Sydney WATER

Sydney Water's response to IPART's Issues Paper

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

October 2015

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Executive summary

Sydney Water welcomes the opportunity to respond to the IPART's Review of prices for Sydney Water Corporation from 1 July 2016 Water – Issues Paper (the Issues Paper). We believe 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. We appreciate the extensive work and detailed response IPART has provided in its preliminary views on issues. This has enabled us to understand IPART's concerns and to provide an informed and targeted response.

In our response we have addressed the 63 questions posed, although we recognise those relating to opex and capex will be dealt with in more detail during the efficiency review process. We have also sought to provide significant detail on IPART's preliminary views that are of particular concern or interest to Sydney Water, or where we believe additional information is required.

We acknowledge that IPART has been willing in recent years to change its positions when presented with analysis based on sound economic principles and additional information.

Sydney Water's approach to the Pricing Review

Sydney Water considers that this review provides an opportunity to demonstrate that with goodwill from all stakeholders we can 'do regulation' better. The regulatory model that has developed in Australia has often been characterised by a high degree of combativeness, consultants and frequent resort to appeals, where available, and a focus on short-term wins.

Sydney Water recognises that IPART has been seeking to change this through its efforts to establish more open processes and provide greater certainty and consistency in its decisions and we wish to support this.

We consider that there is considerable commonality of objectives between regulators, utilities and stakeholders. Our submission has been prepared with the objective of achieving efficient provision and use of water, wastewater and stormwater services that ensures the commercially sustainable provision of services of the quality that customers expect and are willing to pay for. Put simply, the goal is efficient service provision and pricing in the long-term interests of our customers. This is a long-term objective and primary beneficiaries of this are the customers (and the economy more generally). To achieve this it is important that Sydney Water has strong incentives to improve efficiency and can expect to achieve a commercial profit if we perform well, and a higher profit if we achieve outstanding performance. Of course, if we do not perform well we should expect to make a smaller profit.

Our Pricing Proposal focused on this objective and the constructive long-term engagement with IPART and other stakeholders to this end. We have avoided a focus on short-term wins and instead focused on the long-term through strengthening incentives, increasing certainty and assigning risk better. Our forecasts for capex and opex are not ambit claims and include productivity improvements.

Sydney Water understands that IPART, like other regulators, will be concerned about opportunities for gaming or windfall gains. However we would ask that IPART consider this in the context of the balance of the overall proposal and the benefits of stronger incentives and reduced regulatory burdens for the long-term benefit of customers. Attempts to eliminate opportunities for gaming or windfall gains – especially where in practice this is unlikely – will dilute incentives and increase the complexity and cost of regulation, contrary to the long-term interest of customers.

Sydney Water's Pricing Proposal 30 June 2015

Our Pricing Proposal submitted on 30 June 2015 demonstrates our strong commitment to providing services at the quality levels desired by customers, cost effectively and at the right prices, while remaining financially sustainable. This was highlighted by:

- decreases in opex and capex during 2012–16 of over $450m, and a proposal to introduce regulations to strengthen our incentives for future cost reductions
- our passing on of reduced costs and efficiency gains to customers through lower bills, our engaging with customers on preferred tariff structures for water, our rebalancing of service charges between customer groups to more efficiently allocate network capacity costs, and our proposed weighted average price cap to ensure more cost-reflective prices in future
- improvements in already high levels of customer satisfaction over 2012–16, our highest ever ratings for corporate reputation and value for money, and our commitment to enhancing customer engagement in the future
- our first ever credit rating upgrade in 2015, and credit ratios forecast to remain at investment-grade levels over the longer term.

The proposal also outlined how we have improved as a business and are looking to continually improve through better management of our business and risks in light of current, new, emerging and future challenges.

IPART Issues Paper – Sydney Water's concerns

We consider our goals are strongly aligned with IPART's objectives and have demonstrated through our proposal an increased willingness to take on risk, for example in relation to growth and adverse weather conditions. Nevertheless, we are concerned the combined preliminary views in the Issues Paper across a range of matters, has increased the level of regulatory risk imposed. It has potentially tipped the balance of overall risks inappropriately towards Sydney Water.

We believe that, under IPART's approach, an efficient business may no longer reasonably expect to recover its long-term costs. A regulatory framework where a business is efficient, yet unsustainable, is not in the long-term interests of customers and drives outcomes inconsistent with an effectively competitive market. We have put proposed ways to resolve each of these matters.

Sydney Water's particular areas of interest in relation to IPART's preliminary views:

- **Our proposals to modernise regulation** – We believe the proposed approach for dealing with the efficiency benefit sharing scheme (EBSS), price flexibility through a weighted average price cap (WAPC) and cost recovery schemes, is asymmetric. We also consider the current demand volatility adjustment mechanism to be ineffective. These place risks for our financial sustainability. In considering regulatory principles, it is not a proportionate or a targeted approach to regulation. Although we support benchmarking, its introduction needs to be measured, and adjusted explicitly for numerous factors including changes in quality requirements over time.
- **The application of existing regulations** – For the regulatory treatment of finance leases, regulatory tax, the acquisition of additional land in Rouse Hill, asset write-offs, the Shoalhaven transfer and the weighted average cost of capital (WACC), we believe there is potentially the risk that an efficient business may not recover its long-term costs.
- **Tariff structures and cost allocation** – We are concerned the water, wastewater and stormwater charges and rules around cost allocation may not result in efficient usage and investment signals to customers or Sydney Water.
- **Wholesale access pricing** – We support introducing an access price, based on a retail-minus avoidable costs approach. Given that this is a new issue, we would like to ensure there is robust and transparent consultation with the right stakeholders over the coming months, before IPART issues our Draft Pricing Determination.

More detail on each of the above issues, along with our preferred approach is provided below.

From a process perspective we have also found the four week timeframe to provide a response to be a challenge. Given the concurrent reviews, we have not had the opportunity to consider and provide comment on the separate reviews for WaterNSW, DPI Water, and Hunter Water. We understand other bodies have faced similar challenges. A concern of focusing on our own determination processes is that we have had limited ability to participate in the review of other utilities, which may limit the effectiveness of these processes.

Modernising regulation

In proposing to IPART that it modernises its approach to regulation, Sydney Water 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. Our Pricing Proposal on 30 June 2015:

- explored the limitations of the existing regulatory framework
- assessed best practice approaches to regulation from other sectors and overseas
- was heavily based on incentives tried, tested and fine-tuned in other sectors in Australia and in the UK since the early 2000s
- adopted a phased approach to introducing new regulation that could be strengthened in future periods

- looked to make appropriate modifications to address known concerns that would potentially undermine confidence with the schemes.

We appreciate IPART's commitment to consider our proposals. Sydney Water understands that IPART needs some assurance in introducing such schemes to ensure they are in the long-term interests of customers and do not create adverse impacts. Our view in relation to each scheme and our preferred position is outlined below.

EBSS

We share IPART's desire to ensure regulatory incentives cannot be manipulated by businesses to the detriment of customers. Some issues highlighted by IPART are legitimate and echo those we raised in assessing the EBSS. As a result in our Pricing Proposal we modified our design to address these concerns. For example, to alleviate the benefit from deferral under a capex EBSS, we based our proposal on a very limited class of assets that:

- amounted to around 9.5% of total capex for 2016–20
- has a recurrent expenditure profile like opex, which limits the ability to derive windfall gains from deferral
- has already had a large decrease in expenditure profile over 2012–16
- has a capex-opex trade-off, or requires a 'totex' approach to optimising expenditure, which ensures we only spend capex where it is the lowest cost to our customers.

As our interest was to ensure a robust long-lasting regulatory framework, we were disappointed IPART's assessment emphasised our theoretical ability to 'game' the proposed incentives for our own benefit. We believe IPART, should have placed greater weight on:

- outcomes under established EBSS schemes to better understand the risks of gaming in practice
- the protections against gaming we built into our proposals
- the efficiency gains already incorporated into the proposed capex program and the testing of these projections through the ex-ante efficiency review.

Further, in regard to the opex EBSS IPART has:

- misinterpreted our opex EBSS proposal, leading to an incorrect assessment that we might look to increase opex in the penultimate year of a determination to obtain a higher allowance in subsequent periods
- failed to appreciate manipulation for short-term gain does not align with Sydney Water's proposed phased approach to introducing incentive schemes. We have looked to limit the level of risks to customers in the first instance, and to ensure the workability of the schemes so that strengthened incentives can be explored in future period. Gaming, or perceptions of gaming in the short-term, even if inadvertent, would in our view risk IPART removing the regulations – as has been done by Australian Energy Regulator. This is not in our long-term interests or those of our customers.

IPART's proposed options are asymmetric in application and unlike our proposal, do not:

- appropriately target the incentives for cost efficiency over the period, as in one instance the holding period is shorter than the regulatory period
- represent a proportionate response to regulation, as it potentially recreates an efficiency review process by requiring an intrusive assessment of any opex reduction over a period to confirm it is a sustained decrease
- appreciate that our regulatory opex can legitimately increase because of changes in weather, or underlying market conditions, given that over 50% of core opex (excluding bulk water costs) is externally sourced through competitive procurement and tendering processes.

Sydney Water's position on EBSS

We believe our initial proposal for an opex and capex EBSS creates the right incentives for efficiency and represents a targeted and proportionate approach to regulation.

We commissioned an independent economic expert with considerable experience in design of these schemes to provide us with advice on the alternative model proposed by IPART. The independent expert is of the view that while some of IPART concerns raised are valid an amendment to Sydney Water's proposed opex EBSS and the inclusion of our proposed capex EBSS would be preferable to IPART's alternative model.

Accordingly, we have looked to clarify a minor technical issue with our original proposal about final year expenditure. To avoid any doubt, we have also restated that we do not believe that opex of the penultimate year should be rolled forward without scrutiny.

Given the technical nature of the EBSS, we encourage IPART to engage external experts to provide independent expertise, or peer review any proposed scheme design. IPART has taken this approach for the WACC, financeability testing, and the expenditure review process. We note other regulators have also engaged expert panels to seek advice when introducing new regulatory frameworks.

WAPC

Sydney Water supports a WAPC, as we believe it represents a more targeted and proportionate approach to regulation and reflects what customers want. The WAPC allows IPART to move away from having to set prices and levels for over 100 prices in each determination. As our Pricing Proposal established, a WAPC enables us to tailor tariffs to better meet the customer (i.e. the market's, not individual customers') needs, as a competitive provider would. This leads to allocatively efficient pricing and stronger incentives for end use efficiency.

Sydney Water believes IPART's proposal to apply a WAPC to non-residential customers in the first instance, is pragmatic. However, we are concerned with IPART's proposed approach where

IPART sets regulated prices for each service, which applies unless customers choose an optional price offered by Sydney Water.

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 the 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 wish 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.

Under our proposal, we believe an opt-in scheme is not needed because customers' interests will be protected by IPART's side constraints and the ongoing oversight.

Sydney Water's position on WAPC

We support a WAPC applying only to non-residential customers, in the first instance. Given concerns raised by IPART, we will develop a pricing strategy that we shall provide IPART prior to the 10 November public hearing.

Cost recovery schemes

We believe IPART has misunderstood our proposal for a cost recovery scheme and viewed it as Sydney Water proposing to pass through outturns above forecast to customers. This would mean compensating us for poor planning or forecasting. We emphasised in our proposal that this was not our intention. Further, we believe these schemes would mean customers could potentially avoid having to pay for a service they do not incur.

Cost recovery schemes are aligned with regulatory best practice and a common feature of other regulated industries, such as the energy sector where there are:

- cost pass-throughs provided for material events, which can be considered in the absence of having to reopen the determination
- cost contingency schemes to account for expenditures that are material in nature and depend on an event occurring.

IPART effectively has a cost recovery scheme in place for the Sydney Desalination Plant (SDP) and is currently considering such a scheme for the Shoalhaven Transfer.

While Sydney Water does not necessarily agree with the assessment that a cost recovery scheme is prevented under the *Independent Pricing and Regulatory Tribunal Act 1992*, we accept there is a grey area in interpreting what constitutes a methodology. We would encourage any review of the Act ensures that such schemes could be implemented in future.

In developing our proposal, we assumed the best case outcomes for the environment protection licences would apply. In the absence of a cost recovery scheme, our proposed expenditure in response to a potential change is at risk. To appropriately account for such risks, a cash flow

adjustment should be considered to compensate for the expected costs on these projects. This type of approach is currently used by IPART for the Shoalhaven Transfer.

Sydney Water's position on cost recovery schemes

Any future review of the IPART Act should ensure cost recovery schemes can be introduced. In the absence of a cost recovery scheme and in the light of risks we have taken to assess the environmental costs in our proposal, we believe a cash flow adjustment would be appropriate to compensate us properly for our expected costs on these projects.

Demand volatility adjustment mechanism

The current determination incudes a mechanism to adjust our revenue, to address the risk of a material variation between actual water demand over the determination period and the forecast used to make the determination. 'Material variation' is currently defined as more than ± 10% over the whole determination period. Only the impact of a variation outside of this level would be adjusted for.

Under the mechanism we bear demand risk up to the 10% threshold (or deadband), and customers bear it beyond that. As a business, we believe it is appropriate for us to bear and manage the revenue risk associated with normal deviations from average weather conditions and demand. We support IPART's preliminary view to retain the existing mechanism. However, if the mechanism is designed to address abnormal revenue risk from extreme demand volatility, then the 10% threshold over a full determination period is unlikely to be effective. We propose the threshold be reduced, to greater than ± five per cent for next determination period. Based on the current high dam levels, we expect that a threshold of ± five per cent will only be triggered if high level restrictions are imposed in the next two or three years.

Sydney Water's position on demand volatility adjustment mechanism

We support the retention of a demand volatility adjustment mechanism. However, we propose for the threshold to be effective IPART set it at greater than ± five per cent for next determination period. Even at this level, we believe the adjustment mechanism would be unlikely to be triggered.

Benchmarking

In principle we support benchmarking, although for it to be effective it must be done correctly. For the water sector, key issues are such things as:

- differences in geography and topology of networks – e.g. Melbourne has flatter terrain leading to less pumps being required to transport water than Sydney
- differences in regulation, soil type, mine subsidence and density of cities

- differences institutional structure – e.g. vertical integration versus separate retail suppliers
- differences in the approach to economic, health, and environmental regulation where comparisons are being made between water utilities in different states or countries.

In relation to a quality adjustment, any benchmarking analysis of water has been, and will continue to be affected by the need to spend more to meet water quality standards, drought measures and environmental requirements.

The experience over the drought is a key example of the need for quality adjustment. The drought has had a major impact on the perceived productivity of the entire water sector in Australia. In particular, desalination plant investments to ensure water security led to higher input costs, while at same time water efficiency measures led to decreased output or demand. This translated to analysis by the Productivity Commission showing water has much lower productivity relative to other infrastructure sectors in Australia. Unless the appropriate adjustments are made to take into account quality adjustments, benchmarking may lead to incorrect conclusions about overall performance of the utility and sector over time.

Finally, we would also be concerned if the upshot of benchmarking was that only a frontier efficient business could earn the WACC, which is an average benchmark rate of return. This is inconsistent with effectively competitive market outcomes, where frontier businesses earn above normal returns for a transitory period until competition arises. We note that Ofwat recognised this and built multipliers into its EBSS for frontier businesses.

Sydney Water's position on benchmarking

Sydney Water supports the use of benchmarking. We believe benchmarking should be used to complement incentive schemes and to allow for more targeted efficiency audit processes. Benchmarking however needs to be done correctly, ensuring appropriate adjustments are made for differences between utilities, and used in the right way, so that frontier businesses are not simply provided average returns.

Regulatory application

We mostly agree with the objective and principles IPART used to assess the existing regulatory framework. However, we believe there is a potential for risk to be inadvertently shifted to Sydney Water on each of the following issues.

Regulatory treatment of finance leases

IPART's proposed approach creates an asymmetric return on capital risk, which effectively will optimise out our capex from the regulatory asset base (RAB). This arises as our commercial contract over the finance lease is designed to transfer risk away from customers and Sydney Water. Commercial operators are only willing to accept these arrangements and risk transfer, if

they get commercial rates of return above our regulated WACC. In estimating the capital value for the RAB, using the discount rate consistent with our contract yields a lower RAB value, which we are then only allowed to earn the WACC on.

Such a regulatory treatment would mean that an efficient business entering into contracts that generated value through appropriately reallocating risks would have an ex-ante expectation that it would not recover costs. The proposed regulatory treatment of finance leases would potentially weaken the incentive on companies to agree such contracts from being entered into in future. There would be a bias away from such efficient commercial transactions to remove the capital optimisation/return on capital risk.

Sydney Water's position on the regulatory treatment of finance leases

As in our Pricing Proposal Sydney Water's preferred position would be to treat finance leases as opex. If IPART wishes to manage these through a RAB mechanism, then to avoid the optimisation or cost of capital risk, the implied rate of return in the commercial contract should not be used to estimate the separate RAB. Provided Sydney Water can demonstrate the value to Sydney Water and our customers of the risk being transferred to a third party, we believe IPART should use the regulated WACC to derive this figure.

Regulatory tax

We believe that the regulatory tax for assets free of charge (AFOC) should now be based on forecast figures, rather than historical averages. While we previously supported using five-year averages, we believe this is no longer appropriate. We have improved forecasting in this area, and now have forecasts of AFOC in our annual Statement of Corporate Intent (SCI).

Sydney Water's position on regulatory tax

The regulatory tax for assets free of charge (AFOC) should be based on forecast figures.

Rouse Hill land

In disallowing the $17.1m for additional land acquisition, IPART is assuming it is to deliver a stormwater solution, which should be recovered on a user pays basis by the private beneficiaries of Rouse Hill. In the absence of that, it has indicated Sydney Water (and our shareholder) should wear the cost.

We believe that increasing prices to customers goes against current government policy. IPART's disallowance of the cost also ignores the original intent of purchasing this land.

While providing the benefit of reducing flood risk, the 1991 Environmental Impact Study demonstrates that much of the land at Rouse Hill was required as part of a nutrient management

solution. This arose from concerns at the time about future discharges from the wastewater treatment plant to the Hawkesbury-Nepean River. The land was part of the wastewater solution to limit the impact on the river, and so the cost should be spread over the wastewater regulatory asset base (RAB).

Sydney Water's position on the treatment of additional land acquired for Rouse Hill

The additional land acquired should be placed on the wastewater RAB as we purchased this land for both stormwater and wastewater management purposes. We also believe IPART's approach does not align with government policy.

Asset disposal

Sydney Water supports the proposal to share 58% of the sales value for pre-2000 line-in-the-sand land assets, which have been in use since 2000. We believe it is a pragmatic solution that addresses the concerns we raised in our proposal where we requested a 50:50 sharing rule.

We believe though that as the indexation of the RAB has historically been lower than indexation of property values, multiplying the sales value by 42% is likely to overstate the customer share of the benefits from using the regulatory asset. As customers are effectively sharing in the capital gain through a discount in their bills, we believe that in contrast to IPART's position, customers should make a comparable contribution to the tax which arises from the capital gain. However, we concede that, based on our current calculations, the position in our Pricing Proposal for customers to pay an amount of tax based on the sharing rule, is likely to over-compensate us for this contribution.

We have concerns about IPART's approach to asset write offs. By taking the asset value out of the RAB in line with its accounting treatment, it could have an asymmetric impact on an efficient business that has assets that are both long-lived and variable in life. For example, assets such as water mains and wastewater mains that do not reach the book life will incur a loss, which is not offset by any corresponding gain for those that outlive the book life.

Sydney Water's position on asset disposal

We agree with the 58% sharing of the sales value for pre-2000 line-in-the-sand-land assets still in use from 2000. However, we believe that to the extent customers receive a share of the capital gain through a larger discount in their bill, it is appropriate for them to bear a corresponding share of the tax on those capital gains. Also, to avoid the risk of asymmetric outcomes from the proposed write down process, IPART should consider excluding classes of assets from write downs, such as those that are both long-lived and variable in life.

