benchmarking analysis

Atkins-Cardno concludes that "*a gap remains between Sydney Water and many of the well-performing E&W companies*"⁷⁵. We note that Atkins-Cardno's finding implicitly relies on the assumption that it can robustly estimate the degree to which a business' cost forecasts are inefficient by (1) simplistically comparing that business' costs with those of other businesses, and (2) in making this comparison, not control for observable differences between those firms.

As the Productivity Commission⁷⁶ has noted the costs of providing water are influenced by various factors, all of which are constantly interacting at the same time and across time. Such as, but not limited to:

- **Geography and topography** — influences transportation costs. Pumping water longer distances, or up hills, will increase costs.
- **Degree of treatment** — treatment to a higher standard is more expensive.

⁷⁴ Atkins-Cardno, *Sydney Water Corporation – Expenditure Review, Final*, 21 December 2015, p61.

⁷⁵ Atkins-Cardno, *Sydney Water Corporation – Expenditure Review, Final*, 21 December 2015, p64.

⁷⁶ Productivity Commission (2011), *Australia's Urban Water Sector*, Inquiry Report, No. 55, Volume 1, p16.

- **Households served and growth of connections** — a higher number of connections and a rapid growth rate of connections experienced by a firm, generally higher will be immediate costs.
- **Nature of primary sources** — affects the costs of extracting water.
- **Health and environmental requirements** — the more stringent the requirements generally the higher are treatment costs.
- **Asset life cycles** — newer assets tend to be cheaper to maintain and run than older assets.

Costs are also influenced by factors such as:

- **Density of connections** — arising from different land use patterns, the greater the density generally the lower the cost per connection / household.
- **Water risk (weather patterns) and/or scarcity spending requirements** — weather conditions vary greatly between jurisdictions, as a consequence so to do policies and acceptable risks around water security. This means that at least short-term costs may vary greatly between water firms.
- **Local market conditions** — the market power of local suppliers of say labour or other inputs can greatly influence the input costs to firms.
- **Regulatory environment and model** — regulatory frameworks apply different regulatory approach's to determining efficient costs, and/or provide different incentives such as quality.
- **Industry structure** — while Australian water businesses are involved in the same production process, they face potentially very different splits between operating and capital expenditure due to industry structure.

Reflecting on these differences, a common concern with comparative efficiency analysis is that there are many factors outside of a utility's control that impact on the quanta of costs or differences in the quality of services delivered. Where these factors can be identified and measured across the sample of businesses used in the benchmarking then they can be allowed for in analyses. Accounting for all possible influences is, however, impractical, let alone allowing for all of the differences simultaneously between benchmarked firms by making use of non-stochastic techniques. The implication of which is that the benchmarking technique assumed by Atkins-Cardno:

- does not control for most, if any of the important variables, and/or
- controls for variables only one at a time, and not detecting significant dynamics a firm experiences.

To our knowledge only a regression based benchmarking technique can simultaneously consider all of the above mentioned factors. The direct implication is that Atkins-Cardno's benchmarking clearly fails to satisfy any of these basic needs for an appropriate benchmarking analysis, hence conclusions draw regarding Sydney Water's performance are erroneous.

Further, we note that a regression based methodology requires a lot of input data. Chatfield shows that the number of explanatory variables should be no more than one quarter of the number of observations in the benchmark sample⁷⁷. So, if Atkins-Cardno wished to use only the six

⁷⁷ Chatfield, C. (1988), *Problem solving: a statistician's guide*, Chapman and Hall, London.

explanatory variables the Productivity Commission has listed as being applicable to a benchmarking model, then a sample of at least 24 companies or countries is required to give an unbiased estimate of the appropriate frontier company. Clearly this has not been the case. Atkins-Cardno have sought to only employ at most three explanatory variables in their simple approach.

Further, making use of international water companies for benchmarking analyses has been criticised by the Australia Competition Tribunal (ACT) in its recent merits review of the Australian Energy Regulator's (AER) 2015 revenue determinations relating to Ausgrid, Endeavour Energy, Essential Energy, ActewAGL and Jemena Gas Networks.

The AER has been directed to remake its operating expenditure forecasts based on econometric international benchmarking techniques for network service providers (NSP's) by making use of a wider range of modelling and economic benchmarking techniques, in particular focusing on expanding the comparison to a greater number of Australian rather than international firm benchmarks. This situation is paralleled in Atkins-Cardno's application to Sydney Water, where Atkins-Cardno relies, in our view, purely on outdated international (UK & Wales) benchmarking figures. Although IPART and Atkins-Cardno are not legally required to have regard to the ACT decision, the decision is in our view directly relevant in terms of a practical 'best practice' precedent and high-lighting further the large deficiencies in the current benchmarking relied on by Atkins-Cardno in forecasting Sydney Water's proposed operating expenditure.

We believe that the decision now adds weight to Sydney Water's operating expenditure forecasts, and casts even greater doubt as to the applicability of the quanta used by Atkins-Cardno in making efficiency adjustments to Sydney Water's operating expenditure forecasts.

Below the specific issues regarding Atkins-Cardno's justification for efficiency quantum via benchmarking are addressed.

Comparison of operating expenditure: Australia

In terms of Atkins-Cardno's comparison of operating expenditure across Australian businesses, it does not take account of the different industry structures existing in the different jurisdictions. While Australian water businesses are involved in the same production process, they face potentially very different splits between operating and capital expenditure due to industry structure. For example, there is complete vertical integration for Hunter Water and SA Water but disaggregation in Melbourne between Melbourne Water (bulk supply) and the Melbourne retailers. Any implied efficiency impact from the different splits between operating and capital expenditure may not be reflective of actual efficiency.

The impact of recent investments in water security also does not seem to have been taken into consideration. This has had the effect of increasing costs for most businesses (and to varying degrees) without necessarily increasing outputs. Finally, we question the relevance of plotting costs per property against costs per unit of volume as this appears to show a comparison of volume per property, which is not within Sydney Water's control.

Comparison of totex: England and Wales

While we acknowledge that totex may provide a more comprehensive measure of expenditure, we consider there are still issues with using this measure for benchmarking purposes. In England and Wales, issues raised with a totex approach include whether there is still unobserved heterogeneity, and if yes would the effects be random? In addition, different businesses will be at different places

in their asset condition and investment cycles, which is likely to have a significant impact on any comparisons.

Atkins-Cardno also compares its findings with the UK Competition and Markets Authority (CMA) review of the Bristol Water price determination. The CMA found that Bristol Water could achieve efficiencies of 1% per year, compared to the business' proposal of 0.5% per year. Atkins-Cardno appears to be arguing that the combined impact of its recommended continuing and catch-up operating expenditure efficiencies is valid, simply because it is less than the CMA finding for Bristol Water (ie 0.75% per year cumulative, but weighted towards the end of the regulatory period, compared to 1% per year). It is not clear why either this comparison or this conclusion is appropriate.

European benchmarking analysis

Atkins-Cardno found that the European benchmarking data in the public domain is limited and inconclusive, but considers that *"there may be merit in Sydney Water taking part in this benchmarking analysis as this would provide greater access to the data and enable a wider range of comparisons to be made"*⁷⁸. In our view a more relevant comparison would be benchmarking against other Australian businesses, particularly when applying such a simple benchmarking analysis. This is because when comparing each factor one at a time, the greater the similarity of the comparators the more likely all other factors are implicitly being held constant, allowing for an improved ceteris paribus analysis.

Adjustments to forecast capital expenditure

As discussed above for operating expenditure, we further do not understand how the catch-up efficiencies applied by Atkins-Cardno have been derived. We consider that the recommended reductions are subjective judgments that are not supported by any quantitative analysis, let alone a robust or applicable benchmarking analysis. We can only conclude there is no evidence to support the view that these adjustments reflect Sydney Water's position relative to any justifiable frontier company.

Atkins-Cardno has also applied a continuing efficiency adjustment of 0.25% a year. The rationale given for this adjustment is that it is the factor applied by Ofwat in its 2009 review of prices for water and wastewater businesses in England and Wales. As discussed above no evidence is provided to demonstrate why this makes it an appropriate adjustment for an urban water business in Australia in 2015. That is, Atkins-Cardno does not show that this is a reasonable expectation of improvement in a frontier company in the urban water sector in Australia over the period 2016–20.

However, our major concern is over Atkins-Cardno's recommendations for a number of significant reductions in particular program expenditures. These recommendations are not based on quantitative analysis and evidence and appear very subjective.

Our view is, as outlined in the section 1.3, that large recommended capital expenditure reductions are supported by weak evidence and/or the underlying reasoning for the adjustment has not been articulated. The recommended reduction to wastewater treatment plant renewals is addressed in only three paragraphs in the report – none of which actually explain the reasoning behind the

⁷⁸ Atkins-Cardno, *Sydney Water Corporation – Expenditure Review, Final*, 21 December 2015, p64.

recommended expenditure reduction. We do not consider that an appropriate level of analysis has been presented for such a substantial expenditure reduction.