Shoalhaven transfer

In principle, we prefer the Shoalhaven Transfer to be dealt with as a cost pass-through in the same vein as the SDP. We believe this is efficient and avoids customers paying for services they are not receiving. However, as our current estimate of the cost of the Shoalhaven transfer is relatively small compared to SDP, which results in a very small increase in price (approximately $0.02 per kilolitre), we do not believe the value associated with the additional small price signal warrants the increased costs of administering the pass-through to our customers. On that basis we support retaining the current expected cost approach.

We understand the current intention of IPART is to treat the Shoalhaven Transfer costs the same way for both WaterNSW and Sydney Water. It would be of concern if IPART adopted a different approach. For example, WaterNSW incurs the Shoalhaven Transfer as a cost pass-through, but Sydney Water then recovers the actuarial-based expected cost associated with the transfer. This would lead to a sub-optimal outcome where Sydney Water would charge customers for costs not incurred, but when a transfer occurs, we would then incur costs above what IPART allows us to recover from our customers.

Sydney Water's position on Shoalhaven transfer

Whatever approach IPART takes on the Shoalhaven transfer costs, it should be the same for both WaterNSW and Sydney Water.

WACC

We agree with the objectives and principles which IPART outlined for estimating the WACC. We continue to support the methodology developed in 2013, but note there is recent evidence from the Reserve Bank of Australia (RBA) showing investors favour longer term returns. IPART should consider this when examining the appropriate long and short-term mix for the WACC estimate. A 50:50 weighting could result in investors expecting below normal returns.

We note that some current indicators also suggest the market is subject to higher volatility. If the uncertainty index were to suggest a need to deviate from the mid-point estimate of the WACC in the coming months of the review period, we would like early engagement from IPART given the potential impact this would have on our customer bills.

Sydney Water's position on WACC

We believe IPART should consider a 60:40 long-term and short-term weighting for the WACC. We seek that IPART provide monthly updates of its uncertainty index calculations in the lead up to the Price Determination.

Tariffs and cost allocation

We believe an efficient price should be cost-based and provide efficient investment signals for users and suppliers. Efficient investment requires a focus on long-run costs and a level of pricing stability so customers and suppliers can appropriately respond to price signals. Consistent with best practice in water utilities and energy networks, we support prices set with reference to appropriate estimates of the long-run marginal cost (LRMC). We also believe customer preferences should be taken into account.

We agree that IPART's proposed fixed 'availability charge' for water is probably a more accurate term than the fixed 'service charge' to reflect what the fixed charge covers. Effectively, it recovers costs Sydney Water incurs to support networks that allow us to have:

- clean safe drinking water available for customers connected to our network when they turn on the tap
- the supporting infrastructure available to have wastewater removed from the home and disposed of to minimise environmental and health impacts.

Our views on the tariff structures for each monopoly service we provide and on cost allocation are outlined below.

Water

The $1.97 per kL usage price is well within the plausible range of our estimates for the LRMC. It provides a level of pricing stability for customers and is consistent with revealed customer preferences from our online survey.

In contrast, IPART's LRMC estimate ranging from $1.12–1.24 per kL, is at the lower end of the plausible range of our LRMC estimates. Using such an estimate as the basis for the usage price, would not provide price stability for customers. It would represent around a 50% reduction in the current usage price and result in an almost tripling of the fixed service charge. A usage price in this range was also only preferred by a small sample of our customers. We believe such a usage price will not send the appropriate price signal to Sydney Water or our customers. At worst it could lead to significant increases in the demand for water, resulting in long-term stress on Sydney's water supply.

Sydney Water's position on water tariffs

We believe the proposed $1.97 per kL usage price is appropriate. It is within the plausible range of estimates for the LRMC, provides a level of pricing stability for customers and is consistent with stated customer preferences.

Wastewater

We have reconsidered our position on the discharge allowance for non-residential customers. We now agree with IPART's position that it should continue to transition down to 150 kL a year to make it consistent with the deemed allowance in the residential service charge.

We are concerned though about usage charges being set with reference to short run marginal cost (SRMC). We do not accept IPART's view that a postage stamp price makes a SRMC approach appropriate. This contains no long-term price signal and systemically underestimates the efficient prices. This is particularly problematic given that, with a growing population in Sydney and the North West and South West growth centres, even without changes to our licensed load limits we will need to invest billions of dollars in wastewater treatment plants in the future. Changes to load limits would only serve to increase these costs.

We believe IPART can and should estimate a LRMC for the network. While not an accurate measure of the marginal costs in each region, it will provide a much better approximation of the average incremental costs of service over time and provide for more stable customer prices.

In light of stated preference by residential customers for higher usage prices, we believe we should explore attitudes towards usage prices for residential customers in the future. Given that estimates for wastewater usage are based on discharge factors related to water usage, it would seem unusual to have a usage price for water and wastewater based on the same usage, but estimated using a different cost.

Sydney Water's position on wastewater tariffs

Sydney Water agrees that for consistency with the deemed allowance in the residential service charge, the discharge factor should continue to transition down to 150 kL a year.

We do not believe though that the SRMC estimate is appropriate for wastewater usage charges. We consider that an LRMC estimate provide a more appropriate pricing signal given the substantial investments we must make to meet growth or changes in environmental standards in future.

We propose to maintain the $1.10 usage price for the time being. As we have done for water, we would like to assess residential customer preference for wastewater usage charges over the 2016–2020 period.

Stormwater

Sydney Water considers that area-based charges only provide a proxy for cost and may not necessarily be cost-reflective. We therefore question IPART's proposal to move further towards strict area-based charges.

Stormwater also provides benefits to the whole community, not just those who directly pay for the infrastructure.

While Sydney Water has not canvassed the idea in our current proposal, we have begun engaging with the community to assess their views on a beneficiary pays approach to pricing of stormwater. Both our online survey and deliberative forum, suggest a strong willingness for our customers to pay for our stormwater infrastructure, even where they live outside our areas of operation.

Sydney Water's position on stormwater charges

We believe the relationship between property area and stormwater costs is not strong enough to move to a strict area-based charge.

Cost allocation

Consistent with an avoidable cost framework, ancillary and miscellaneous services bear direct overhead costs, but do not bear indirect corporate overheads. That is, even if these services were no longer supplied, the existing common corporate overhead cost would still remain.

Given the small amounts of revenues associated with these services, we believe our proposed approach to cost allocation is appropriate. Also, to the extent some of these services have or could become contestable in future, the approach is consistent with requirements for competitive neutrality in delivering services under the 2001 *NSW Treasury Guidelines for Pricing of User Charges*.

Sydney Water's position on cost allocation

Consistent with an avoidable cost framework, ancillary and miscellaneous services should not bear indirect corporate overheads.

Wholesale access pricing

It is important that any access price ensures efficient and effective competition, subject to the constraint imposed by the existing universal service obligation of postage stamp pricing. An incorrectly set access price, which does not include a contribution to universal service obligations, creates the potential for an inefficient competitor to profitably gain access and artificially increases postage stamp prices.

It is well-established in the presence of a postage stamp pricing arrangement that a 'retail-minus avoidable costs approach', also referred to as the efficient component pricing rule (ECPR), creates the right incentives for efficient and effective competitive entry. This ensures access seekers contribute appropriately to the implicit subsidy in the postage stamp price.

On this basis, Sydney Water agrees in principle with IPART's preliminary view that any access price should be based on a retail minus avoidable cost price. We believe an appropriate retail

minus in an interim price set by IPART would be around three per cent lower than the end user-retail price, based on Water Services Association of Australia (WSAA) benchmarking from 2011.

Given the different stakeholder mix likely to be interested in the wholesale pricing issue, our main concern is that engagement is open and transparent and asks the right parties for feedback. We welcome IPART's initiative to hold a separate public workshop on 8 December on this issue. We encourage IPART to maintain an open dialogue with affected parties in the lead up to the Draft Price Determination.

Sydney Water's position on wholesale access pricing

Retail minus avoidable costs, where the retail price is the end-user retail price, represents an efficient wholesale access pricing regime under a retail postage stamp pricing arrangement. The efficiency of this pricing principle is supported by independent expert economic advice and the Australian Competition and Consumer Commission.

If IPART is to set an interim wholesale price, we support a retail minus avoidable costs methodology, where based on WSAA benchmarking of the retail 'cost to serve', the minus is a three per cent reduction from the full retail price.

If it would contribute to certainty, we are open to commencing voluntary access undertakings for both water and wastewater services over the course of the next year. Given the different key stakeholders involved, we encourage IPART to maintain an open dialogue until it issues the Draft Determination.

Next Steps

Sydney Water appreciates the extensive work IPART has done to address our Pricing Proposal. We note though that responding to this Issues Paper within the compressed timeframe (four weeks) has been challenging.

We understand that a similar period of time is scheduled for responding to the Draft Determination in 2016. We recognise that IPART is under considerable time pressures, not only for our price determination, but also for other water-related determinations and activities in other sectors.

Nevertheless, we would appreciate a longer time to respond formally to the Draft Determination. If not possible, we believe IPART should engage earlier on key elements of the Draft Determination to give us more time to respond.

We believe we have demonstrated a strong alignment with IPART's objectives and are keen to work with IPART to improve regulation for the long-term interest of customers. We encourage IPART to retain an open dialogue in considering views and issues we have raised in this submission and our Pricing Proposal, especially where they require clarification.

1 Introduction

Sydney Water welcomes the opportunity to respond to the IPART's Review of prices for Sydney Water Corporation from 1 July 2016 Issues Paper (the Issues Paper). We appreciate the extensive work and detailed response from IPART in canvassing its preliminary views. This is a good starting point for more engagement, especially on areas of contention. We acknowledge that over the past few years IPART has been open and willing to change preliminary views on the basis of sound economic principles and compelling evidence.

We mostly agree with the objectives and principles IPART has adopted to assess our proposal. In applying these objectives and principles, however, we believe IPART's preliminary views on a number of key issues have inappropriately tipped the overall balance of risk towards Sydney Water. We believe an efficient business would not have a legitimate expectation of recovering its long term costs and would potentially be unsustainable, which is not in the long-term interests of customers.

Our submission responds to all 63 questions posed in the Issues Paper, although questions pertaining to opex and capex will be dealt with through the efficiency review process. We also provide greater detail and feedback on IPART's preliminary views where they are of particular concern or interest to Sydney Water.

The document structure is as follows:

- Chapter 2 outlines our concerns with IPART's preliminary views on our proposals to modernise regulation, in particular, on the efficiency benefit sharing scheme. We also address issues relating to pricing flexibility, cost recovery schemes, demand risk, and benchmarking.
- Chapter 3 examines the application of existing regulations, and highlights that the preliminary views on the regulatory treatment of finance leases, tax, asset disposals, additional land to be purchased at Rouse Hill, Shoalhaven transfers and the weighted average cost of capital (WACC), all create a risk that an efficient business would not recover its long-term costs.
- Chapter 4 addresses the issues of the appropriate tariff structure for water, wastewater and stormwater, the allocation of costs for ancillary and miscellaneous services, and acknowledges our agreement with IPART's view that the discharge allowance should now be 150 kL a year.
- Chapter 5 supports a retail minus approach to wholesale access pricing regulation and illustrates that we would be open to progressing voluntary access undertakings for water and wastewater services if it would promote certainty in the sector.
- Chapter 6 answers IPART's 63 questions.
- Appendices A – F include additional information from Sydney Water in support of our submission. It covers background information for the additional land purchased at Rouse Hill, our proposed approach for the treatment of capital gains tax on asset disposals, our revised stormwater prices, the efficiency of a retail minus avoidable cost approach, the water charges

that would apply if the desalination plant is turned on, and a confidential section on hot water metering.

- Attachments 1 and 2 contain two independent expert reports from Incenta Economics Consulting on the Efficiency Benefit Sharing Scheme, and HoustonKemp Economists on the efficient wholesale access pricing principle.

2 Modernising regulation

Key messages

- In proposing to modernise regulation we aim to promote improved incentives to increase efficiency, and a more targeted and proportionate approach to regulation. We believe this is in the long term interests of our customers.
- IPART has misinterpreted our proposed efficiency benefit sharing scheme (EBSS). Its proposal has misplaced focus on an intention to 'game' the regulation and has not appropriately considered:
  - established EBSS schemes to understand the risks of gaming in practice
  - protections against gaming we built into our original proposals
  - efficiency gains already incorporated into the proposed capex programs and the testing of projections through the ex-ante efficiency review.

  We believe our proposal better promotes the long-term interests of customers, as it creates stronger incentives for efficiency, and represents a more targeted and proportionate response.
- Sydney Water supports introducing a WAPC for non-residential customers only in the first instance and will provide IPART a pricing strategy prior to the 10 November hearing. A model though where IPART sets regulated prices which apply unless customers choose an optional price will put cost recovery at risk.
- IPART has suggested we have proposed any outturns above forecast should be passed through to customers. This is incorrect. Our proposed cost recovery schemes are regulatory best practice. In the absence of IPART being able to implement such schemes under the IPART Act, some cashflow adjustment should be considered to compensate for the expected costs. The ability to implement such schemes must be considered in the next review of the IPART Act.
- We support retaining the demand volatility adjustment, but believe the current 10% threshold is too high and should be reduced to a level greater than ±five per cent.
- In principle we support benchmarking, however to be effective it must be done, used and interpreted in the right way. That is, the appropriate adjustments must be made, and we would be concerned if it means only a frontier efficient business could earn an average rate of return.

Sydney Water believes we have common objectives with IPART in modernising regulation, that is, to consider efficiency, business sustainability and the long-term interest of consumers. Our Pricing

Proposal[1] seeks to balance these objectives and share risks between Sydney Water and its customers, so we can maintain our current performance in controlling costs and increasing customer satisfaction.

IPART's preliminary views change that balance and increase the risks to Sydney Water, particularly in response to our proposals for modernising regulation. It is not clear to us that IPART has based its positions on clear objectives and principles. IPART's concerns about (theoretical) potential gaming seem to have guided its thinking and have resulted in an asymmetric approach in its preliminary views.

The schemes we have proposed for modernising regulation are well established in other industries (including those regulated by IPART) and jurisdictions. This experience and established regulatory practice, which were outlined in our Pricing Proposal,[2] is not reflected in IPART's Issues Paper.

We consider that our proposals increase the incentive to achieve efficiencies (through an Efficiency Benefits Sharing Scheme or EBSS), and yield better targeted and more proportionate regulation (through both the EBSS and by adopting a weighted average price cap or WAPC). Alternatively, IPART's preliminary views question the financial sustainability of our business and do not increase incentives or improve regulatory outcomes to the same extent as our proposal.

This chapter responds to IPART's Issues Paper on modernising regulation by:

- setting out the objectives of regulation, and the criteria for assessing proposals for change (Section 2.1)
- assessing IPART's preliminary views on:
    - a modified opex EBSS and no capex EBSS (Section 2.2)
    - the proposed application of a WAPC (Section 2.3)
    - the decision to retain the existing arrangements for cost recovery schemes to address expenditure risk (Section 2.4.1)
- providing our views on:
    - the appropriate approach to address demand risk (Section 2.4.2)
    - using benchmarking in economic regulation (Section 2.5).

2.1 Objectives and assessment criteria

Regulation should be guided by clear objectives and best practice principles. This can provide a clear and consistent framework to assess the regulatory framework and the options available. Consistently applying an assessment framework helps ensure that the regulatory framework is also consistent and fit for purpose.

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[1] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015 (Pricing Proposal).

[2] Ibid, Section 4 and Section 10.7-10.11.

It is important that IPART uses clear objectives and best practice principles to assess our proposals and to propose modifications. We believe IPART should adopt the following primary objectives, consistent with the long-term interests of consumers and common regulatory practice:

1. Promotion of economic efficiency, including productive, allocative and dynamic efficiency.
2. Commercial sustainability of prudent and efficient service provision.
3. Protection of customers by preventing monopoly rents.

In considering these three objectives IPART must ensure its regulation is consistent with the objectives in Section 15 of the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act). The objectives in Section 15 are mostly consistent with these objectives but there are some potentially significant differences. For example, Section 15 requires IPART to have regard to:

- actual costs and incentives to improve efficiency and reduce costs 'for the benefit of consumers and taxpayers'
- reasonable dividends
- the standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise)
- the social impact of its decisions
- demand management and least cost planning.

IPART has issued papers on how it will interpret and apply its obligations to consider impacts of its decisions on financeability, customers, and the environment. We welcome this as providing greater certainty – an important feature of best practice regulation.

Underpinning IPART's papers, is that IPART recognises the limitations of regulation and that it should not consider these factors at the expense of enabling the regulated business to efficiently provide services and that a prudent and efficient business should be able to reasonably expect to recover its costs, including an appropriate return on capital. This principle is relevant to a number of the proposals in the Issues Paper. In relation to modernising regulation covered in this Section, it is relevant to the implementation of the EBSS, the WAPC, recovering revenues for unanticipated cost and demand variations, and the use of benchmarking results. It is also relevant to IPART's approach to applying existing regulations, which is covered in Section 3.

Commonly agreed principles of best practice regulation and regulatory processes:

1. Decisions must be transparent: IPARTs processes should be open, methodologies/regulations as simple and clear as possible, and analysis able to be replicated by other stakeholders.
2. Decisions must be accountable: as well as being transparent, decisions should be well-justified.
3. Decisions must be proportionate: IPART should intervene only when necessary and regulations/price controls should be appropriate to the risk posed and administrative and compliance costs should be low and commensurate with the problem addressed.
4. Decisions must be consistent: Policies, rules and standards set by IPART or other regulators/agencies/Ministers must be joined up and implemented fairly.

5. Decisions must be targeted: IPART's regulations and controls should focus on the problem and minimise side effects.

In assessing our proposals and the alternatives IPART should assess whether the proposals/options:

- promote the generally agreed objectives of regulation
- promote the objectives in Section 15 of the IPART Act
- are consistent with the best practice principles of regulations and regulatory processes/methodologies.

Our proposal aims to improve regulation to better meet these criteria by improving incentives for the long-term interest of customers and decreasing the scope and detail of regulation so that it is more proportionate and better targeted. This is consistent with the principles of best practice regulation, as IPART has previously recognised.[3]

We consider some aspects of IPART's response to our Pricing Proposal do not improve regulation to better meet the above criteria. In particular, by modifying our proposals to meet (unfounded) concerns about gaming, IPART has reduced the extent to which the proposed measures both improve incentives and yield more targeted and proportionate regulation.

2.2 EBSS

Sydney Water's objective in proposing an EBSS is to better align favourable long-term outcomes for our customers and us. Our proposed EBSS aims to build upon and improve the current framework of incentive regulation. A key tenet of incentive regulation is that businesses have an incentive to reveal their efficient costs over time, such that outturn expenditure can be a guide to the actual efficient level of expenditure. This allows a less intrusive method to be taken to regulation overall, and meets the principle of proportionality. This means regulators intervene only when necessary, remedies (or mechanisms) are appropriate to the risk posed and there is a clear match between the choice of remedy/mechanism and the regulatory objectives.

We believe we have based our proposal on robust economic principles and established schemes that have been operating since the late 1990s. The use of an EBSS in other industries and jurisdictions supports the view that the likely benefits to customers from the scheme are sufficient to warrant any reward (or penalty) for the business. To allay potential concerns about the schemes, we proposed a measured approach, recognising that if we 'gamed' or manipulated the schemes we would risk their removal in the future.

Accordingly, we considered the concerns raised in other jurisdictions and industries around incentives schemes. We proposed a phased approach with the level of risk for IPART and

[3] IPART, *Investigation into the burden of regulation in NSW and improving regulatory efficiency – Issues Paper*, January 2006, p 23.

customers quite constrained in the first period, until we provide practical proof of its benefits. Our proposal modifies the EBSS for the first period by:

- limiting the coverage of the schemes
- applying a cap and collar
- envisaging an ongoing role for IPART in setting expenditure allowances.

We consider that IPART's approach to assessing our proposals could give greater weight to the well-established history of these schemes and their operation. IPART's own research[4] suggests these schemes have been beneficial for consumers (see Boxout 2-1 below), but the preliminary views in the Issues Paper move away from those findings and approach.

Boxout 2-1: Evidence on incentive mechanisms

IPART's 20115 paper looks at the use of incentive mechanisms by other regulators. It finds support for the view that incentive mechanisms have had a positive impact. For example, Ofwat has used an opex EBSS since its 1999 price review. In 2004 Ofwat asserted that:

> *…the incentive mechanisms amended in 1999 to reward capital expenditure outperformance and incremental outperformance on operating expenditure have worked well. We therefore propose to build on those systems rather than amend them fundamentally.*[6]

And again in 2008:

> *Our approach to operating expenditure and efficiency has worked well for consumers. It is highly transparent and offers clear incentives for each company to outperform by improving efficiency, all to the benefit of consumers.*[7]

The IPART report concludes:

> *The incentive to defer cost savings in the standard CPI-X regulatory framework may be removed by a carryover mechanism. … Implementing a carryover mechanism or an annual sharing of cost savings and monitoring them seems to involve an increase in complexity, both for the regulator and the regulated. Balancing the positive incentive*

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[4] IPART, *Incentives for cost saving in CPI-X regimes,* IPART Working Paper, July 2011, available at http://www.ipart.nsw.gov.au/files/03383fa4-b4ad-4d03-87f5-9fc200a2f445/Working_Paper_-_Incentives_for_cost-saving_in_CPI-X_regimes_-_July_2011_-_Website.pdf

[5] Ibid.

[6] Ofwat, *Managing Director letter MD191*, 25 March 2004.

[7] Ofwat, *Setting price limits for 2010-15: Framework and approach*, March 2008, section 4.4, p 40.

effects of the mechanism against the negative effects of greater complexity may be something IPART and other regulators may be required to consider in the future.[8]

In its 2009 review of IPART's approach to incentive-based regulation, Cambridge Economic Policy Associates (CEPA) observed that:

Until recently it appeared that a degree of consensus had emerged that capex was best incentivised through five year rolling incentives, and this approach was increasingly common around the world, although less so in Australia. However, recent years have seen some innovation and developments of this approach, although mainly for privately owned companies, such as Ofgem's use of menu regulation… Many regulators use some form of pass-through and/or re-opening mechanism to address risk and uncertainty. [9]

Evidence from England and Wales shows improved company performance as measured by the overall performance assessment at successive price reviews.

Source: http://www.ofwat.gov.uk/publications/focusreports/prs_inf_sim.pdf

[8] IPART, *Incentives for cost saving in CPI-X regimes,* IPART Working Paper, July 2011, p 23.

[9] CEPA, *Review of IPART's approach to incentive based regulation: a report by CEPA, Final report*, October 2009, pp 23, 49.

We commissioned Incenta Economic Consulting (Incenta) to provide us with advice on the alternative model proposed by IPART in its Issues Paper. Incenta is of the view that some of the issues raised by IPART are valid. However, Incenta concludes that an amendment to our proposed opex EBSS and inclusion of a capex EBSS would be preferred to IPART's alternative model. We have referred to Incenta's specific findings in our assessment of IPART's alternative model below.

IPART's modified EBSS represents an asymmetric approach that increases the risk that we cannot recover the efficient costs of providing services. The proposed options for the carryover period do not address the existing uneven incentives throughout the regulatory period. Finally, 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 these reasons, we are maintaining our proposed EBSS as we set out in our pricing submission.

Sydney Water wants to work with IPART to improve the long-term regulatory framework. While we recognise concerns about gaming, we believe gaming would be inconsistent with our regulatory objectives and a long-term outlook.

We note that IPART has used external independent expertise to assess changes to the regulatory framework previously (for example when it considered how to assess financeability and the methodology for estimating the WACC). We encourage IPART to undertake a similar technical or peer review in this instance. We also believe it would be appropriate to hold a separate forum or workshop to consider form of regulation issues, apart from the more generic consideration of our Pricing Proposal at the 10 November 2015 public hearing. Again we note that there is precedent for this approach, for example in retail electricity pricing, where technical issues were covered in a separate session at the public forum.

2.2.1 IPART's modified opex EBSS

We are concerned that IPART appears to misrepresent our proposal in its Issues Paper, leading it to propose its own 'modified' EBSS for opex. In particular, IPART raises two issues around gaming, that is, the profiling of expenditure by the business to:

a) influence the allowance in the next regulatory period

b) create a windfall gain in the absence of an actual cost saving.

We address these issues in turn.

Our proposal has been characterised inaccurately in terms of the role of actual outturn expenditure in the penultimate year of the regulatory period (Year 3). This makes our proposal look less favourable and reasonable. We are not proposing that actual Year 3 expenditure is mechanistically used to set the allowance for the following regulatory period. We envisage that IPART would retain discretion in setting expenditure allowances in the next regulatory period. Our Pricing Proposal explicitly outlined that our EBSS includes:

> *…a "base, step and trend" approach for the opex EBSS, which allows IPART to retain full control of the costs to be included in the appropriate base year, for the next regulatory period.*[10]

As recognised by Incenta, this is a standard approach that has been adopted by the AER.[11] The 'step' component of this approach allows the regulator to readjust the penultimate year base that is rolled forward if it is concerned that the year is unrepresentative. IPART could do this by using information from its expenditure review or by making adjustments for benchmarking. We consider that this removes a major concern that IPART appears to have with our proposed scheme.

IPART raises a concern about the incentive to shift expenditure between years to achieve windfall gains with no efficiencies.[12] Incenta found that this concern would be addressed by an assumption that there is no incremental change in efficiency between Years 3 and 4.[13] This results in a zero carry-over for that year. We acknowledge that this is an oversight in the detail of the proposal contained in our pricing submission and we agree that such an amendment should be made.

Asymmetric approach

It appears that, in in response to concerns about gaming, IPART has adopted an unnecessary asymmetric approach. The modified EBSS proposed by IPART introduces asymmetry and additional expenditure risks for Sydney Water (compared to our proposal) by not including losses. The proposed asymmetric treatment of over- and under-spends fails to recognise that:

a) expenditure may be required to realise efficiency gains

b) there are opportunities to substitute between opex and capex to achieve a lower cost result overall

c) efficient costs can legitimately go up for a business such as Sydney Water, where a significant proportion of expenditure is the result of competitive procurement and tendering processes[14]

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[10] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 257.

[11] Incenta demonstrates that if an efficiency adjustment is being contemplated two factors should be considered. Firstly, it is important when testing efficiency to separate out the effects of any one-off factors and focus on underlying efficiency. Secondly, if an efficiency reduction is to be applied then it is not appropriate to apply an accrued negative carry-over (if one exists). Incenta Economic Consulting, *Cost-efficiency incentive schemes for Sydney Water: Comment on the IPART Issues Paper*, October 2015, p 4, 18-19.

[12] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 257.

[13] Incenta Economic Consulting, *Cost-efficiency incentive schemes for Sydney Water: Comment on the IPART Issues Paper*, October 2015, p 11. When calculating the incremental efficiency change for the first year of the second period, an adjustment would need to be made for the difference between the assumed level of expenditure in the final year of the previous period and the actual expenditure.

[14] If market conditions change, even using best practice procurement and tendering may not guarantee reduced opex. We also note that our opex and capex projections are based on continuation of the current

d) 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 for our opex and capex of average weather conditions.

Incenta recognises that IPART's proposed model can result in inappropriate outcomes when the timing of a regulated business's expenditure changes.[15] IPART's approach maintains the existing risk that we would not recover costs when the level of efficient costs legitimately increases within the period.

It is inconsistent with the schemes implemented elsewhere. We have not seen a regulator adopt an approach like this before.

Potential carryover period

The view about which incentive rate, or sharing ratio, is chosen will depend on the view about the relationship between the business's responsiveness and the share of gains retained. This ensures that the incentive is strong enough to encourage behavioural change, but low enough for customers to not have to wait too long to receive the benefits of an efficiency improvement.[16]

While it is important that customers benefit from cost savings, using resources efficiently is also important from a societal perspective. The decision on the carry-over period must balance the two.

The carry-over period must be at least as long as the determination period to equalise the incentive to reduce costs. So, if the carry-over period is less than the regulatory period, there is still a greater incentive to make gains in year 1 compared to the other years. This was recognised by the AER, who found that:

> *The incentive to reduce opex will not be continuous if the length of the carryover period is less than the length of the regulatory control period. This is because NSPs [network service providers] would be able to retain recurrent efficiency gains for longer if the gain is made at the start of the regulatory control period than at the end.*

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low rates of increases in specific unit costs and do not include contingency factors. There is a risk that these assumptions will prove to be optimistic, and under our Pricing Proposal, Sydney Water bears this risk.

[15] Incenta Economic Consulting, *Cost-efficiency incentive schemes for Sydney Water: Comment on the IPART Issues Paper*, October 2015, pp 13-18.

[16] IPART's Issues Paper questions the appropriate carryover period taking into account observed outcomes in competitive markets. We note that in competitive markets firms have incentives to drive cost efficiencies in any year – this is what the EBSS is looking to achieve. There is no clear evidence on how long a firm can retain an efficiency gain before it has to be passed through to customers and we note that firms in the same market do have different cost structures and levels of efficiency that persist over time. According to Yarrow, "…even in competitive markets, firms with differing levels of efficiency may survive for quite long periods (see, for example, Inter-company variations in Tobin q statistics, and their persistence over time)." (See Yarrow's report at http://www.aemc.gov.au/.)

If the EBSS and CESS [Capital Expenditure Sharing Scheme] are not balanced then NSPs may have an incentive to make inefficient expenditure decisions. [17]

This implies that Sydney Water's opex EBSS carryover must be for at least four years (the current length of Sydney Water's regulatory period) and that the opex EBSS and capex EBSS carryover periods must be the same. Our proposal is for a carry-over period equal to the determination period (that is a carryover period of four years and a holding period of five years). This is the minimum carry-over period required to equalise incentives, and provides customers with the maximum benefit from cost savings.

A carryover period of four years will provide us with about 25% of the benefits/losses and the balance to its customers. This level compares to about 30% provided by UK and Australian incentive scheme arrangements, based on a five year carryover period (consistent with the length of the regulatory period).

IPART's proposed alternative of a two year holding period (or one year carryover period) reduces the existing incentives in the early years of the regulatory period and does not increase the overall incentive. We do not see this as an advance.

Current performance on opex

Finally, we can demonstrate that the costs subject to the EBSS are close to efficient or best practice.

- As set out in our Pricing Proposal, when benchmarking was last undertaken across water utilities in 2011 Sydney Water had the second lowest retail cost to serve.[18]
- Since that time Sydney Water's opex per property has consistently declined whilst we have serviced growth.[19]
- We have outperformed the efficient level of opex determined in the last price review.[20]
- 40% of our opex relates to bulk water costs (which are outside our control and not covered by the EBSS). Of the rest, 33% is market-tested (the remaining 27% is mostly labour and administrative costs).

2.2.2 IPART's modified EBSS – exclusion of capex

We acknowledge there is precedent for regulators introducing an opex EBSS before a capex EBSS. However, we have proposed a capex EBSS that addresses concerns around the benefits of one-off capex deferrals and gaming. We have chosen capex categories for the EBSS related to expenditures:

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[17] AER, *Better Regulation, Explanatory Statement, Efficiency Benefit Sharing Scheme*, November 2013, pp 24–25.

[18] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 7-10.

[19] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 131.

[20] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 130.

- that only account for around 9.5% of total capex for 2016–2020
- that are more recurrent in nature and where we have recently achieved a major step reduction in costs, such as critical water mains and reticulation renewals. In this instance, IPART should be less concerned that we will be rewarded for cost savings because we are well away from the efficient frontier
- where there are clear opportunities for substitution between opex and capex 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 opex.[21] If the incentives are equalised through inclusion of capex in the EBSS, we would only adopt a capex solution where it was efficient and delivered the lowest social cost.

We believe IPART has not properly considered this context around our proposal. While agreeing with IPART's sentiment that capex schemes are more difficult to apply than opex schemes, Incenta considers that there are material costs to 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 opex and capex where there is a trade-off. Incenta further considers that the potential deficiencies in the capex scheme are manageable, given the classes of capital expenditure that Sydney Water proposes to apply the scheme to.[22]

In its Issues Paper IPART raised a number of arguments against a capex EBSS:

- Capex is fundamentally different to opex.
- The relationship between the two types of spend is complicated.
- It is difficult to distinguish between efficiency savings and deferrals.
- A capex EBSS may increase the incentive to over-forecast capex.
- Combined with a cost-pass through mechanism, a capex EBSS the business to retain upside risk while exposing customers to downside risk.

We address each of these arguments below.

Capex is fundamentally different to opex

We have limited our proposed capex EBSS to expenditure on critical water mains and reticulation renewals and electricity. This comprises only 9.5% of our total forecast capex over the 2016–20 period. Sydney Water also has a high level of confidence in our forecasting accuracy for water network replacement capex and believes it is not subject to the same level of forecasting uncertainty as other classes of capex. We note that we have made significant savings in this expenditure over the current period, and believe the research work we have engaged in with

[21] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 141-142.

[22] Incenta Economic Consulting, *Cost-efficiency incentive schemes for Sydney Water: Comment on the IPART Issues Paper*, October 2015, pp 20-22.

National ICT Australia (NICTA) could lead to further cost reductions in the next period, such that any deferrals would be efficient.[23] In terms of critical water mains and reticulation renewals and electricity, we are proposing neutrality between capex and opex solutions as there is a high substitution possibility.

We also note that IPART's view of a fundamental difference between opex and capex is not shared by other regulators, such as Ofgem, who have combined the two under 'Totex'. We also note that the AER considered that without the capex EBSS the incentive for a business to spend less than its forecast capex declines over the regulatory period.

> *This is because as the end of the regulatory control period approaches, the time available for the distributor to retain any savings gets shorter. So the earlier a distributor incurs a capex underspend in the regulatory control period, the greater its reward will be. As a result, the incentive for a distributor to spend less than its capex forecast declines throughout the period.*[24]

The relationship between the two types of spend is complicated

Introducing an EBSS for both opex and capex allows a business to deliver regulated services efficiently (that is, at the lowest costs possible) by removing the potential penalty for substituting between the two types of expenditure once allowances are set. There is a variety of circumstances where a business might have the option to choose between an operating expenditure solution or a capital expenditure solution so as to achieve a certain outcome. This makes it important to balance pay-off incentives for efficiency savings in capital and operating expenditure. If the payoffs are not balanced, the business may prefer one form of expenditure, and therefore one solution, over another, even though it may not be the most efficient solution overall.[25]

One area where trade-offs between operating and capital expenditure have been a particular issue for Sydney Water is expenditure on electricity, where we have invested capital in energy efficiency and renewable self-generation to cost-effectively reduce operational energy costs. This is outlined in Boxout 2-2 below. The potential for substitutability in this area is the reason we have proposed including electricity in the capex EBSS.

Another area where we have used opex in lieu of capex is in our priority sewerage program (PSP). Our initial proposal for sewering Douglas Park village was to build a local treatment plant and irrigate. Due to the associated cost and complexity, this was changed to building a pump station

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[23] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 28.

[24] http://www.aer.gov.au/system/files/AER%20-%20Final%20Decision%20Ausgrid%20distribution%20determination%20-%20Attachment%2010%20-%20Capital%20expenditure%20sharing%20scheme%20-%20April%202015.pdf

[25] Trade-offs between capital and operating expenditure are likely to be a feature of any infrastructure business. For example, there will be a point where a business has to decide between continued maintenance expenditure or replacing aging assets. Where the decision for the business is between either one-off capital expenditure or recurrent operating expenditure, the EBSS, designed correctly, can effectively deliver the right balance of incentives. The consequence is that a project that is just neutral from the customer's perspective in terms of the choice between operating and capital expenditure, will also be just neutral in terms of the rewards and penalties to the regulated business.

and transfer line to Appin (where the wastewater could enter the West Camden reticulation network). However, after further investigation the final proposal was to build a collection point on the outskirts of Douglas Park and carry the effluent away via tanker as a permanent solution. We estimated that this option resulted in a capex saving of $9.9m, an opex increase of $0.42 m a year and a $4.4m net present value (NPV) compared to the capex option.

Boxout 2-2: Energy efficiency and renewable self-generation

Energy efficiency

The Energy Efficiency Management Program (EEMP) is a capital program, replacing inefficient technology or processes with a more efficient option. Projects include equipment upgrades, instrumentation changes and process optimisation.

The program operates under a framework business case with a recurrent capital budget of $1m a year (not all energy efficiency projects are funded by the EEMP). Each initiative must pass investment criteria, however the program capital budget reduces the time spent on individual funding submissions and facilitates rapid deployment. The program reduces our energy costs by targeting:

- volume – in reducing the electricity consumed for the same process outcome, and
- rate – in using electricity at lower cost times, freeing up grid capacity at peak times or altering a site's electricity demand characteristics to reduce those charges.

Since July 2011, we have spent $2.6m for recurrent savings of $1.1m a year. We measure benefits realisation on performance versus baseline data, to the standard required to create Energy Savings Certificates under the NSW Government's Energy Savings Scheme.

Renewable energy

This program reduces energy costs by integrating renewable generation into our operations. It allows us to avoid more expensive grid purchases, creates tradeable green certificates and earns us external revenue when we generate more electricity than we can use on-site.

As an example of resource recovery, our cogeneration extracts the energy contained in wastewater as biogas, in-turn converting it into electricity and heat. We have recently expanded the existing cogeneration capacity at North Head, Malabar and Cronulla, further reducing our grid purchases at these sites. Combined, the new generators cost about $6m and, after operations and maintenance costs, will deliver around $760,000 year-on-year electricity savings and environmental certificates. Our operations and maintenance program ensures our renewable energy generation assets generate the maximum amount of energy at lowest lifecycle costs.

Applying a symmetric EBSS to both capital and operating expenditure means that, in most cases where trade-offs between opex and capex are possible, the business will be indifferent between

whether efficiency gains are achieved between reductions in opex or capex. Its incentive will be to minimise total costs. This is achieved where the business is able to retain the same proportion of the total savings achieved for each different type of expenditure. This is the element that IPART can control in establishing the capex EBSS. We note that other regulators have accepted the principle of equalisation (see AER findings above).

In our view, the net effect of the other factors cited by IPART[26] is unclear, however there is no reason to suppose that there are not trade-offs between opex and capex. Complexities in the relationship between opex and capex do not negate the principle that the incentives for efficiency gains should be neutralised. A rational business will respond to optimise its returns under the incentives provided and the only clear 'losers' in the long term from incentive biases and weak incentives are the customers.

Our proposed capex EBSS complements the opex EBSS by allowing for efficient substitution between the two types of expenditure. As with the opex EBSS, equalising incentives across the regulatory period means customers receive the benefits of cost reductions quicker.

It is difficult to distinguish between efficiency savings and deferrals

Capex incentive schemes appear to have operated successfully for the UK water industry for a considerable time, but we recognise that they have proved problematic in Australia because of concerns about incentives for deferring capex.

A capex EBSS was applied by the Essential Services Commission (ESC) in Victoria for the 2001–2005 regulatory period together with an opex EBSS. However, the capex EBSS was removed in the subsequent regulatory period, because of concerns about evidence indicating very strong incentives for capex deferral. A material amount of the capex approved by the ESC was not incurred in the regulatory period and therefore qualified for incentive payments. In some cases this capex was proposed again in the subsequent regulatory period, giving rise to concerns about double-dipping.

Reflecting this concern, the AER's subsequent 2008 electricity distribution decisions did not implement capex EBSS schemes for electricity distribution. However, the AER has more recently developed a capex EBSS which is now being introduced, initially with NSW electricity distribution. This provides for the AER to make adjustments to the incentive payments where a material proportion of capex is deferred.

While we acknowledge these concerns, we reiterate that the categories we have proposed for inclusion in the capex EBSS are where expenditure is largely recurrent and/or there is an

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[26] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 89, states that:

> *The relationship and trade-off between operating and capital expenditure is complex and driven by a range of dynamic factors, including management priorities, capital market conditions (including the relationship between the WACC and the utility's cost of capital), and the level of substitutability between operating and capital solutions.*

opportunity to substitute with opex. We consider that this approach minimises the risk that deferrals are inefficient.