A number of the recommended expenditure reductions appear to have been calculated arbitrarily. This includes reductions of expenditure to half of the proposed increase, and those where the reduced expenditure has been set to align with the average annual levels in the current period. (The latter appears to be the justification for the proposed wastewater treatment plant expenditure for 2016–20.) No evidence has been provided to explain why these revised expenditure levels are appropriate or how they lead to a more efficient outcome over time.

In our view a conceptual framework of program-specific adjustments obviates the need for the application of catch-up and continuing efficiencies. We note that this is consistent with the approach taken by Jacobs, who undertook the expenditure review for Hunter Water. Jacobs applied program-specific adjustments and continuing efficiencies to Hunter Water's proposed expenditure only. Jacobs' approach highlights the arbitrariness of Atkins-Cardno's proposed catch up efficiencies and we are concerned that double or even triple-counting of potential efficiencies may have occurred.

Sense check of the frontier framework

Atkins-Cardno's proposed cuts infer an implausible Sydney Water TFP

As discussed in Appendix 3 of our confidential submission to IPART in response to Atkins-Cardno's final report⁷⁹ we outlined the frontier methodology and its economic theory.

In summary it was shown that the underlying economics of the frontier firm framework can be defined in a standard two dimensional isocost diagram (assuming constant returns to scale for simplicity).

Table 10-1 is a replication of our diagram (Figure A10.3) summarising the frontier method in Appendix 3. Table 10-2 is an updated version of Table 10-1 making use of the operating expenditure allowance for Sydney Water reported by IPART in its Draft Determination (approximately \$2,999 million).

⁷⁹ Atkins-Cardno, *Sydney Water Corporation – Expenditure Review, Final Report* 21 December 2015.

Table 10-1 Sydney Water cost efficiency measures and implied frontier acceleration (replication of A10.3)

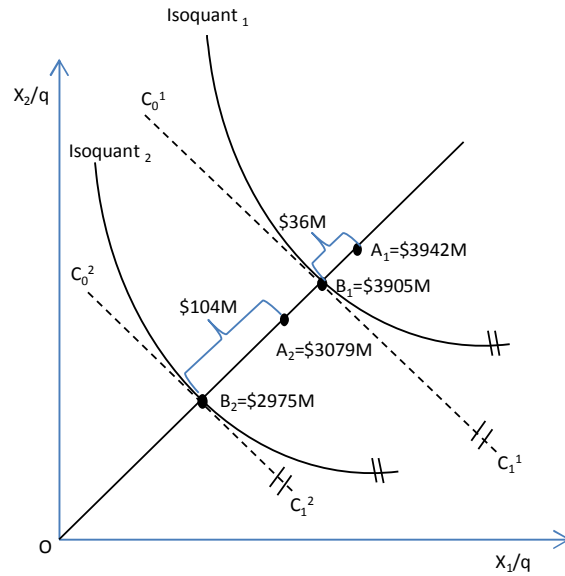
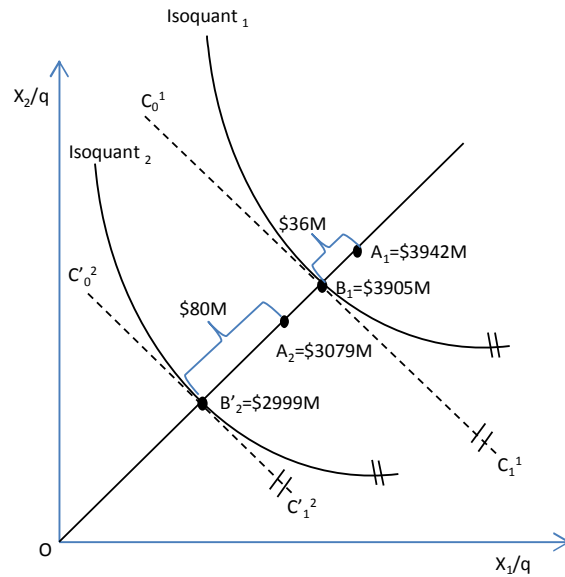


Table 10-2 Sydney Water cost efficiency measures and implied frontier acceleration (Draft Determination operating expenditure allowance)



Isoquant₁, isocost ($C_0^1 C_1^1$) and points A_1 and B_1 from Table 10-1 represent the operating expenditure costs for the 2012–16 regulatory period for Sydney Water represented in 2015–16 dollars as presented by Atkins-Cardno in its final report. Specifically, $A_1 = \$3942$ million⁸⁰ is the proposed total operating expenditure Sydney Water submitted. $B_1 = \$3905$ ⁸¹ is the efficient and prudent expenditure recommended to IPART by Atkins-Cardno following their review, and taking into account catch-up and continuing (or frontier) efficiencies of 2% (approximately) and 0.25% per annum respectively.