A capex EBSS may increase the incentive to over-forecast capex

We recognise that under the existing regulatory regime there is an incentive to over-forecast capex and that this may be exacerbated by introducing a capex EBSS. However, we note that under our proposed EBSS, the existing approach to assessing forecast capex 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 capex be covered by an EBSS in the first period. We have limited the scope of the capex EBSS to critical water mains and reticulation renewals and electricity where there are the least opportunities for gaming. These two items represent around 9.5% of our total capex for 2016–20. We have made savings in expenditure on critical water mains and reticulation renewals over the current determination period.[27] We have a high level of confidence in our forecasting accuracy for this expenditure. It is not subject to the same level of forecasting uncertainty as other classes of capex, such as information technology, and we believe the risks around the level of this expenditure are low.[28]

Finally, we note that IPART's proposal to do further benchmarking and analysis of productivity trends will give it an additional tool to assess forecast capex and establish a degree of comfort with Sydney Water's proposals going forward.

Combined with a cost-pass through mechanism, capex allows the business to retain upside risk while exposing customers to downside risk

We think there may be some confusion around our proposal here. As set out in Section 2.4, our proposal for passing through costs associated with material variances in project costs is often referred to as the inclusion of 'cost contingency projects'. These are materially large projects where the requirement, timing or costs of the project are uncertain at the time of the price review submission. The projects would be pre-approved by IPART, but have a trigger event within the determination period for incorporating into prices the efficient costs of undertaking these projects. Cost contingency projects would not form part of the EBSS.

2.2.3 Summary of Sydney Water's views on the EBSS

In conclusion, we believe our proposal for an EBSS is in the long-term interests of consumers, would not adversely affect the financial sustainability of the business and supports the principle of proportionate regulation. We believe IPART's proposed modifications do not meet these objectives, as they dilute the incentives faced by the business and increase the complexity and

[27] As outlined in our Pricing Proposal we spent $287 million over the 2012 determination period (compared to our allowance of $464 million) and we expect to spend $250 million on critical water mains and reticulation renewals in the 2016 period (all figures in $2015/16). See Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Chapter 8.

[28] Although we acknowledge that the allowed level of expenditure is subject to review by IPART.

administrative costs associated with regulation. We recognise that IPART has proposed these modifications to address perceived problems around gaming. However, while these can be demonstrated in theory, we consider there is not strong evidence of gaming in response to incentives in other regimes.

For example, the UK regulators (who have had practical experience with the outcomes under these incentives) have strengthened, rather than reduced, the incentives over time. Furthermore, gaming of incentives is not in the long-term interest of the regulated business if it results in a subsequent withdrawal or weakening of the incentives. Like other well-performing businesses, Sydney Water is committed to working cooperatively with IPART over multiple regulatory periods to improve the regulatory framework to promote a more efficient, sustainable supply of services. We are clear that we see this as being in our interest, but more importantly it is in the long-term interest of customers.

2.3 Pricing flexibility through a WAPC

As our Pricing Proposal states,[29] a weighted average price cap (WAPC) enables us to tailor tariffs to better meet customer (that is, the market's, not individual customers') needs, as a competitive provider would. This leads to allocatively efficient pricing and stronger incentives for end-use efficiency. 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 wish to loss lead. Under our proposal, an opt-in scheme is not needed because customers' interests are protected by IPART's side constraints and on-going oversight.

Sydney Water has proposed to gradually move towards greater pricing flexibility in the upcoming determination period. A business should know its cost structure and customers better than the regulator, and so should be better placed to set more cost-reflective and efficient prices and/or provide higher-valued services. Pricing flexibility also gives a business scope to respond to changing circumstances and costs during the regulatory period. By avoiding unnecessary regulation, pricing flexibility enables more proportionate and better targeted regulation.

Pricing flexibility has been a part of economic regulation in the Australian energy sector and the UK water and energy sectors for about two decades.[30] IPART currently applies a weighted average price cap (WAPC) in setting public transport fares and in regulating retail gas prices.

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[29] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Section 10.8.

[30] We set out experience with pricing flexibility in other industries and jurisdictions in our response to question 28 in Chapter 6. While the AER may be moving towards revenue caps to promote more efficient pricing for electricity distribution services, we do not consider a revenue cap appropriate for Sydney Water. Firstly, we do not consider that customers should bear all demand risk. As a business, we accept the revenue risk from normal deviations from average weather conditions and demand (see our answer to IPART's Issues Paper question 34). Secondly, as set out in Chapter 4, pricing stability (or an indication of future price trends) is important for customers, as they make investment decisions. Under a revenue cap, the business determines the structure of prices within established guidelines, rather than the regulator making those decisions.

In its Issues Paper, IPART indicates that it is open to a model whereby it sets prices for 2016–17 and applies a WAPC to the prices faced by Sydney Water's large, non-residential customers for the rest of the determination period.[31] The WAPC would be accompanied by a pricing strategy and, potentially, pricing principles and side constraints. IPART also suggests an alternative option where it would continue to set regulated prices for each year, but allow Sydney Water to offer (large, non-residential) customers the choice to opt out of the regulated price and opt in to an alternative price combination offered by Sydney Water, under a WAPC.

For 2016–2020, we agree that a WAPC could be used to adjust the prices faced by large, non-residential customers only. We would accept binding pricing principles and side constraints to the WAPC and we anticipate both would form part of the price determination. On this basis, we do not support IPART's 'opt-in' model as we consider that binding pricing principles and side constraints provide adequate protection to large, non-residential customers and the 'opt-in' model would expose us to revenue risk and generate an expectation that a prudent and efficient business would not be able to recover its costs.[32]

We consider that a WAPC applied in this way can address the concerns raised by IPART in its Issues Paper. However, we understand that IPART needs more information from us about how we would use pricing flexibility. IPART may also be uncomfortable committing to a WAPC where prices have not been finalised. We are continuing to engage with our corporate customers and their representatives and will provide IPART with a draft pricing strategy before the public forum.

2.3.1 WAPC coverage

We acknowledge IPART's view that we could provide increased cost reflectivity and value to large, non-residential (or corporate) customers.[33] Accordingly, we would accept applying a WAPC to the prices faced by corporate customers only for 2016–2020. We believe this should address IPART's concerns about potential gaming and abuse of market power (see section 2.3.3 below). Through this we hope to demonstrate that the benefits significantly outweigh the risks and we would look to apply a WAPC to a wider customer base as part of our 2020 pricing submission.

We propose that IPART determine a WAPC for each of our water and wastewater services for these customers. We believe there is potential for increased cost reflectivity and enhanced value to customers in both services, as indicated by the examples we included in our Pricing Proposal (and in our response to question 29 of the Issues Paper – see Chapter 6).[34]

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[31] IPART defines these as customers with a connection or connections greater than a 20mm equivalent.

[32] Regulated prices are set to recover costs. The large non-residential customers would only ever choose to opt out of prices set by the regulator if they expected the different tariff structure would save them money. The subsequent expected reduction in revenue must mean that a regulated business could not expect to recover its long-term costs.

[33] Although we note that our initial research on residential customer preferences suggests that offering three different tariff combinations for water pricing might be appropriate.

[34] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 245-6.

Finally, we note that the revenue we receive from large, non-residential customers is a relatively small part of our overall revenue (at present these customers contribute around 10% of total revenue). This implies that a consequence of limiting the WAPC to the prices faced by these customers is that there is only limited scope to use it to address demand risk.

2.3.2 Pricing principles, side constraints and pricing strategy

A WAPC would be complemented by measures that promote greater transparency about our short to medium-term approach to pricing, and how this will impact customers. These measures are:

- pricing principles and side constraints
- a published pricing strategy.

We anticipate that the determination would specify pricing principles and side constraints, along with the WAPC formula. This will allow IPART to retain control over the types of changes in prices that we would be able to apply in the first period.

Pricing principles and side constraints

While IPART would no longer directly regulate some prices, we would expect it to determine certain measures:

- to promote cost-reflective price structures and levels (pricing principles) and
- that limit sharp increases in prices where the business is moving a price to a more cost-reflective level (side constraints).

In our Pricing Proposal we suggested the following pricing principles: [35]

- Prices should be consistent with the WAPC and any applicable side constraints set by IPART.
- Sydney Water must not show any undue preference towards, or undue discrimination against any customer or class of customer, including potential customers.
- Prices should be based on sound economic principles, having regard to:
    - simplicity and transparency
    - the avoidance and/or minimisation of cross-subsidies
    - the minimisation of price volatility
    - the efficient costs of providing services to customers
    - customers' preferences for price levels and structures
    - the long-run marginal cost of water supply
    - the maintenance of postage stamp pricing.

[35] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 250–1.

- Sydney Water must develop, maintain and publish a pricing strategy that considers these charging principles. Sydney Water shall engage customers, IPART and other relevant stakeholders in its pricing strategy, and review it every two years or at some other interval agreed with IPART.

We support using these pricing principles to set the framework within which we would amend prices. We note that the pricing principles include that we would have regard to the LRMC of water supply. We consider it appropriate for customers to be exposed to the costs of long run augmentation. However, we consider that:

- there is considerable uncertainty in estimating LRMC (and at present it is a resource cost only and does not include network costs)
- customers' responses to prices often require investment in new equipment and processes (that is, not just a behavioural response), so stability of price signals is important. Price volatility undermines the ability to respond and can strand customer investment.
- customer preferences matter, as was recognised by IPART at the last Hunter Water determination where IPART opted for price stability, after considering customer preferences.

We also suggested that the outcomes provided by pricing constraints could be facilitated through pricing principles and our pricing strategy. However, we acknowledge that side-constraints provide an additional level of consumer protection over and above the WAPC itself and binding pricing principles. Accordingly, we would accept pricing constraints in this first determination period.

Our pricing strategy

Price changes under a WAPC will be better understood by customers and stakeholders where they are made within the context of a publicly-available, overarching pricing strategy. A published strategy provides both transparency and certainty to customers and IPART about how we intend to implement the WAPC model of pricing. It allows us to strengthen our strategic commitment to being a more customer-focused organisation. By engaging with stakeholders to develop this approach, we can inform the strategy with their values and preferences.

Over the long term we envisage that our pricing strategy will be a non-binding price path for the determination period. At the outset, the strategy will focus more on describing the process we will use to consult with our customers and establish new price offerings. In particular, our pricing strategy will include:

- our pricing objectives
- how we propose to consult with customers
- how we will set prices, considering any pricing principles and side constraints
- expected price trends.

Pricing objectives

Our pricing objectives will be consistent with our overall regulatory objectives, that is, promoting efficiency, financial sustainability and the long-term interests of consumers.

Consulting with customers

Over the next regulatory period, we intend to engage customers in greater depth and across more issues than ever before, on the issues that matter most to them in water and wastewater pricing. Our customer engagement process will involve:

- establishing priorities
- conducting the engagement and incorporating the findings into our decision making
- communicating the findings and outcomes
- evaluating the effectiveness of the engagement process.

Approach to setting prices

Our approach to price setting will be informed by three factors:

1. The estimated cost of supplying services over the long term (known as the long run marginal cost or LRMC) and the immediate cost of supplying services in the short-term (known as the short run marginal cost or SRMC)
2. Our forecast costs over the coming period
3. What customers tell us they prefer.

In establishing our approach to setting prices we will consider the principles supporting the current pricing for our services (see Chapter 4).

Expected price trends

In terms of our long-term approach to pricing, we would set out the scope, scale and timing of our anticipated changes in prices, along with the rationale behind these changes.

We will develop this pricing strategy by engaging with customers and in full collaboration with IPART and other interested stakeholders. We are currently engaging with our corporate customers and their representatives to develop our initial pricing strategy. We aim to provide IPART with a draft pricing strategy before the public forum.

2.3.3 Considerations raised in the Issues Paper

In its Issues Paper, IPART raises a number of considerations for implementing a WAPC. These include:

- potential for price discrimination
- potential to extract rents
- implications for competition
- complexity and administrative burden
- factors specific to the NSW urban water sector.

We consider each of these in turn.

IPART raises the issue of the potential for price discrimination (and, in particular, 'Ramsey Pricing') under a WAPC.[36] By practising price discrimination, a business can maximise revenue by lowering prices for customers with elastic demand and increasing prices for customers with inelastic demand. However, as IPART recognises, restricting the coverage or application of the WAPC to the prices faced by a small subset of customers automatically restrains the extent to which prices can diverge between individual customers and customer classes. Given the proposed WAPC would only apply to the prices faced by corporate customers we do not believe that concerns over price discrimination are warranted.

IPART also suggests there is an opportunity for a business to extract rents under a WAPC, if it can accurately predict relative changes in demand between customer groups.[37] We recognise that the accuracy of our forecasts of demand and property growth will affect the overall revenue we are able to earn while keeping within the WAPC. If a weighting (based on historical quantities) underestimates the proportion of future revenue attributable to a particular component of prices, customers being charged for that component could legitimately face a higher price than if the weight was representative of future expectations. We could address this concern by including a correction factor or mechanism in the WAPC formula.

In terms of concerns that a WAPC could affect future competition and market entry (in particular if we implemented a 'limit pricing strategy') we believe that restricting the coverage of the WAPC and applying pricing principles and side constraints limits the ability to under-price in potentially contestable areas of the business.

Compliance with the WAPC would be assessed each year by IPART in the same way that compliance with the determination is currently assessed. So, we do not see how the introduction of a WAPC would increase the administrative burden faced by IPART. When we submit our prices each year, we would include an explanatory statement with supporting information on how we derived the prices, how they meet the pricing principles and how they are consistent with the pricing strategy.

For 'sector specific' factors IPART has raised, we agree that pricing flexibility is important to a firm facing competition, but we would also argue that it is important from a societal or overall economic efficiency perspective where there is not competition. A WAPC provides the scope to better mimic competition in its absence. The price offerings we are currently exploring with customers do not require more sophisticated metering than presently exists but will present customers with options that can provide better value for them – as would occur in a competitive market. Finally, we recognise the current NSW Government policy of postage-stamp pricing and the implications this has for applying a WAPC. Maintenance of postage stamp pricing would be one of the pricing principles that would guide our proposals.

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[36] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, pp 101–2.

[37] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, pp 102–3.

We support applying a WAPC to the prices faced by large, non-residential customers in the next determination period. We envisage that the WAPC would be accompanied by binding pricing principles and side constraints, as well as a published pricing strategy. We believe a WAPC could increase the efficiency of pricing and reduce regulatory burden. We would look to broaden our application of a WAPC once we have demonstrated that it is achieving these objectives and that concerns over gaming are not realised in practice.

2.4 Measures to address expenditure and demand risks

There is always a risk when determining a regulated business' revenue requirement that actual expenditure and/or actual demand within the regulatory period will deviate from the forecasts used to derive the revenue requirement. There is also a risk that a major unforeseen event (such as a natural disaster) may occur and adversely affect the business's ability to provide the service and/or its financial viability.

To deal with these risks, regulators have developed a number of tools to ensure that a regulated business has an appropriate exposure to risk, including:

- CPI escalation mechanism
- cost pass-through mechanism
- cost contingency schemes
- intra-period capex review provisions
- ex-post capex review
- expenditure incentive schemes.
- a shorter regulatory period
- regulatory determination re-opener provisions
- a pure revenue cap
- a hybrid price and revenue cap.

Whether or not a regulator will use any of these tools will depend on the nature of the risks the regulated business is exposed to, how significant the risks are perceived to be, who the regulator thinks is best placed to bear these risks, and the relative importance the regulator places on its regulatory objectives.

We have proposed two additional cost recovery schemes to address expenditure risk. These schemes are aligned with regulatory best practice and a common feature in other regulated industries and jurisdictions. We support retaining the existing hybrid price and revenue cap (the demand volatility adjustment mechanism) to address abnormal revenue risk from extreme demand conditions. However we believe that the current threshold at which the mechanism is triggered is too high for the mechanism to have any effect. If the mechanism is to be retained, we believe the threshold should be reduced and specified in the determination.

2.4.1 Addressing expenditure risk – cost recovery schemes

We believe IPART may have misunderstood our proposal for a cost recovery scheme. However, we recognise that our proposal may have been unclear. We do not propose to pass through to customers any outturn costs above our forecasts/expectations. We are proposing 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 (eg AER, Ofwat, Ofgem). We note that IPART has a cost pass-through scheme in place for the SDP, and may adopt such a scheme for transfers from the Shoalhaven in the future.[38] In taking the position to retain the existing cost pass-through arrangements, IPART has fully exposed Sydney Water to risks that are largely beyond our control.

Implications of retaining the existing arrangements

In its Issues Paper IPART states that

> *…cost pass through mechanisms should only be applied in exceptional circumstances and where the business is no better placed than customers to control or influence the likelihood of the event occurring or the size of the resulting cost.*[39]

We agree with this as an objective for applying cost recovery schemes.

We believe our proposal meets this objective and we are concerned about IPART's definition of the circumstances when a cost pass-through mechanism would apply.[40] 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.

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[38] IPART, *Review of Prices for WaterNSW Greater Sydney area from 1 July 2016 – Water – Issues Paper*, September 2015, pp 64-6.

[39] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 94.

[40] Ibid.

- 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 capex program for the next regulatory period, we have assumed the best feasible outcome on environmental regulation.[41] 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 the services to the required standard. In the absence of an appropriate cost recovery scheme, we consider that IPART should include this risk in cash flows on an ex-ante basis (see Boxout 2-3 below).

Boxout 2-3 – Costs of wet weather overflow abatement

As set out in our Pricing Proposal, Sydney Water has been working since 2012 on a potential environmental 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 has committed to submitting a proposal to the EPA by 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
- drives more cost-effective solutions.

[41] That is, our proposed capex is based on the EPA's acceptance of Sydney Water's proposals for the variation of our Environment Protection Licences (EPLs).

The timing of this program is not aligned with our Pricing Proposal. However, the forecast costs included in the submission ($127m, $2015–16[42]) 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 though 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.

We note IPART's view that, under the IPART Act, the determination must specify the costs to be passed through.[43] 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.

2.4.2 Addressing demand risk – demand volatility adjustment mechanism

The current determination incudes a mechanism to adjust our revenue, to address the risk of a material variation between actual water demand over the determination period and the forecast used to make the determination. 'Material variation' is currently defined as more than ± 10% over the whole determination period. Only the impact of a variation outside of this level would be adjusted for.

Under the mechanism we bear demand risk up to the 10% threshold (or deadband), and customers bear it beyond that. As a business, we believe it is appropriate for us to bear and manage the revenue risk associated with normal deviations from average weather conditions and demand. To mitigate the revenue risk from extreme or abnormal weather conditions and demand, we support IPART's preliminary view to retain the existing mechanism. However, we ask that

[42] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 204.

[43] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 94.

IPART consider a threshold lower than ± 10%, but greater than ± five per cent over the Price Determination period.

Setting the appropriate threshold

Based on forecast demand and historical data, we consider it highly unlikely that Sydney Water would trigger the 10% threshold over the determination period, even if restrictions were implemented during the next four years. The table below shows the estimated impact of restrictions on demand and revenue.

Table 2-1 Estimated impact of restrictions

	as % of total demand	as % of revenue demand
L1	4%	5%
L2	8%	9%
Emergency	14%	16%

The estimates suggest that even in an extreme scenario, for example, where storage levels fell rapidly and Level 2 restrictions were imposed for 2017–18 and the highest 'Emergency' level restrictions for 2018–19 and 2019–20, the demand reduction would be nine per cent over the full four years. That is, it would not trigger the ten per cent threshold.

During the last drought it took seven-to-nine years for storage levels to fall from full to 33% (the lowest level before the drought was broken). However, we note that during this period there were times when storage levels fell at a rate equivalent to about 25 percentage points per year. If such a rate were maintained over a period of three years, then the storage level for 'Emergency' restrictions could indeed be reached.

If the mechanism is designed to address abnormal revenue risk from extreme demand volatility, then the 10% threshold over a full determination period is unlikely to be effective. We propose that the threshold be reduced, but be greater than ± five per cent for next determination period. Based on the current high dam levels, we expect that a threshold of ± five per cent will only be triggered if high level restrictions are imposed in the next two or three years. We note that demand variations of minus five per cent would weaken our key credit metrics. In particular we estimate that if actual demand is five per cent less than forecast, our Funds Flow from Operations (FFO)/Debt measure would fall to the lower bounds for investment grade.