The same can be said regarding Table 10-2 however making use of the operating expenditure allowance as determined by IPART in its Draft Determination.

The important features of the Table 10-1 and Table 10-2 are that assuming constant returns to scale and full allocative efficiency as outlined in in Appendix 3 of our confidential submission to IPART in response to Atkins-Cardno's final report, then the costs represented by A_1 in each diagram and B_1 and B'_1 respectively in a two-dimensional space are a reasonable approximation of the distance from the origin then it is possible to approximate the level of cost (in)efficiency for Sydney Water in each scenario as the ratio of the distances OB_1/OA_1 , then the suggested efficient and prudent expenditure level to reach the frontier over the 2012–16 regulatory period. Notably in the 2012 determination period in both Table 10-1 and Table 10-2 this cost efficiency was $99.08\% = (\$3538 \text{ million} / \$3942 \text{ million} \times 100)$ efficient relative to the Frontier Firm. Put another way Sydney Water was 0.92% ($1 - 99.08\%$) away from the frontier set by the Frontier Firm and as determined by the efficiency review for that regulatory cycle.

Repeating, the analysis for the proposed 2016 regulatory period for Table 10-1 and Table 10-2 respectively, it can be seen that the frontier (for operating expenditure) has been determined to be moving away from Sydney Water as a firm in both Table 10-1 and Table 10-2 inclusively. Atkins-Cardno in its final report has determined that Sydney Water has been judged to be 96.62% ($\$2975 \text{ million} / \$3079 \text{ million} \times 100$) efficient relative to the Frontier Firm, or 3.38% ($1 - 96.62\%$) from the frontier. IPART's Draft Determination operating expenditure allowance assumes that Sydney Water is 2.60% ($1 - \$2999 \text{ million} / \3079 million) from the frontier. In another context, IPART, via its Draft Determination, position has implied that the frontier has now, in aggregate, accelerated away from Sydney Water to be approximately $1.7(3.38\% - 0.92\%)$ percentage points further away from Sydney Water relative to the 2012 regulatory period and the Frontier Firm is expected to experience a productivity improvement across the relevant determination periods of approximately $23\% = [1 - (\$2,999 \text{ million} / \$3,905 \text{ million})]$ — result which all appear to be implausible.

To why these numbers are implausible consider reconsider the Frontier Shift equation presented by Sydney Water in Appendix 3 of our confidential submission to IPART in response to Atkins-Cardno's final report:

$$\text{Frontier Shift}_t = \text{PPI}_t - \Delta \text{MFP}_t - \text{CPI}_{t+1}.$$

⁸⁰ $A_1 = \$3571$ in 2012 dollars with an assumed inflation rate of 2.5% per annum.

⁸¹ $B_1 = \$3538$ in 2012 dollars with an assumed inflation rate of 2.5% per annum.