We note that, in its determination of Essential Energy's water prices in Broken Hill, IPART did not define a materiality threshold, but left this open to its discretion at the next price review. We do not support such an approach as we believe it is important to provide us and our customers with a greater degree of certainty about the circumstances in which under- or over-recoveries will be passed through. Accordingly we consider that the threshold for the demand volatility adjustment mechanism should be specified in the determination.

2.5 Benchmarking

Sydney Water believes greater use of benchmarking would be consistent with the objectives of increasing incentives and decreasing the intrusiveness of regulation. We support using benchmarking to provide additional information to the regulatory process.

As set out in our Pricing Proposal,[44] in 2011 the Water Service Association of Australia (WSAA) benchmarked Sydney Water for retail 'cost to serve'[45] with 13 other Australian water utilities. Sydney Water had the best performance of the utilities. Although WSAA has discontinued this benchmarking, it provides a snapshot of 2011 and, since then, we have continued to further reduce costs.

We welcome IPART's proposal to do more benchmarking and analysis of productivity trends. Quantitative benchmarking analysis – if carefully conducted and used – can improve the transparency and predictability of regulatory assessments of allowed costs and strengthen the incentives to improve efficiency and so disclose efficient costs. We see this as complementing our proposed EBSS and not as an alternative approach to regulation. Benchmarking alone is rarely used as a means of regulation. In our view, benchmarking, the EBSS and the expenditure review are all part of the one regulatory package.

However, while we support benchmarking in principle, we believe it must be done in the right way. It is important that IPART:

- recognise the inherent limitations of benchmarking models and comparison.
- use a range of models and benchmarking approaches and give weight to them in decision-making according to their relative strengths and weaknesses
- consider the results of benchmarking analysis alongside other qualitative and quantitative information on costs, including actual and projected costs
- use the results of the benchmarking analysis to inform judgements on allowed costs rather than to determine the costs to be allowed
- allow a transition, if it considers large reductions in costs are possible, to ensure we can achieve the proposed cost reductions prudently without creating service risks and limit the consequences of estimation errors.

This approach recognises that:

- we cannot know efficient costs with certainty and the consequences of error are significant;

[44] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 7–10.

[45] 'Cost to serve' is the cost for each billed property for all customer-related water and wastewater services interactions, for example, customer billing enquiries and complaints. Only costs that were common between participating utilities were used, including customer contact, case management, market research and debt recovery.

- the long-term interests of the consumers are best served by strengthening the incentive for efficiency and the continuous disclosure of efficient costs rather than the assumption of efficient costs.

This approach is consistent with other regulators – such as Ofgem and Ofwat – and the requirements of Section 15 of the IPART Act. Section 15 requires IPART to consider 'the cost of providing the services' and 'the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers'.

This supports an approach that focuses on strengthening the incentives to improve efficiency, but considers the costs incurred. Unlike the National Electricity Legislation and rules, Section 15 does not link allowed costs to estimates of efficient costs. It is also more consistent with the recommendations of experts, such as Professors Yarrow and Littlechild, on the role of estimates of efficient costs.[46] An approach that gives sole weight, or too much weight, to estimates of efficient costs would be inconsistent with these requirements.

We raise two other issues about benchmarking in regulation:

- the relationship between a firm's level of efficiency and the regulated rate of return it receives
- the need to adjust for quality when benchmarking the water sector.

2.5.1 Frontier businesses and the regulated rate of return

We would be concerned if benchmarking was used so that only a firm on the efficiency frontier could earn an average rate of return. We believe this is inconsistent with effectively competitive market outcomes, where frontier businesses earn above normal returns for a transitory period, until competition erodes these returns.

The reference points for assumptions on allowed costs and the rate of return must be consistent. In practice, firms are not equally efficient and returns earned by the most efficient and least efficient vary widely.

For a regulated business the allowed returns on debt and equity are based on the market average or typical firm – not the most efficient firm. So, it would be inconsistent to assume a firm is on the efficiency frontier and provide it with the opportunity to earn only a market-average performance if it achieves that level of efficiency. As outlined in our Pricing Proposal, Ofwat allowed companies to earn additional rewards if they were at or close to (within five per cent) the efficiency frontier.[47]

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[46] See Professor George Yarrow, *Advice to AEMC on Rule Change on the Economic Regulation of Network Service Providers*, p 6, available at http://www.aemc.gov.au/getattachment/66d7fa3e-e218-44d0-9c47-41913dd12c8f/Professor-George-Yarrow.aspx and Stephen Littlechild, *Advice to AEMC on Rule Change on the Economic Regulation of Network Service Providers*, p 16, available at http://www.aemc.gov.au/getattachment/21472911-8959-46bd-ae9d-01849deb2d95/Professor-Stephen-Littlechild.aspx

[47] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, p 61.

2.5.2 Adjusting for quality

Finally, we note that a key issue for benchmarking the water sector is that quality adjustments would need to be made. Efficient costs in the sector are affected by requirements on businesses to increase spending to meet water quality standards, drought measures and environmental requirements. For example:

- Water filtration costs are increasing, with changes to the Australian Drinking Water Guidelines (ADWG).
    - Water filtration costs have been increasing since 2011, as a result of significant unforeseen changes to raw water quality, at the same time as changes to the ADWG, which placed a more stringent constraint on plant performance targets.
    - The combined impacts of variability on raw water natural organic matter and turbidity plus sustained high levels of colour have significantly increased treatment costs (in particular chemical costs). We expect that poor raw water quality will affect treatment costs during the next determination period.
    - The new ADWG 2011 place more stringent filtered water turbidity limits which in the short term impact treatment operating costs (chemicals, monitoring, control systems) and in the longer term will lead to capital improvements at water filtration plants. We are actively working on optimising source selection and treatment to reduce operating costs.
    - The ADWG changes also require major upgrades of the Prospect, Macarthur and North Richmond water filtration plants, at an estimated cost of about $150 million. (We anticipate that the majority of this expenditure will be incurred in the 2016-20 determination period.)
- The millennium drought had a major impact on the perceived productivity of the water sector, as investments in desalination plants drove up input costs at a time of decreasing demand. In recent years this has resulted in the water sector appearing to perform poorly relative to other sectors in productivity analysis done by the Productivity Commission.
- In wastewater, tightening the requirements of environment protection licences (EPLs) will increase compliance costs. For example, reductions in the annual mass load limits on pollutant discharges in the EPLs in future would likely increase costs.

The benefits from this increased expenditure, for example improved drinking water quality, increased water security, and reduced environmental impacts, can be difficult to quantify in traditional output terms.[48] However, we must appropriately account and adjust for quality issues like these. Benchmarking analysis must recognise changes in service quality requirements and the impact these have on efficient costs over time.

[48] In the case of environmental impacts it can be difficult to predict if there will be a benefit and there are a number of cases where there has been no discernible change to the condition of the environment after work has been completed.

While we have highlighted the importance of adjusting for quality in benchmarking the water sector, we also note that there are other factors outside the control of management that affect a business's efficiency. These factors include geography, topography, scale of operations, regulatory requirements, ownership and governance.

Sydney Water would be pleased to work with IPART and other stakeholders to do the benchmarking and productivity analysis. Our understanding of the cost drivers of water businesses and the impact of operating environments can help ensure the models are well-founded, reduce the risk of data errors and ensure the limitations of the various models are better understood.

3 Regulatory Application

Key messages

- Sydney Water generally supports the objectives and principles IPART used to assess the existing regulatory framework. We believe that as with modernising regulation, the preliminary views on a number of existing regulations creates a risk that an efficient business would not recover its long-term costs.
- For the regulatory treatment of finance leases, if IPART adopts a RAB-based mechanism it should use the regulated WACC to derive the RAB estimates for finance leases. This avoids a cost of capital or optimisation risk. It ensures that efficient commercial contracts that appropriately transfer risk and provide value to the regulated firm and its customers are not disincentivised in future.
- Regulatory tax for assets free of charge (AFOC) should use our forecast figures in our Statement of Corporate Intent (SCI) based on best practice budgeting processes, not historical averages. In the absence of this IPART risks under-compensating Sydney Water for realistic estimates of our AFOC.
- The $17.1m of additional land acquired for Rouse Hill should be placed on the wastewater RAB. This land was purchased for both stormwater and wastewater management purposes and we also believe IPART's approach is not aligned with government policy.
- For asset disposals:
    - we agree with sharing 42% of the land sales value for pre-2000 line-in-the-sand assets that has been used to supply regulated services from 2000 with customers. However, we believe to the extent customers receive a capital gain via a large discount in their bill, it is appropriate for them to bear some portion of the capital gains tax.
    - we consider there is an asymmetric risk created by IPART's proposed treatment of non-significant write offs to the RAB, where the assets are both long-lived and variable in nature. This class of assets should be excluded from consideration.
- The approach on the Shoalhaven Transfer costs must be the same for both WaterNSW and Sydney Water.
- For the estimate of the weighted average cost of capital (WACC), we believe given the results of a recent RBA study, IPART should consider a 60:40 long-term and short-term combination. Further, based on recent uncertainty in the market, we request IPART provide monthly updates of its uncertainty index calculations in the lead up to the Price Determination.

As with modernising regulation, we believe that IPART's approach to existing regulation has potentially created a risk that an efficient business would not be able to recover its long-term costs. This Section highlights this outcome by examining the risks associated with the regulatory treatment of:

- finance leases (Section 3.1)
- tax in dealing with Assets Free of Charge (AFOC) (Section 3.2)
- the acquisition of additional $17.1m of land in Rouse Hill (Section 3.3)
- asset disposals (Section 3.4)
- Shoalhaven Transfers (Section 3.5)
- the rate of return or weighted average cost of capital (WACC) (Section 3.6).

3.1 Regulatory treatment of finance leases

As expressed in Sydney Water's Pricing Proposal,[49] our first preference for the regulatory treatment for finance leases is for all finance lease payments to be treated as operating expenditure, as this approach will provide a cash-neutral position from the transaction. However, this approach does not align with IPART's preliminary preferred position for regulatory treatment of finance leases.

In our Pricing Proposal, we incorporated an alternative approach to establishing separate water and wastewater RABs for finance lease assets, by discounting future finance lease payments using the prevailing regulatory WACC. This proposed approach pursues financial neutrality from the regulatory treatment of any finance lease arrangements.

In assessing the move from an operating lease agreement to a finance lease, we have adhered to the following principles:

a) The outcome should offer net benefits to customers, that is, customers are better off with these extension transactions.

   We estimated the customer benefits (including quantifiable risks) by comparing the customers' NPV of costs under the base case (i.e. the status quo), to that of the case with the new finance leases in place. This showed the new arrangements have positive NPV outcomes for customers (i.e. the NPV of costs resulting from the extensions is lower than that of the status quo). This means customers would benefit from the new transaction.

b) The outcome from the arrangements should reduce Sydney Water's operational and other risks.

We believe that the renegotiated agreements achieve this objective, noting that a number of risks cannot easily be quantified, such as the operational risks from the deterioration of key assets.

[49] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Section 11.1.3.

The renegotiated outcomes are consistent with these principles. We believe the new arrangements are commercially prudent and will provide positive value to customers. They will also reduce our risks and improve flexibility. So it is appropriate for us to be able to recover the cost of the leases.

We based our proposed regulatory arrangements around ensuring that we recover the renegotiated lease costs and no more. To that end, our Pricing Proposal outlined a few regulatory treatments to recover the costs of the finance leases.[50] We are willing to consider any alternative proposed approaches that will provide us with a regulatory treatment that enable us to recover all efficient finance lease charges and associated costs.

We are concerned that IPART, through its proposed regulatory treatment of using an interest rate implied in a finance lease to discount future finance lease payments, will create a return on capital risk to Sydney Water. This also effectively amounts to a capital optimisation risk. Such an approach will discourage investment and innovative financing methods, which may result in future valued adding transactions not taking place.

The situation arises because the commercial contract in the finance lease is designed to transfer some risks away from customers and Sydney Water. Commercial operators/lessors though are only prepared to accept such risks if they earn commercial rates of return that are typically greater than, and unrelated to, our regulated WACC. This risk premium, embedded in the finance lease interest rate, is not recognised or captured by IPART in its consideration of the regulatory treatment of the finance lease.

IPART is proposing that the value of the RAB should be calculated using a discount rate consistent with the implied interest rate in the finance lease contract, which yields a lower RAB value than that calculated using the prevailing regulatory WACC. This will, in turn, depress our returns, as we are only allowed to earn the regulated WACC on a lower RAB. Such a regulatory treatment would mean that an efficient business entering into contracts that generated value through appropriately reallocating risks, would have an ex-ante expectation that it would not recover costs.

This means, IPART's proposed regulatory treatment of finance leases would potentially disincentivise contracts like we have now, from being entered into in future. There would be a bias away from efficient commercial transactions to remove the optimisation/return on capital risk.

3.2 Tax allowance – Assets Free of Charge (AFOC)

The approach in Sydney Water's Pricing Proposal for estimating assets free of charge (AFOC) in the tax building block calculation, is consistent with the revised approach to forecasting AFOC that we have used since 2012 in preparing our Statement of Corporate Intent (SCI). We have used these revised approaches for annual budgeting and forecasting of tax and AFOC revenue.

AFOC is revenue for income tax purposes and is included by IPART in calculating the regulatory tax allowance. However, IPART raised an issue with our methodology for forecasting the AFOC in the 2016 Price Submission, noting that this has significantly increased the value of the AFOC, compared to the 2012 Determination forecast values and so has increased the regulatory tax

[50] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, pp 287–88.

allowance. IPART indicated it preferred to continue to use the average annual AFOC over the preceding five years to determine AFOC for the 2016 determination.

We consider that IPART's stated preference to continue using historical data would significantly understate the expected outcome.

Our revised methodology, now well in place for the last three years, reflects best practice budgeting based on market intelligence and outputs. This is a more advanced and appropriate method than the historical average. Unlike the historical average, our forecasts take into account current market conditions, which is particularly important given the prevailing favourable economic climate for development.

We based our AFOC forecast for the 2016–2020 period on dwelling projections issued by the NSW Department of Planning and Environment (NSW DP&E). NSW DP&E projections are used consistently as a core input across government for infrastructure planning and forecasts. In addition, we supplement these projections with actual records of connections and lots released, including categorising by region and type.

As a result of this process, our submission already incorporates conservatism, based on market intelligence, resulting in reductions compared to NSW DP&E projections. Our submission correctly reflects our support of the NSW Government's current growth initiative, including major road and rail infrastructure projects.

We also consider our revised methodology to be more equitable, as the cash flows (tax allowance due to AFOC) are aligned with market development rates, rather than a lag adjustment using IPART's methodology.

As actual AFOC have been greater than the 2012 Determination forecast, IPART's current historical average approach has already penalised Sydney Water about $15m in under-recovered tax. We will continue to be penalised if IPART continues to adopt the historical average approach for the 2016 Determination.

3.3 Rouse Hill land charge

IPART introduced the Rouse Hill land charge in the 2012 Determination. It applies to new properties in the Rouse Hill area for five years from when they are connected. As noted in its Issues Paper, IPART established the charge on the principle that costs of future land purchases by Sydney Water for drainage and stormwater management in Rouse Hill should be borne by new residents, seeing as that land is used to protect their properties from flooding. In comparison, IPART allowed costs associated with capital expenditure on drainage-related civil works in the Rouse Hill area to be shared among all of Sydney Water's wastewater customers, as this improves the quality of water entering the Hawkesbury-Nepean River system (which indirectly benefits all of our customers).

In our Pricing Proposal, we proposed to:

- maintain the Rouse Hill land charge at its current level of $249.97 a year in real terms over the 2016 determination period

- allocate an additional $17.1 million of land acquisition costs to the wastewater RAB in 2016–17, due to revised estimates of land required
- extend the recovery period for the Rouse Hill land charge by four years to 2025–26.

IPART's preliminary position is to not allow the allocation of additional land acquisition costs to the wastewater RAB. It has also noted that it will consider the appropriate level and length of time of the land charge as part of this Price Determination.

IPART's preliminary position would more than double the Rouse Hill land charge to $533.70 a year ($2015–16), if Sydney Water recovered additional land acquisition costs from customers, and assuming that IPART accepted our extension of the recovery period to 2025–26. If IPART does not accept our proposals for the land charge, we will need to increase the charge to $637 a year ($2015–16) to recover these additional costs from Rouse Hill customers alone. We do not feel this is in line with Government policy, as demonstrated in 2013 when the Treasurer approved Sydney Water reducing the Rouse Hill land charge to $237 a year from $969 ($2012–13).

More importantly, IPART's preliminary position regarding additional land acquisition costs appears to be based on a view that the land will be used solely for stormwater management, and so should be recovered on a user pays basis by the private beneficiaries of Rouse Hill (or borne as a loss by Sydney Water). This does not take into account the integrated management approach used for wastewater and stormwater at Rouse Hill, to avoid an incremental deterioration in water quality in the Hawkesbury-Nepean River. This approach is explained further below.

3.3.1 Functions of the Rouse Hill stormwater scheme

Sydney Water maintains that we should be allowed to recover the additional costs for acquiring land for stormwater management in Rouse Hill through general wastewater charges. Just like drainage-related civil works, land acquired for stormwater management in Rouse Hill performs both stormwater and wastewater management functions.

The stormwater management scheme at Rouse Hill was a condition of approval for the Rouse Hill Wastewater Treatment Plant. The conclusions in the original 1991 Environmental Impact Statement (EIS) and Determining Authority's Report (DAR) requires us to manage stormwater in a way that mitigates the impacts of nutrients from the wastewater treatment plant on the Hawkesbury Nepean River. The EIS demonstrated that, without mitigation measures, the treatment plant would have an adverse impact on the water quality of Second Ponds Creek, Cattai Creek and the Hawkesbury-Nepean River as:

- water quality in Second Ponds Creek and lower Caddies Creek is completely controlled by effluent from the proposed Rouse Hill wastewater treatment plant during zero or median flow conditions because the creek flow is too low to dilute the effluent
- the distance between the effluent discharge point and Cattai Creek is only 1.5 km and significant improvements in water quality as a result of in-stream purification would not be expected in this short distance.

The EIS focusses on the elements of the integrated approach for wastewater management (artificial wetlands and riffle zones). The DAR provides further details on the required stormwater elements of the proposed pollution control package. This includes establishing wetlands designed to control urban runoff and water quality, dry basins to attenuate peak flows and floodway works.

Appendix A contains an extract from the DAR that refers to the need for an integrated approach to stormwater and wastewater management. We are happy to provide IPART with full versions of the DAR and EIS, if required.

Without an integrated catchment management approach, there was significant potential for urban stormwater run-off in the Rouse Hill Development Area to offset any gains from improved wastewater treatment. Successfully implementing and operating the stormwater measures outlined in the planning approval documents was considered critical to the effectiveness of the management activities (wetlands and riffle zones) associated with the wastewater treatment plant.

To address these potential adverse impacts on the Hawkesbury-Nepean River System, the (then) Water Board formulated a pollution control package for the Rouse Hill Development Area in liaison with the State Pollution Control Commission, Department of Planning, Department of Housing and local government bodies. Key components of this package included:

- integrated management of water supply, drainage and wastewater for the catchment
- run-off management to maintain pre-development quality and quantity through detention basins, sediment traps and wetlands
- tertiary treatment of wastewater with nutrient removal and disinfection using the best current technology
- further treatment of the discharged treated wastewater in artificial wetlands and riffle zones in creeks
- maximum re-use of treated wastewater on open spaces, forests and in industrial areas
- a range of measures to encourage reduced water use.

We have progressively implemented the integrated management approach for wastewater and drainage over time. We continue to do this in line with the development of the Rouse Hill Development Area. So, although we are acquiring the land some 25 years after building the original treatment plant, a primary purpose of acquiring the land is to implement the mitigation measures required by the wastewater treatment plant planning approval.