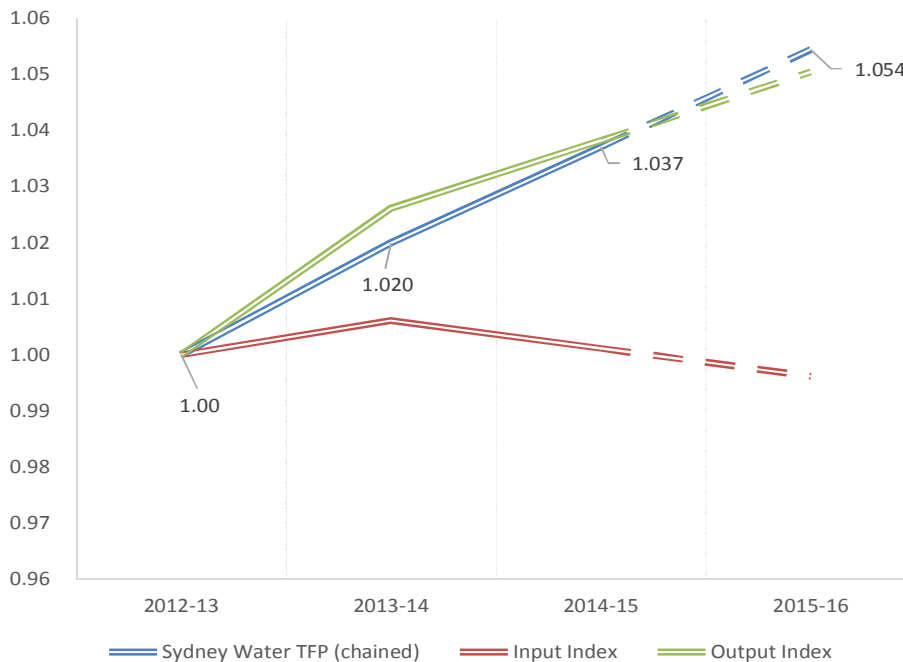
Table 10-1 and Table 10-2 imply that the frontier has shifted away from Sydney Water. In particular Table 10-2 suggests a 2.60% shift away (Frontier Shift_t) relative to the 2012 determination. Using the frontier shift equation and known estimations of parameters by the ABS for input cost inflation (PPI_t)⁸² approximately 1.30% per annum, we can estimate what that the implied productivity change (Multi-Factor Productivity) for Sydney Water has been in the 2012 regulatory period for Atkins-Cardno's implied frontier shift to be true. Solving for ΔMFP_t we have:

$$2.60\% = 5.30\% - \Delta MFP_t - 10.38\%$$

$$\Delta MFP_t = 5.30\% - 10.38\% - 3.38\% = -7.68\%$$

The above result suggest that if the implied 2.60% acceleration away from Sydney Water by frontier, driven by the Frontier Firm's 23% improvement in productivity, was sensible then the economy and Sydney Water would, all else equal, need to experience an aggregate productivity slowdown of -7.60% since 2012. Such a large productivity slow-down is not plausible relative to widely known ABS figures, and especially relative to our own preliminary productivity estimates, which show Total Factor Productivity (TFP) between the years 2012 to 15 inclusive of approximately 3.7% cumulatively and a linearly projected TFP to be approximately 5.4% for the 2012 regulatory period. Table 10-3 below shows these high level results and the next section outlines the broad methodology underpinning these results.

Table 10-3 Preliminary Sydney Water TFP 2012-2016



⁸² Estimated by ABS Cat. No. 6427.0 Producer Price Indexes, Australia, Table 13. Input to the Manufacturing industries, division and selected industries, index numbers and percentage changes. Series ID A231379OF Domestic Materials, Percentage change from corresponding quarter of previous year.

Sydney Water's Preliminary TFP Analysis

Total Factor Productivity (TFP), which is another name for Multi-Factor Productivity (MFP) as defined in the Frontier Function equation above, can be defined simply as some measure of output(s) of a firm relative to its input(s).

Often outputs and inputs are defined via an implicit or explicit index form. Mathematically this can be described as:

$$TFP = \frac{\text{Growth in Output}}{\text{Growth in Inputs}} = \frac{\text{Output quantity Index}}{\text{Input quantity Index}}.$$

For simplicity and to reduce the data requirement for a preliminary TFP analysis, we have followed Lawrence, Diewert and Fox⁸³ in defining outputs via an implicit output index. More specifically Lawrence et al (2006) show that the growth in profit of a firm between period t and t-1 can be defined as:

$$G^t \equiv \Pi^t / \Pi^{t-1} \quad (1)$$

which is one plus the growth rate of profits, where Π is profits in each of periods t and t-1.

From this an index of productivity growth between period t-1 and t can be constructed (residually) as an output index divided by an input index as follow:

$$TFP \equiv [G^t/P^t]/I^t, \quad (2)$$

Where P_t is an output price index, G/P_t is an implicit output index and I^t is an input quantity index. More specifically:

- G^t is defined as Sydney Water's aggregate revenue growth for regulated services between 2012 to 2015 as report in Sydney Water's Annual Information Return (AIR);
- P^t is defined as the output price growth of Sydney Water's regulated service for water, wastewater and stormwater as measured by the Australian Bureau of Statistics (ABS) via the CPI subcategory – "Price growth (Index Numbers; Water and sewerage; Sydney)."
- I^t is a Tornqvist input index for Sydney Water's regulated services as reported in Sydney Water's Annual Information Return (AIR).

From the above three indices needed to construct a preliminary TFP, the input index I^t requires the greatest elaboration. Specifically, inputs are defined as capital, labour and other. Table 10-4 defines the inputs.