Accordingly, while we are happy to maintain the Rouse Hill Land Charge at its current level (plus CPI), we feel it is appropriate to recover additional costs from general wastewater customers, as this expenditure:

- is required as a condition of approval for the wastewater treatment plant
- will mitigate environmental impacts exacerbated by flows from the wastewater treatment plant into Second Ponds and Caddies Creeks
- will improve the quality of water entering the Hawkesbury-Nepean River system by relieving pressure on in-stream nutrient removal processes.

We believe our approach appropriately shares the costs of land acquisition between Rouse Hill customers, who are receiving some additional benefits through use of the land for stormwater management purposes, and the general wastewater customer base.

3.3.2 Extending the land charge to June 2026

In its Issues Paper, IPART noted that it will consider a suitable length of time that the Rouse Hill land charge should be levied on new residents.

We are seeking to extend the recovery period by four years as this generally aligns with our current growth projections. Before 2012, growth forecasts indicated that the area would largely be developed by 2022 (based on stages then released under the NSW Government's *Metropolitan Development Plan* program). However, we now believe growth will continue beyond this.

At the time of drafting our Pricing Proposal, our updated forecasts indicated that most of the development in the Rouse Hill area would occur by 2025–26. These forecasts (July 2014) included information from the *Metropolitan Development Plan 2010–11* and the North West Rail Link precinct announcements.

There may be some parts of the Rouse Hill area that will still have capacity for further growth after this time, particularly if they are rezoned in the future. Data we received in August 2015 doubles the possible number of future dwellings in some parts of the Rouse Hill area. This could mean further growth occurs in these areas beyond 2026. We are yet to analyse the impact of this data.

3.3.3 Further information regarding forecast drainage civil capital expenditure

We note IPART's statement in its Issues Paper that it will investigate whether forecast costs for drainage civil capital expenditure in Rouse Hill over 2016 to 2020 represents prudent and efficient expenditure, as these forecasts are much higher than costs incurred during the current determination period. Further explanation of these forecast costs is provided below.

Sydney Water's forecasts for civil capital expenditure for drainage infrastructure in Rouse Hill Development Area over 2016–2020 represents the costs to improve trunk drainage along Strangers and Elizabeth Macarthur Creeks. Before 2009, the Rouse Hill Infrastructure Consortium (RHIC, later known as Australia Water Holdings) acted for Sydney Water to identify and construct trunk drainage works in the area. In this capacity RHIC only completed limited works in these two areas. We have subsequently identified that the trunk drainage is inadequate, causing public safety and stability problems.

During the current pricing period, Sydney Water completed investigations and planning to provide an adequate drainage corridor along Strangers and Elizabeth Macarthur Creeks. The costs forecast for the 2016–2020 pricing period are required to deliver this work.

If the proposed work is deferred, flooding of public roads and private properties and erosion of creek banks will occur. This is incompatible with the urban development imminent near these creek sections, and we will fail in our responsibility to provide effective and efficient trunk drainage services. As development proceeds, the risks posed by inadequate drainage to public safety and environmental protection, including deteriorating water quality downstream, will increase. It will become more difficult and costly to fix the problems, and pose increasingly unacceptable risks to public safety.

3.4 Asset disposal

3.4.1 Asset sales

In relation to land and property disposal we agree with IPART:

- that an appropriate economic principle to apply for asset disposals is one that, to the extent customers have paid for and benefited from the use of an asset, removes the identifiable regulatory value of an asset from the RAB at the time of disposal (indexed for inflation and depreciation as necessary)
- that to the extent customers have not paid for or benefited from the use of an asset, then the value of the asset would not be captured within the RAB and should not to be removed from the RAB at the time of disposal. That is to say, no proportion of the sales value needs to be shared with customers by removing its regulatory value from the RAB.
- in part that, in so far as the business has received benefits from the ownership of any assets that are disposed of[51], the business should also bear capital gains taxation (CGT) obligations arising from those additional benefits. To be clear though we believe only when the business has retained all of the benefits from the ownership of an asset that is disposed of, should the business then bear the full amount of any CGT bill.

Where an asset's regulatory value is not known with great certainty the regulatory value must be estimated. We also agree with IPART that a practical approach to estimate the regulatory value is to apply IPART's proposed ratio of the RAB to depreciated replacement cost (DRC) for the asset as at the inception (line-in-the-sand) of the RAB at 2000. This ratio, which we also agree with, is estimated by IPART to be approximately 0.42.

It is worth noting though that the RAB to DRC ratio (42%) is a 'baseline' estimate of the regulatory value of an asset as at 2000. When the 0.42 is multiplied by the contemporary sales value, we believe it actually over-compensates customers for when the asset is disposed in the future. This is because:

- the relationship between the future sales value of an asset and the implied RAB value is not constant over time, which is what the 0.42 effectively assumes
- the sales value of assets has grown faster by all commonly known measures (estimated at a long-term average annual growth of approximately 4.80%)[52] than the rate of growth of the value of asset in the RAB, which is indexed at inflation

This implies customers are being over-compensated relative to the value they have gained from use of the asset. Customers are sharing in a proportion of the value of ownership of the asset which, in line with the principle outlined above, is value that should be retained by Sydney Water (and shareholders) in its entirely. We believe that to the extent customers receive a capital gain via a larger discount in their bill, it is also appropriate for them to bear some portion of the CGT bill.

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[51] There are benefits that are over and above the regulated revenues paid for by customers, and increases in the regulatory asset base.

[52] Calculated as 4.80% = $(149.8/85.3)^{(1/12)}$, using Australian Bureau of Statistics (ABS), *ABS Residential Property Price Indexes: Eight Capital Cities*, June 2015, Cat No. 6416.0 for Sydney.

Appendix B outlines an approach to estimating customers' over-compensation and expresses the value, on average, as a portion of any CGT obligations. This portion can be expressed as a lower CGT rate to apply to Sydney Water (approximately 24.90%), or as a percentage of any capital gains that should be paid by customers, approximately 5.10% (30% minus 24.90%). The result can be interpreted as customers are over-compensated by an amount equal to 5.10% of the capital gain of any asset disposed of and to be removed from the RAB.

To give these figures a degree of relativity, and making use of the capital gains figures presented by Sydney Water in Table 11.3 of our Pricing Proposal,[53] the total capital gain on the actual and forecast property sales between 2012–13 to 2019–20 is $314.7 million. This results in an overpayment to customers equal to approximately $16.05 million (5.10% x $314.7 million) in nominal terms over the period 2012–13 to 2019–20.

To reflect the over-compensation of customers, or Sydney Water's disproportionate CGT bill paid (relative to its actual value from ownership), we believe an adjustment to revenues should be made. An appropriate adjustment is one equal to customers' CGT bill which was paid on their behalf by Sydney Water. Such an adjustment could potentially be made in the manner suggested by Sydney Water in our Pricing Proposal (Section 11.1.2), or within Sydney Water's cash flow modelling.

3.4.2 Asset sales – Issues for clarification

Our understanding is that CGT obligations from asset disposals are an obligation that arises from non-regulated income (benefits from ownership) and should be paid for out of non-regulated income (profits of sales of an asset less the regulatory value). On this point IPART appears to have suggested that capital gains taxation obligations from non-operational (surplus to the RAB) asset disposals should be paid from regulatory profits we retain[54].

We believe the two possible interpretation of this are that:

- taxation obligations are to be paid for from regulatory profits. If this interpretation is correct, then we believe that this would cause Sydney Water, without considering an 'appropriate' return, to under-recover its costs. It results in an outcome and approach no longer consistent with IPART's principle of Financial Capital Maintenance (FCM).
- Sydney Water should pay CGT obligations from any (non-regulated) profits, as derived from non-operational asset disposals.

We seek IPART clarify the appropriate interpretation.

Sydney Water also seeks clarification from IPART on its views in relation to treating existing assets within the RAB which are intended to be disposed of, but have not yet been disposed of. IPART has raised this as a primary issue putting forward the question:

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[53] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Section 11.1.2.

[54] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 63.

…how and when to remove an asset from the RAB, given that it is no longer used to provide regulated services to customers.[55]

One possible interpretation is that IPART is proposing to remove land assets from the RAB before they are sold or reclassified as non-operational. We believe this would be inconsistent with the RAB roll-forward principles that IPART has adopted and the FCM approach, and needs to be more fully considered and discussed.

If this is intended, then Sydney Water believes that it would represent a very significant change in approach by IPART. Further it would create a significant asymmetric non-systematic risk. This needs to be accounted for either through an adjustment to Sydney Water's cash flow, or if not possible, an uplift to the allowed WACC.

Sydney Water would welcome IPART providing further clarification on its proposed approach to dealing with asset disposals.

3.4.3 Asset write offs

We have concerns about IPART's approach to asset write offs generally.

In the first instance Sydney Water would like a greater level of clarity about how IPART proposes to deal with significant asset write offs.

In terms of non-significant write offs, we believe that by taking the asset value out of the RAB in line with its accounting treatment, it could have an asymmetric impact on an efficient and prudent business that has assets that are both long-lived and variable in life. For example, assets such as water mains and sewer mains that do not reach their final book life will incur a loss, which is not offset by any corresponding gain for those that outlive the book life. We question the appropriateness of the 0.5% threshold used, and/or believe that consideration should be given to excluding assets and/or asset classes that are long-lived and variable in life.

Finally, the above discussion raises the question of how the 0.5% threshold to distinguish between significant and non-significant write-offs was determined.

We seek and welcome IPART providing further clarification on these matters.

3.5 Shoalhaven transfers

Sydney Water promotes the principle that we should pass through costs outside the firm's control to customers, only if they occur. This can be achieved by using an appropriate cost pass-through methodology. Or, if such a methodology cannot be provided for, an ex-ante probabilistic allowance must be made in the cash flow modelling, as IPART did for the Shoalhaven pumping costs over the 2012 determination period.

In principle, we support IPART treating Shoalhaven transfers as a cost pass-through consistent with the approach used for SDP costs. However, given the relatively low magnitude of the estimated costs, the limited price signal from having only a very small price increase (around

[55] Ibid.

$0.02), and the administrative complication of passing these costs through water prices, we would support IPART maintaining the existing ex-ante treatment of pumping costs.

We note that similar proposed cost treatment options were discussed in the WaterNSW's Issues Paper. We assume that once IPART determines a cost treatment method (either an ex-ante probabilistic approach or the alternative cost pass-through methodology) they will adopt the same methodology for both Sydney Water and WaterNSW.

3.6 Rate of return – Weighted Average Cost of Capital (WACC)

IPART in its Review of WACC Methodology completed in December 2013 set out its objective in determining the regulatory WACC as follows:

> *Our objective in determine the WACC is to establish a value that reflects the efficient cost of capital for a benchmark entity. The benchmark entity is a firm that operates in a competitive market and faces similar risks to the regulated business that is subject to our decision.*[56]

Sydney Water has been a strong supporter of IPART's objective in setting the regulatory WACC as expressed in submissions to the above review. The rationale for setting a regulatory WACC reflecting the efficient cost of capital of a benchmark entity is to enable a regulated business to recover its financing costs, that is debt and equity costs, to maintain its financeability and investor confidence.

3.6.1 Appropriate long- and short-term combination of the WACC

In adopting the current methodology IPART developed a consistent set of estimates of the WACC using short-term averages and long-term averages of market data. IPART recognised that while theory may suggest businesses should use current market data (i.e. short-term averages) anecdotal evidence and practical experience indicated that business' estimates of the WACC give significant weight to long-term averages.

We support IPART's approach and consider that it provides a more consistent market relevant approach to determining the WACC. Since IPART's decision evidence from the Reserve Bank of Australia (RBA) has become available to support an even greater weight being given to long-term averages.

Recent research conducted by the RBA provides evidence that private sector companies in Australia estimate the WACC and set hurdle rates for new investment based on the long-term estimates of market parameters. Lane and Rosewall state that:

> *Contacts indicate that required rates of return on capital expenditure, also referred to as 'hurdle rates', are often several percentage points above the cost of capital. More*

[56] IPART, *Final Report Review of WACC Methodology*, December 2013, p 9.

importantly, contacts note that the hurdle rate is often held constant through time, rather than being adjusted in line with the cost of capital.[57]

The paper implies that in the Australian private sector, adjustments to the hurdle rate of return occur with a lag and in-step changes that do not adjust fully for the current market interest rates. This supports greater weight being given to the long-term average WACC rather than the current estimates. It suggests IPART should consider giving greater weight to the long-term averages of market parameters when estimating the WACC.

At the current point in time a greater weighting placed on long-term estimates would increase the WACC, but in future periods it may well result in a lower estimate. We recognise and accept this. Our proposed change is based on evidence, not outcome driven, and we consider IPART should continue to apply the proposed weighting in future decisions unless there is clear new evidence suggesting business give a significantly different weight to long- and short-term averages in deriving the WACCs. In the absence of applying a revised weighting IPART currently risks under-compensating investors for the expected rate of return on investments. This is highlighted in Table 3-1 below, which presents WACC estimates for three different combinations of long- and short-term averages – 50:50, 60:40 and 70:30. In future periods, though Sydney Water acknowledges a 50:50 combination could result in over-compensate investors relative to their expectations.

Table 3-1 WACC estimates with different long- and short-term combinations

Long- and Short-term combinations	Real post-tax WACC
50:50 (LT:ST) IPART estimate	4.82%
60:40 (LT:ST)	4.97%
70:30 (LT:ST)	5.13%

LT: Long-term ST: Short-term

Using IPART's WACC parameter values from August 2015 WACC update[58], we estimate that IPART's WACC estimate based on a 50:50 combination of the long- and short-term averages results in a WACC of 4.82 per cent (real post-tax). Changing the weighting to 60:40 and 70:30 for the long- and short-term averages leads to an increase in the WACC to 4.97 per cent and 5.13 per cent respectively.

3.6.2 Market volatility and adjustments to the WACC

IPART measures market volatility thorough its uncertainty index. This is used for the purpose of determining the appropriate point estimate of the WACC. One of the indices IPART uses to construct its uncertainty index is the S&P/ASX 200 VIX Index (A VIX Index), which is a volatility index that measures investor sentiment and market expectations.

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[57] K. Lane and T. Rosewall, *Firms' investment decisions and interest rates*, Reserve Bank of Australia Bulletin, June Quarter 2015, p 2, available at http://www.rba.gov.au/publications/bulletin/2015/jun/pdf/bu-0615-1.pdf

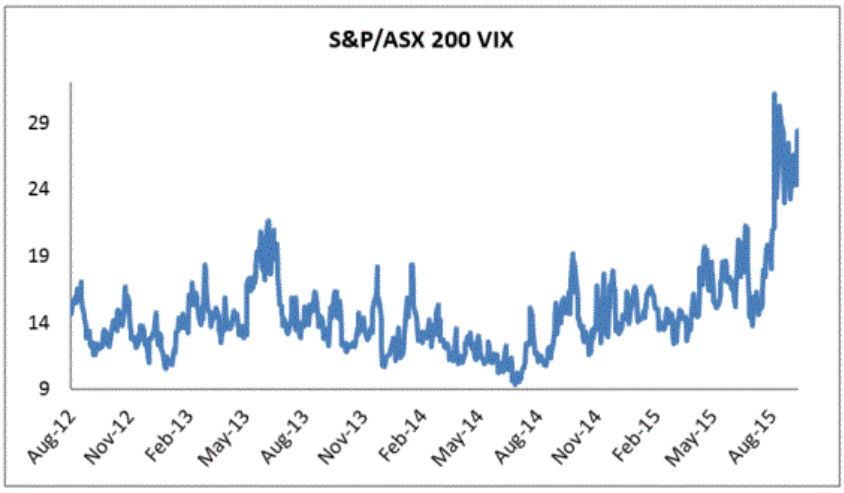
[58] IPART, *Fact Sheet – WACC Biannual Update*, August 2015

IPART's August 2015 WACC market update found no significant volatility in the financial market. On that basis IPART's uncertainty index was within one standard deviation of the long-term average value of zero, IPART set a WACC using the mid-point estimate. In line with IPART's WACC decision rule, this allowed IPART to use the mid-point as the basis of the WACC point estimate.

Figure 3-1 shows that since the IPART estimate, the A VIX Index has risen up significantly. On 30 September 2015, the index was 26.304, and since August reached its 3-year high of 31.185. This suggests there is currently an expectation that the market is becoming more volatile.

If the monthly estimate of the uncertainty index by IPART were to indicate a need for a deviation from the mid-point estimate of the WACC in the coming months of the review period, Sydney Water would appreciate:

- early engagement by IPART given the potential impact on our revenue requirement and our customer bills
- guidance as to how IPART might it makes adjustments to the WACC estimate – i.e. whether it would change the WACC parameter values or cost of equity or debt, or deviate from the mid-point of the WACC.



S&P/ASX 200 VIX	
30-Sep-15	26.304
One Week Ago	26.599
One Month Ago	29.257
52 Week High	31.185
52 Week Low	11.571

Source: http://www.asx.com.au/products/sp-asx200-vix-index.htm

Figure 3-1 S&P/ASX 200 VIX

4 Retail tariff structure and pricing

Key messages

- We support cost-based prices that provide the right signals for efficient investment for customers and Sydney Water. In setting prices it is appropriate to also take into consideration customer preference.
- Our proposed $1.97 per kL usage price for water is within the plausible range of estimates for the long run marginal cost (LRMC), provides the appropriate pricing stability for customers, and is aligned with customers' preferred usage price. We believe it should be preferred to IPART's LRMC estimate which is in the range of $1.12–$1.24 per kL.
- We agree the discharge allowance for wastewater should transition to a 150 kL a year allowance for non-residential customers. However, we are concerned about wastewater usage prices based on short run marginal cost (SRMC). SRMC does not send the right investment signals for customers. We believe an LRMC approach should be adopted and for 2016–2020 the $1.10 price should be preserved.
- A move to stricter area-based charges is not appropriate as property size provides only a proxy for costs. We also believe stormwater services provide community benefits beyond those who directly pay for the infrastructure, and such pricing needs to be considered in 2020.
- Consistent with cost reflectivity and an avoidable cost framework, charges for ancillary and miscellaneous services should not include any indirect corporate overheads.

Sydney Water's objectives for pricing are consistent with our overall regulatory objectives. That is promoting efficiency, financial sustainability and the long-term interests of consumers. Our Pricing Proposal seeks to balance these objectives and set prices that encourage efficient investment decisions.

If the use of water and wastewater services is priced to send efficient investment signals to consumers and suppliers, this will enable efficient investment in water and wastewater efficiency and systems. This focus on investment requires a long-term focus. Investment decisions will not be made on the basis of short-term signals or where prices are unstable or volatile.

This chapter responds to IPART's Issues Paper on retail tariff structures and pricing as follows:

- For water usage pricing, we compare our estimate of the long run marginal cost (LRMC) of water supply to IPART's and set out how we have considered LRMC estimates, price stability and customer preferences in our proposed price (Section 4.1)
- For wastewater pricing, we accept that the discharge allowance for non-residential customers should be reduced to 150 kL a year, however we raise a number of concerns around the potential for wastewater usage to be priced with respect to the short run marginal cost (SRMC) of service provision (Section 4.2)

- For stormwater pricing, we propose to maintain the existing structure of charges, while we comprehensively review stormwater charging for our 2020 price submission. This will consider broadening the basis for levying these charges (Section 4.3)
- We set out the rationale for our proposed approach to allocating costs to miscellaneous and ancillary services, recycled water services and unregulated services (Section 4.4).

4.1 Water pricing

In previous determinations, IPART has endorsed the use of long-run marginal cost (LRMC) of water supply as an appropriate reference point for setting the usage charge (with a fixed component of charges as a balancing item to ensure revenues cover total costs) via the average incremental cost (AIC) approach. Setting prices at LRMC provides a signal about the efficient economic cost of supplying water, so that consumers will only purchase an additional unit of water or invest in efficient water systems if they value it sufficiently to justify the extra costs associated with its supply. Where consumers have invested in efficient water systems or are pursuing efficient consumption, they are focused on the long-run costs of doing so, and are consequently seeking a stable and consistent pricing signal over time when making these decisions.

In this regard, the World Bank has made a recommendation as early as 1977 of the benefits of balancing long-run pricing stability and sending the appropriate pricing signals with the use of LRMC approaches. The World Bank states in regard to the AIC approach particularly, that:

> *It is when capital indivisibility enters the picture that AIC can become more appropriate, for then compromises must be reached between the need to avoid price fluctuations, the need to signal justification of investment, and the need to make best use of existing capacity.* [59]

Despite the reference to AIC by the World Bank, Sydney Water believes that this statement holds true in general when considering all approaches to LRMC. More fundamentally, Sydney Water agrees with IPART that there have been some significant changes since the 2012 price review, meaning that the updated LRMC is likely to be a large magnitude below the current usage charge[60], introducing a degree of pricing instability.

Given this change, Sydney Water also believes IPART's suggestion that a case may exist for a gradual move to the current likely LRMC is possibly an appropriate way forward[61], which maintains a balance between general pricing stability and sending appropriate signals to customers. Our proposed usage price of $1.97 per kL does this. It ensures that the proposed usage charge remains well within the reasonable range for the LRMC while avoiding an excessive degree of pricing instability.

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[59] R.J. Saunders, J.J. Warford., P.C Mann, *Alternative Concepts of Marginal Cost for Public Utility Pricing: Problems of Application in the Water Supply Sector*, World Bank Staff Working Paper No 259, 1977, p 54.

[60] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 142.

[61] Ibid.

4.1.1 Estimating LRMC

Estimating LRMC is not a precise exercise, and the proposed usage charge of $1.97 per kL is only slightly above the average of the estimates of the LRMC prepared by IPART and Sydney Water. Sydney Water's proposal to reduce the usage charge by 14% most appropriately balances pricing stability, the efficient pricing signals and customer preferences. More to the point LRMC is a forward looking concept, calculated with the best inputs and assumptions available at the time of modelling. As a result estimates will always be inherently uncertain; uncertainty is best expressed via sensitivity analysis to ascertain the extent to which changes in underlying assumptions and methods affect the range of LRMC estimates. Via this approach IPART and Sydney Water have independently produced a total range of 112 unique LRMC estimates; derivatives of some of the following choices:

- average incremental cost (AIC) approach or Perturbation approach, or both
- demand forecasts and acceptable variation confidence bound surrounding forecasts
- what types of long-run costs to include and exclude i.e. augmentation, growth servicing drought response costs, costs of water restrictions
- type of augmentation, i.e. new dams, raising dams, desalinisation plant(s) or transfer tunnel(s)
- timing of augmentation – for example, 10, 20, 30, 40 years
- inflows and appropriate models – autoregressive, log-normal or historical
- appropriate system yields – for example, 610, 595, 580GL
- discount rates
- size of perturbation shocks (at differing yield sizes) – 2.5% to 10%.

Estimates and summary statistics are presented in Figure 4-1 .

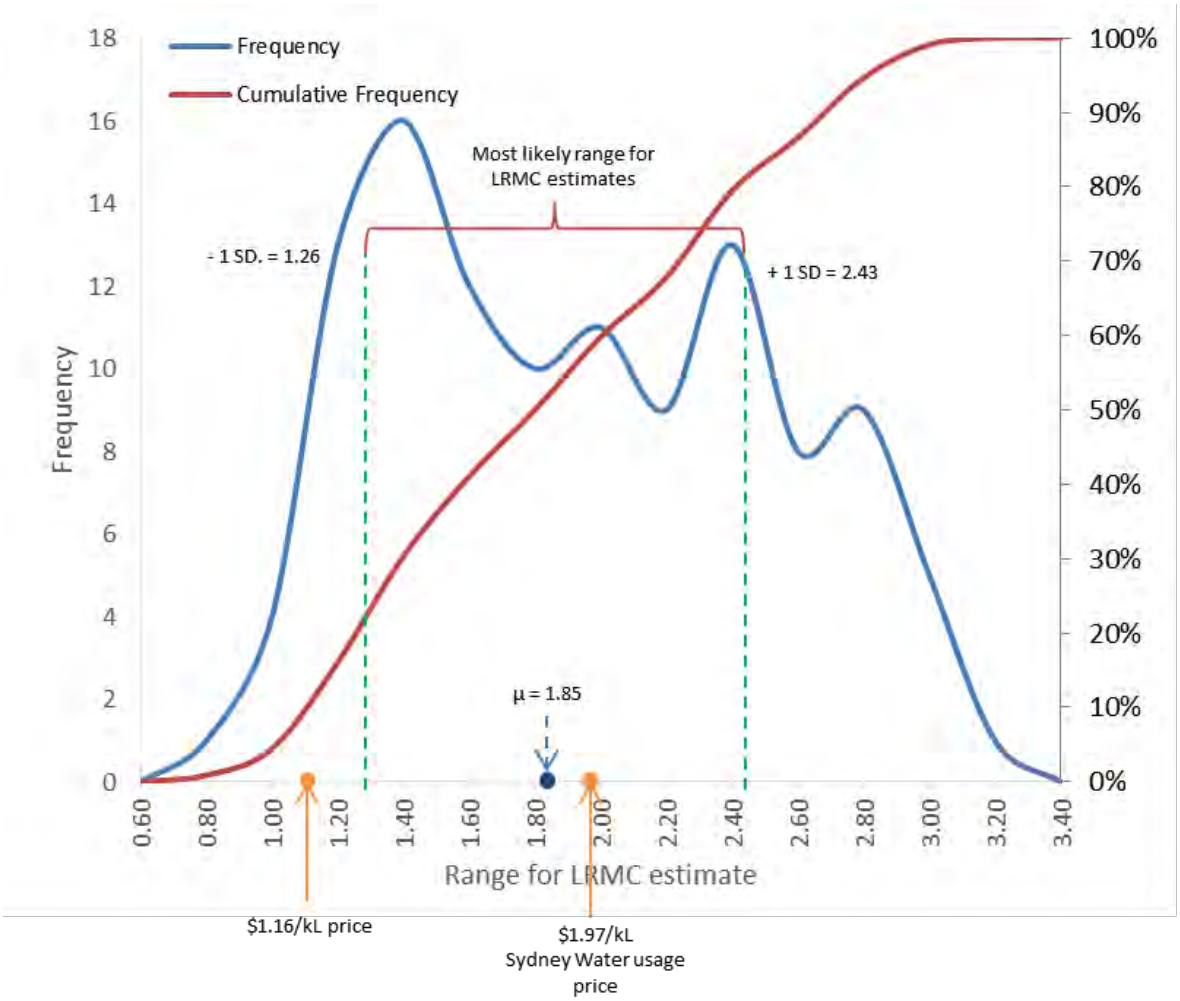

Figure 4-1 Range of likely LRMC estimates

Figure 4-1 illustrates that the range (0.66 per kL to 3.20 per kL) of unique likely LRMC estimates generated is large, with an average of $1.85 per kL and 1 standard deviation of approximately 0.59.

The broad conclusion which can be drawn from the above analysis is that the Sydney Water preferred $1.97 per kL LRMC estimate is a good representation of the likely range of LRMC estimates, given the underlying uncertainty associated with LRMC estimates. IPART's range of LRMC estimates from $1.12–$1.24 per kL, lies outside the lower end of our likely range of LRMC estimates.

As noted in our Pricing Proposal[62], both Sydney Water's and IPART's range of LRMC estimates potentially systemically under-estimate the LRMC. As stated in our proposal, we questioned the efficacy of the LRMC estimates given they were based on the total cost of the bulk water supply, and did not include any network costs.

[62] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Section 10.8.

That aside, based on our analysis we believe that both Sydney Water's and IPART's estimates also do not take into consideration the costs to society of water restrictions. However, where IPART's LRMC model and estimates differ is that IPART's estimates explicitly consider lower demand associated with restrictions, but conversely does not appear to explicitly take into account the associated higher costs[63]. These costs can be significant. For example, Professor Quentin Grafton in 2010 reported that the cost of water restrictions per household for Sydney was approximately $150 (assumed to be annually), relative to having a higher usage price.[64]

We believe both costs are not insignificant relative to customers' bills, and suggest that at best IPART's preferred range of LRMC estimates of $1.12 to $1.24 per kL is likely to be systemically downward biased.

4.1.2 Price stability for customers

Using the LRMC of $1.97 per kL as the basis for the usage price, has the advantage of ensuring long-term pricing stability is maintained. It is much closer to the current $2.29 per kL usage price than the $1.18 per kL midpoint LRMC estimate of IPART. We believe stability is important as without it customers cannot be confident in using usage price signals to make the appropriate long-term efficient decisions about their own investments in water saving devices. We also believe that a very low variable usage price has the potential to create equity issues across our customer base.

Table 4-1 contrasts the outcomes for customers under:

- the current pricing of $2.29 per kL
- if a $1.16 per kL usage price was applied, which was at the lower end of our LRMC estimate, and in the $1.12–$1.24 range estimated by IPART's LRMC modelling
- the $1.97 per kL usage price, which was our proposed pricing.

Table 4-1 Annual bill impacts of different usage prices

Customer Type	Average Usage (kL/yrr)	Current $2.29/kL	SWC Proposal $1.97/kL	% Diff. from Current	IPART* SWC Baseline $1.16/kL	% Diff. from Current
Apartment	160	$470	$414	-11.9%	$474	0.9%
Single Dwelling	200	$561	$493	-12.2%	$520	-7.3%
Single Dwelling	220	$607	$532	-12.4%	$543	-10.5%
Dwelling	350	$904	$788	-12.9%	$694	-23.3%
Service Charge		$104	$99	-4.9%	$288	178.2%

* The mid-point of IPART's suggested range is $1.18/kL $1.16/kL is considered sufficiently close to IPART's estimate for conclusions to be broadly appropriate.

[63] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 226, and footnote 528.

[64] Q. Grafton, *Regulating Water for Cities: Balancing Supply with Demand*, presented at ACCC Regulatory Conference, 30 July 2010.

Table 4-1 shows:

- Sydney Water's proposed usage price of $1.97 per kL provides:
    - for an approximate 12% total bill ***decrease for all*** customer types
    - ensures an equitable bill reduction across all customer groups
    - avoids a large increase in the fixed service charge
- A $1.16/kL usage price provides for an uneven bill impact between customer types with:
    - 'apartment' bills increasing by approximately 0.9%, while customer types which consume the most water (Single Dwelling – 220 and Dwelling) experience the largest bill decreases with 10.5% and 23.3% respectively.
    - a 178% increase in the service charge.

Sydney Water has concerns about both the inequitable impacts on customers, and potentially large increases in demand which might occur should by adopting a usage price of $1.16 per kL (or IPART's midpoint LRMC estimate of $1.18 per kL).

Based on IPART's customer survey, customer types which consume less water, all else equal, are generally also lower income households. IPART has stated that:

> *A higher income household is likely to use more water than an otherwise similar household with a lower income. We found that each additional $10,000 of annual income (before tax) is associated with additional consumption of roughly 2 kL per annum (Table 7.2).* [65]

Adopting either a $1.16 or $1.18 per kL usage price will result in a greater than $1 decrease in the usage price. This is a significant step-change. We believe that such a large reduction in the usage price will potentially bring about significant increases in demand. At worst this will result in unnecessary long-term stress on Sydney's water supply.

4.1.3 Customer preferences

Sydney Water believes the outcomes of our customer research involving sampling over 1,000 customers, reproduced in Figure 4-2 below, demonstrates that a substantial proportion of our customers preferred usage prices in the range of$1.90–$2.30 per kL. There was much less support for a price of $1.20 per kL, which is in the range of IPART's LRMC estimates. A key preference of customers was to have higher usage price, as they perceived it provided greater bill control.[66]

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[65] IPART, *Determinants of residential energy and water consumption in Sydney and surround, Regression analysis of the 2008 and 2010 IPART household survey data: Electricity, Gas and Water — Research Report*, December 201, p 73.

[66] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Chapter 3.

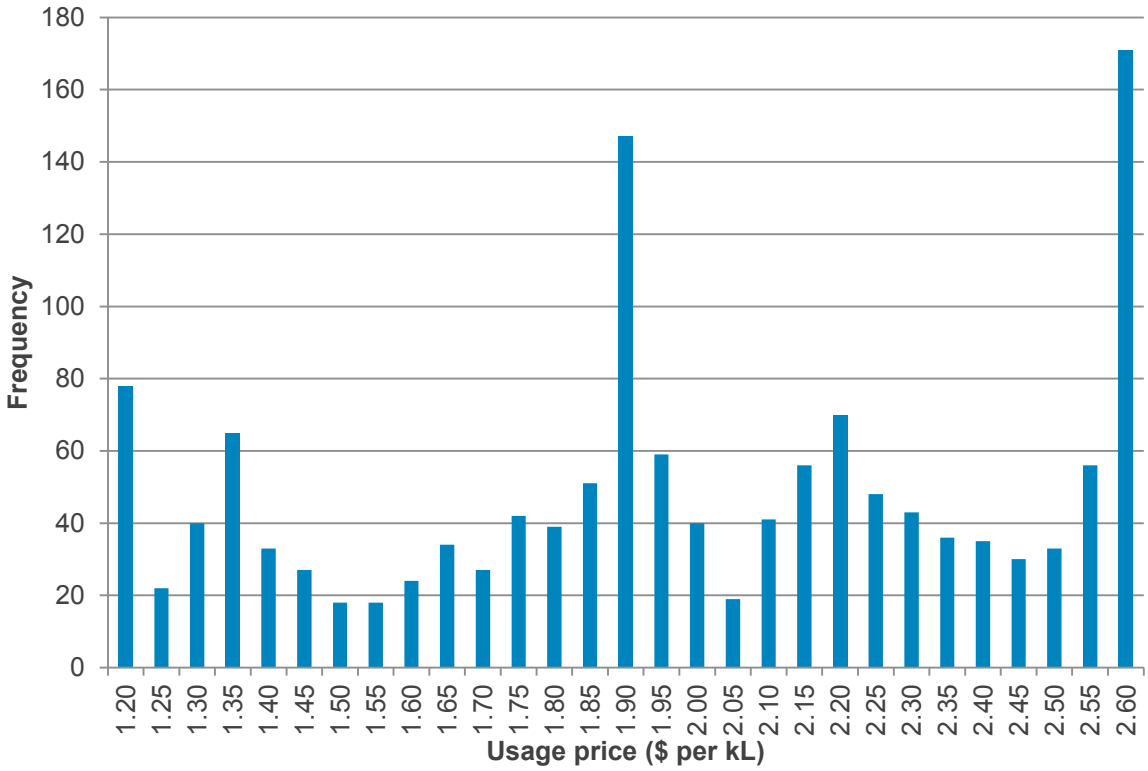

Figure 4-2 Outcomes of customer research on preferred usage price

IPART has previously used customer preference as a basis for setting prices. In determining Hunter Water's 2013-17 usage price IPART had regard to customer preferences, stating that:

> *For this review, we took account of customers' preferences to have greater control over their bills at each step of our process in setting prices. We consider that we have met customers' requests for higher usage charges and lower service charges to the greatest extent possible, whilst also applying our pricing principles.* [67]

The incorporation of customer engagement and preference into the business plans of water utilities has become an increasing focus of Ofwat. Utilities plans for delivering water and wastewater services are now more than ever being driven by what their customers, the environment and society want, now and in the future.[68]

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[67] IPART, *Hunter Water Corporation's water, sewerage, stormwater drainage and other services – Review of prices from 1 July 2013 to 30 June 2017 Water — Final Report*, June 2013, p 34.

[68] Giles Stevens, Director Ofwat, "Customer engagement in the UK water sector – how the latest price review changed the game, reflections on the experience and what the future holds", presentation at the ACCC Regulatory Conference, Brisbane 7 August 2015.

4.2 Wastewater pricing

At present a wastewater usage charge applies to non-residential customers who exceed a specified discharge allowance. In Sydney Water's Pricing Proposal, we proposed fixing both the discharge allowance and the usage price at current levels. That is, retaining a discharge allowance of 300 kL a year and a wastewater usage charge of $1.10 per kL.

IPART's preliminary view is to continue to reduce the discharge allowance to 150 kL a year, which makes it commensurate with the amount of wastewater discharge deemed to be implicit in the residential service charges. IPART will further consider the current level of the wastewater usage charge (and whether it should be further transitioned towards SRMC) during the price review.

We accept that the discharge allowance for non-residential customers should continue to transition down to 150 kL a year, though we are concerned about using SRMC as the basis for wastewater usage pricing.

4.2.1 Discharge allowance for non-residential customers

In its 2012 Determination, IPART assumed that an average annual discharge for residential customers of 150 kL a year was implicit in the residential wastewater service charge. IPART indicated that it would continue to transition the discharge allowance in non-residential service charges down to the 150 kL a year level.[69]

For this determination, Sydney Water has proposed harmonising the 20mm wastewater service charge across residential and non-residential customers.

To be consistent with this proposal, and avoid cross-subsidies between residential and non-residential customers, we accept that the discharge allowance for non-residential customers should continue to transition towards 150kL a year.

We propose adopting the current approach, where the threshold is reduced by 50 kL a year, meaning we would reach the threshold in 2018–19.

4.2.2 Wastewater usage price

In its Issues Paper, IPART contends that it prefers SRMC as the basis for the wastewater usage price.[70] IPART will consider whether the current level of $1.10 per kL is appropriate or whether it must transition more towards SRMC (last estimated by IPART to be about $0.25/kL).[71]

According to IPART, its 2012 decision to base wastewater usage pricing on SRMC was made in the context of postage stamp pricing. It considered that LRMC pricing for wastewater within a postage stamp regime has limited signaling capacity, because (as wastewater catchments are diverse and numerous) changes in usage in one catchment may not affect capacity in another.

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[69] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 122.

[70] Ibid. p 150.

[71] Ibid. p 149.

We do not agree with this, as we believe wastewater services should be priced to send efficient investment signals to customers and suppliers. We are concerned about the potential for the wastewater usage charge to further transition towards SRMC. In particular we note that:

- Locational specific costs and postage stamp pricing are not unique to Sydney Water. They apply to other water businesses and energy networks (where the cost of meeting demand across the network could be different but the same price is charged). However, there are few precedents for using SRMC. LRMC or fully distributed pricing models are the dominant practices (see Boxout 4.1 below).
- IPART's SRMC pricing rule results in a systemic underestimation of efficient prices over time, as it does not contain a long-term pricing signal. In principle under an SRMC pricing rule, prices would vary over time and locations, as capacity constraints are approached. However, IPART's rule effectively assumes that there are no constraints anywhere at any time, no requirements for increased quality and no growth.

We further note that, to service greenfield growth over the next 50 years and assuming current standards in our environment protection licences (EPLs) are maintained, we will need to undertake additional investment to provide wastewater services that will cost about $2.5 billion. The Environment Protection Authority (EPA) is currently considering tightening EPL load requirements for wastewater systems in the Hawkesbury Nepean catchment to the 2014-15 levels, which are 200% below the current load caps for nitrogen and phosphorous. If this were the prevailing approach to licensing our loads over the longer term, to meet this would require engineering solutions involving reverse osmosis at all plants. The capex costs over 50 years to provide these additional services could more than double (that is, to about $6 billion), along with a doubling of annual opex (from $115m to $230m).

We also believe that, if the usage price for wastewater is charged with reference to discharge factors applied to water use, it does not make sense for IPART to set this price on a different basis to the water usage price. We acknowledge that with postage stamp pricing an LRMC rule will not accurately measure marginal costs in each region and in each period. However, it provides a system-wide average, which will better approximate the average marginal cost of service over time than a SRMC estimate, which is based, purely on marginal operating costs in the absence of constraints. We consider that an LRMC for the overall network can be estimated.

Finally we note that, given consumers' responses to prices require investment in equipment and process (to change use and discharge patterns), stable long-term signals are more relevant to consumer decision-making than short-term potentially volatile signals.