⁸³ Lawrence, D., W.E. Diewert and K.J. Fox (2006), *The Contribution of Productivity, Price Changes and Firm Size to Profitability*, Journal of Productivity Analysis 26, p1–13.

Table 10-4 Preliminary TFP Inputs

Inputs	Measure Used	Source
Capital quantity	Derived by deflating nominal value of capital by the implicit price deflator	Sydney Water AIR ABS Cat. No. 5206005 Public corporations - State and local
Labour quantity	Full time equivalent employees	Sydney Water AIR
Other quantity	Operation & maintenance (O&M) quantities derived from deflating O&M costs (excluding labour costs) by the implicit price deflator	Sydney Water AIR ABS Cat. No. 63020014a Average Weekly Ordinary Earnings - Full Time; Adult; Ordinary time earnings ; New South Wales ; Public sector ;
Capital Cost	Value of User Cost of Capital for regulated services	Estimated from inputs taken from Sydney Water AIR
Labour Cost	Full time equivalent wage bill for regulated services	Sydney Water AIR
Other Cost	Calculated as total O&M less labour and depreciation for regulated services	Sydney Water AIR

The user cost of capital approach applied to define the cost of capital for Sydney Water is defined as:

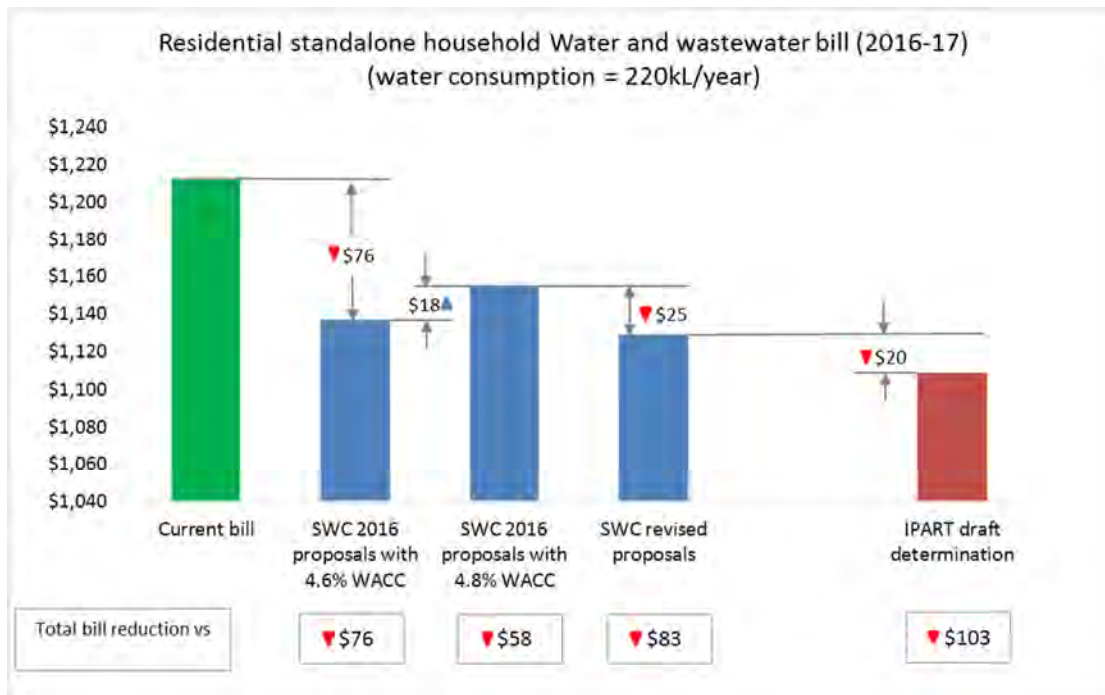
$$VUCC_t = (r_t + d - \Delta P_t / \Delta P_{t-1}) \cdot P_t \cdot K_t,$$

where:

- r is the opportunity cost of holding capital in time t ;
- d is the depreciation rate in time t ;
- P_t is the price of capital;
- $\Delta P_t / \Delta P_{t-1}$ is the rate of change in the price of capital between t and $t-1$; and,
- K_t is the physical quantity of capital in time t .

Combining these inputs using cost shares derived from Sydney Water's AIR and the implicit output index gives Sydney Water's preliminary TFP measure over the regulatory period from 2012 to 2015 as presented in Table 10-3. The year 2016 having only a partial year of information was forecast by applying the average TFP growth rate experienced in each subsequent year.

Appendix D Nominal bill impact



Appendix E Regulatory treatment of finance lease

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