Boxout 4–1: Cost models for wastewater charges

The concept of basing wastewater charges on LRMC has been recognised in other jurisdictions. For example, a 2014 report by Sapere Research Group for Essential Services Commission of South Australia found that "the concept of LRMC is relevant to sewerage services".[72]

A 2012 report by COVEC for Watercare found that:

> *Efficient wastewater pricing therefore is likely to involve:*
>
> - *a volumetric charge based on the LRMC of wastewater treatment*
> - *a connection charge or fixed annual charge for new customers, to reflect the additional network costs that these customers impose*
> - *a fixed charge across all customers to generate revenue equal to the difference between the total revenue requirement and that raised from the volumetric and connection (or other fixed) charges.*[73]

COVEC reviewed the wastewater tariffs applying in Australia, the US and the UK and found "[p]ricing at SRMC appears to be explicitly adopted in NSW only."[74]

In its 2005 *Inquiry on Urban Water and Wastewater Pricing*, the Economic Regulatory Authority (ERA) of Western Australia found that:

> *The usage charge for commercial wastewater services should be adjusted over time to reflect the estimated LRMC of increasing wastewater services to the Perth metropolitan area.*[75]

Sydney Water's proposed approach

We propose maintaining the wastewater usage charge at its current level of $1.10 per kL. We believe the way we charge for wastewater services as a whole should be reviewed, so it seems prudent to avoid large changes in prices now, when a future review may suggest a different approach to pricing. We also believe detailed customer engagement with customers to reveal their preferences for wastewater charging would be necessary and desirable before material price reform.

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[72] See Sapere Research Group, *LRMC of SA Water's Sewerage Services, June 2014*, p 16, available at http://www.escosa.sa.gov.au/library/20150128-Water-InquiryReformConsultantReport-LRMCSAWaterSewerageServices-Sapere.pdf

[73] COVEC, *Wastewater Pricing: Theory, Practice and Lessons for Auckland, October 2012*, p 8, available at http://covec.co.nz/wp-content/uploads/Covec-Wastewater-Tariffs-Overview-Paper-Final-Report.pdf

[74] Ibid, pp 18–21. In the US wastewater charges are required to be proportional to the full cost of service.

[75] ERA, *Final Report: Inquiry on Urban Water and Wastewater Pricing*, November 2005, p 97, available at https://www.erawa.com.au/cproot/5144/2/Final%20Report.pdf

We propose to complete our review of wastewater pricing for our 2020 pricing submission and like what we have done for water tariffs, we will seek customer feedback on the structure and level and charges. As part of this review, we will examine using LRMC as the reference point for wastewater usage charges (as we consider it is an appropriate reference point for both water and wastewater usage charges).

We will also consider whether a wastewater usage charge would be appropriate for residential customers. We acknowledge that introducing a wastewater usage charge for residential customers may more closely reflect the user pays principle and give these customers even greater control over their bills. Something our online survey of customers on water tariffs suggested was an important consideration for them.[76] However, we also note there are difficulties with implementing this type of approach, as discharges are not metered. If we are to consider introducing a wastewater usage charge for residential customers, we must do this carefully and with appropriate customer consultation.

4.3 Stormwater

As part of the 2012 Determination, IPART introduced a system of 'property-area-based' stormwater charging, under which the size of a property determines the price paid. IPART asserted that larger properties place greater demands on the stormwater system, and should therefore pay more, which would make area-based charging more equitable than the charging arrangements existing at the time.[77]

In our Pricing Proposal, Sydney Water proposes retaining the existing structure of charges and reducing all charges by 2.9%, with a view to considering stormwater charging more broadly for the 2020 determination.

In its Issues Paper, IPART questions whether stormwater charges should be further transitioned towards more strict area-based charges. We do not support such an approach at this stage. Property size is an important factor in demand for stormwater services, but it is not the sole determinant. It is not apparent that a more strict application of area-based charging would increase the cost reflectivity of these charges.

IPART also forms the view that stormwater costs should not be recovered from the broader base of water and wastewater customers. Given the benefits of stormwater services (reduced risk of flooding and improved water way health) extend beyond the customers currently paying for them, we consider that it is appropriate to examine broadening the stormwater customer base. This will form part of the work we undertake on stormwater pricing for 2020.

4.3.1 Level of charges in the next determination period

IPART notes that apartments and small non-residential customers contribute around 20% stormwater revenue while representing around 10% of billable area. Conversely the largest non-residential customers contribute between 10-15% of stormwater revenue while representing

[76] Sydney Water, *Our Plan for the future: Sydney Water's prices for 2016–20*, 30 June 2015, Chapter 3, Section 3.5.

[77] That is, a single residential charge and a single non-residential charge.

around 20% of billable area. On this basis, IPART suggests that it may be more cost reflective and equitable to impose more strict requirements for area-based charging. We do not agree with this conclusion, as property size is only one of many factors that determine an individual property's contribution to overall costs. We believe IPART risks setting a charge that is not necessarily cost reflective.

Stormwater cost drivers

The primary aim of stormwater management is to prevent flooding. Therefore a key driver of stormwater costs is asset capacity. The size (and capacity) of Sydney Water's stormwater assets, and hence capital costs, is driven by the amount of runoff to be drained during major storms.

Key relevant facts that should be considered in the pricing of stormwater services are:

- area is not the sole determinant of stormwater flows and capacity costs attributable to a property
- stormwater flows are not the sole driver of stormwater costs – a number of the costs do not vary with stormwater flows.

Area-based charging assumes that the size of a property correlates with its share of stormwater costs. This is true to some extent, as the size of each individual property is a contributor to overall catchment size, which ultimately determines the size (and hence cost) of the assets for that catchment. However it is a far from perfect proxy for stormwater costs.

Within each stormwater catchment the asset capacity for each property is driven by a number of factors. The size of the overall catchment is key, as this influences the total runoff that must be drained during storms. Other factors, such as typical rainfall characteristics in the location, topography, slope, and soil type, layout and proximity to natural watercourses, also influence the amount of runoff generated. For example, three properties of the same size may receive equal rainfall, yet direct different amounts into Sydney Water's systems due to varying factors such as:

- whether they are near the top or bottom of the catchment (that is, close to trunk assets, and already receiving additional flows form higher properties)
- whether they are on a hill, and the slope of the block itself
- the presence of any natural waterways which runoff may drain to.

This means that the contribution to costs of each property could be quite different, even if they are the same size. Size is not the sole determinant of the costs to service a property. The contribution of each individual property does not depend solely on size, it depends on factors like the extent of vegetation, extent of impervious surface (which has links to pollution loads), land use and property management (litter and silt levels may differ greatly between residential and business properties, grassed and concreted properties, or properties undergoing construction).

The relationship between property size and operating costs is also not clear. The costs for maintenance and desilting/emptying activities are largely fixed and do not vary with the amount of run-off in storms.

We do not consider that a stricter application of area-based charging will lead to better cost reflectivity, given the number of factors that impact the costs of providing stormwater services over and above property size. In our view the current charging arrangements are appropriate for the

next determination period, that is, continuation of a 'simplified/smoothed' area based charge where residential properties are grouped into single premise dwellings and multi-premise dwellings, and non-residential properties are grouped into four bands with those over 10,000m^2 having a charge linked to their property size.[78]

We consider that this is an appropriate balance between the potential cost signals provided through area-based charges and the practicality of disaggregating the current charging bands further. This is consistent with the view taken by IPART in its Issues Paper for the 2012 Determination that 'a "pure" property size-based charging system that provides a unique charge for every individual property would be difficult to justify'.[79]

We note that the stormwater prices proposed in our Pricing Proposal did not take into account the revenue received from vacant land receiving a stormwater service. Sydney Water has re-modelled the prices for stormwater with the appropriate treatment of vacant land. The revised stormwater prices (which are now slightly lower) are summarised in Appendix C.

4.3.2 Future broadening of the stormwater customer base

As set out in our pricing proposal, Sydney Water's stormwater areas are generally in the CBD and Inner West of Sydney. Many people in Sydney use these areas for work and recreation, not just those who live there. This means our services benefit a much larger proportion of Sydney's population than those who directly pay for them.[80] This raises the question of whether the wider community that benefits from the infrastructure should pay some contribution towards it, rather than just the local beneficiaries. Stormwater investment also contributes to improved waterways that can be enjoyed by the wider community.

In its Issues Paper, IPART indicated that it does not support spreading stormwater infrastructure costs across water and wastewater customers. IPART claims it has developed a funding approached based on a hierarchy where:

- preferably, the impactor/risk creator should pay (including where government agencies are risk creators)
- if that is not possible, the beneficiary should pay (direct beneficiaries before indirect beneficiaries)
- as a last resort, taxpayers should pay.[81]

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[78] We would maintain the arrangements for the non-residential low impact charge, equal to the 200m^2-1000m^2 non-residential band, where the property meets the criteria determined by Sydney Water.

[79] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 51.

[80] For example, a significant investment in stormwater infrastructure is being made at Green Square to mitigate flooding. Flooding at this site could impact rail services across Sydney and transport to the airport, so prevention of such an outcome benefits a much wider community.

[81] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper* September 2015, p 156.

This is in contrast to the last Price Determination, during which IPART stated with respect to stormwater pricing that it had:

> *…taken account of the community benefit that accrues equally to all of cleaner waterways, rivers and beaches.* [82]

We propose maintaining the existing level of stormwater charges while we comprehensively review stormwater charging for our 2020 price submission. This review will include investigating the potential to broaden the stormwater customer base in the future if wider community benefits are experienced.

We have started engaging with customers on this issue. Customer engagement and feedback will be a major input into our proposal on stormwater charges in 2020. We have already used focus groups, an online survey of over 1,500 customers, and a deliberative forum (see Boxout 4–2 below) to engage with customers.

Through these approaches we have found that there is a very limited knowledge of stormwater among customers, that is, how it works, is provided and paid for. However, there is a strong sense that stormwater is part of the basic 'basket of government services'. Customers see significant value in the recycle / re-use aspects of stormwater, and probably more so than in water sensitive urban design in and of itself. In broad terms, from our enhanced customer engagement we found that:

- flood prevention is a key priority for customers
- waterway health is also important
- customers are willing to pay for stormwater services, even when they are in areas not being serviced by Sydney Water, and even where they were initially opposed to this approach.

[82] IPART, *Review of Prices for Sydney Water Corporation from 1 July 2012 – Final Report,* June 2012, p 123.

Boxout 4–2 Deliberative forum on stormwater charging

We used a method called deliberative democracy with a citizens panel of 23 representative customers, who were selected to get a diverse range of views. A third of the panel customers were known to be 'for' and two-thirds' against' broadening the base for stormwater charging.

Deliberative democracy is a research tool used to discuss really complex issues. It aims to arrive at informed decisions that represent the consensus of the community. There were three topics we raised with the panel:

1. We explored the current idea of area based charging (currently, if you live in a stormwater area, you pay a stormwater charge)

2. We talked about what they value in relation to stormwater services

3. We discussed their willingness to pay.

Interestingly, after the panel had a clear understanding about the issues, the panel's views shifted. The vast majority of the group said they felt we all benefit from stormwater infrastructure, even those who do not live in the area, so charges should be spread across the customer base.

The panel said they valued flood mitigation ahead of other important issues such as water quality and local amenity, including water sensitive urban design. They would be willing to spend money on this, but it was conditional. They want Sydney Water to build a more trusting relationship with customers and community, which means we also need to be more transparent. They want to be confident that money is being spent in the right way and on the right things. They want to be kept informed about how the money is being spent, and they want to know outcomes.

The citizen's panel was a big step for Sydney Water and provided an important opportunity to test the customer value proposition and potentially inform longer term business plans.

4.4 Cost allocation

For costing and pricing purposes, Sydney Water generally defines its costs within its business into three levels:

1. **Directly attributable:** These costs can be directly traced to the delivery of a service. For example, the staff and chemical costs associated with operating an individual wastewater treatment plant. It would also include any capital equipment dedicated to delivering the service.
2. **Pooled:** These are costs to deliver a group of defined services. For example, the costs associated with planning of all of Sydney Water's wastewater treatment plants.
3. **Common:** These are costs (generally corporate function costs) of delivering all services. For example, Board costs.

Pricing and costing are quite different notions. Pricing refers to the process of determining a figure at which products or services will be exchanged in the market place, whereas costing involves determining the value of resources consumed in the producing goods or providing services. The role of costing in pricing is to act as a benchmark against which we can make pricing and production decisions.

We have generally adopted the incremental or avoidable cost principle in setting prices for our 'non-core' services.

Incremental costs can be usefully defined as incorporating 1 and 2 above. That is, they would include all directly attributable costs, plus an allocation of any pooled costs at a divisional level. Including an allocation of pooled costs could be considered as being more than is needed to justify avoidable costs. However, it may be that over time, the size of total pooled costs is partially determined by the 'non-core' services. Including these pooled costs in the costing equation directly links the "non-core" services and pooled costs.

Sydney Water uses these principles in setting the prices for its miscellaneous and ancillary, and recycled water services. IPART has in the past, through its 2012 Price Determination and the September Issues Paper, has raised its concern that we have not allocated corporate overheads to recycled water schemes and its miscellaneous and ancillary charges. Its view is that our approach causes other customers to cross-subsidise these costs.

We could, in addition to incremental costs (costs including pooled divisional overheads) allocate a proportion of our fixed corporate overheads under a 'full cost absorption' method to our 'non-core' services. However, we do not consider this to be appropriate because:

- corporate overheads exist to manage the sizeable core-regulated services and do not increase at all if non-core services are produced and sold as well. It is worth noting that the non-core services in question make up only 1.02% of all our revenue, which is so small so as to have no impact on corporate activity. Looking at this question in reverse, corporate overheads would not decrease if non-core services were to cease, so there is no driver to increase them for such a marginal activity. There is little basis for allocating any part of these costs to non-core services aside from accounting convention.
- this would be inefficient for our business, leading to distorted decisions, based on costs related to average rather than marginal activities. In general, this sort of approach will discourage profitable activity.
- we note that over time, some of these miscellaneous and ancillary services or products may move from being non-contestable to contestable, so pricing these services on a fully distributed cost basis, with potential cost increase of 20% to 25%, may create a distorted price for us later in a competitive market.
- Sydney Water's proposed approach is consistent with requirements under the *Competition and Consumer Act 2010*, to act in a competitive manner. Our non-core services (such as recycled water and other unregulated services) are subject to competitive neutrality obligations. To comply with these obligations, we must charge prices for these services that at least recover 'incremental costs', including commercially acceptable profits. We also note that in 2001 the *New South Wales Treasury Guidelines for Pricing of User Charges – TPP 01-02* recommended that agencies:

…should set the price of a good or service, sold in a competitive market, at a level that at least recovers the avoidable cost of its production. Avoidable costs are those that would be avoided if a good or service is not produced.[83]

These obligations set a floor price for services, based on avoidable costs. That price is the competitive price. It would be counter-intuitive to force us to set prices higher than that level by allocating a part of fixed overhead to these products, and encourage inefficient entry, at the expense of the economic efficiency, consumers of these products, and the reasonable commercial interests of Sydney Water.

[83] New South Wales Treasury, *Guidelines for Pricing of User Charges*, Policy & Guidelines Paper TPP 01-02, June 2001, p 4.

5 Wholesale access pricing

Key messages

- We believe a reasonable price cap reflective of the average retail 'cost to serve' (retail associated costs) for the Australian water industry is a three per cent reduction from the total price, including fixed charges per end use customer and usage charges.
- Sydney Water supports IPART's proposal to address the issue of pricing for wholesale services as part of the 2016 Pricing Determination.
- We believe the access framework in the Water Industry Competition Act 2006 (WICA) is a valid long-term approach to supporting efficient entry and maintaining postage stamp pricing through the use of 'retail minus avoidable costs plus facilitation costs' (RMAC) pricing.
- However, we recognise some parties remain uncertain about the scope of WICA and the services it covers. A temporary wholesale access price cap determined by IPART will foster greater certainty in the market place. This is good for customers, licensed retail suppliers of water and/or wastewater services under WICA (secondary water utilities) and Sydney Water.
- Sydney Water supports RMAC as the most appropriate pricing methodology as it promotes efficient competition within the context of retail prices set on a postage stamp pricing basis. Whether secondary water utilities are considered access seekers or wholesale customers, a RMAC pricing methodology is appropriate.
- We are happy to recommence work on a voluntary access undertaking, if it would contribute to certainty.

Sydney Water has always taken a constructive approach to providing wholesale services and we have never refused a request for access. We have a number of commercial agreements with secondary water utilities to provide wholesale services for on-selling.

We support IPART's position that wholesale prices should be based on the retail price minus avoidable costs (the RMAC) as it promotes efficient entry, is consistent with access pricing principles under WICA and the approach determined by the Australian Competition and Consumer Commission (ACCC) for access to declared wastewater networks. This section discusses:

- stakeholder consultation (Section 5.1)
- the importance of setting the right price in a postage stamp price context (Section 5.2)
- the RMAC methodology, including the ACCC's determination (Section 5.3)
- a suggested wholesale price cap based on the average retail 'cost to serve' (Section 5.4)
- our proposed way forward (Section 5.5).

In its Issues Paper, IPART uses the term 'wholesale customers' to refer to WICA-licensed "utilities that buy drinking water and/or wastewater services from Sydney Water and then on-sell water and/or wastewater services to end use customers".[84] In our response, we have used the terms 'wholesale customers' and 'access seekers', as this latter term is consistent with WICA, federal competition law and general practice in other monopoly industries subject to competition.

5.1 Stakeholder consultation

Introducing a wholesale price cap is a major step change for the NSW urban water industry. This is an area of interest for many different stakeholders, including public and secondary water utilities, other agencies and industry organisations.

Experience from other industries where regulators have made decisions regarding third party access pricing (for example, telecommunications markets) suggests that this issue can create a lot of tension, especially if decisions are not well understood by affected parties.

Given stakeholder interest, our main concern is that engagement is open and transparent. We support IPART's recent announcement to hold a separate forum on this issue on 8 December 2015. We encourage IPART to maintain an open dialogue with affected parties in the lead up to the Draft Price Determination.

5.2 Setting the right price

Sydney Water operates under a postage stamp pricing framework which effectively confers a universal service obligation on us. This framework, administered by IPART, ensures the efficient overall costs to service the community are shared equally by customers, even though the cost of servicing different locations within our area of operations differs greatly. Postage stamp pricing reflects the average cost of servicing customers within our area of operations. It is a system of socially equitable geographic averaging that ensures that:

⇒ the same types of customers

⇒ pay the same price

⇒ for the same service.

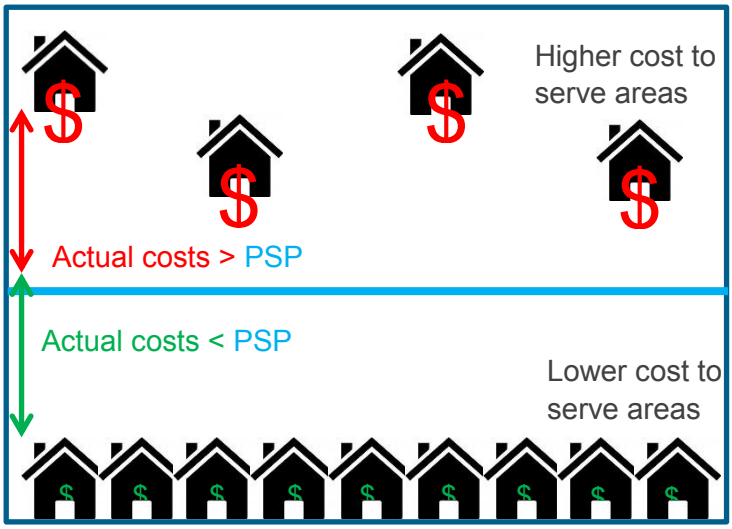

Figure 5-1 How postage stamp pricing works

[84] IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper*, September 2015, p 180.

Low cost to serve areas are typically inner city or infill areas where there is an ability to leverage off existing capacity and to take advantage of economies of scale and density. High cost to serve areas are typically new growth areas that have (currently) low levels of demand, less economies of scale and density, and require high upfront capital and ongoing operational costs relating to new infrastructure.

Where the postage stamp price is above the cost of providing services in any region or part of the network, the profit earned from that region subsidises areas where the postage stamp price is below the cost of providing services.

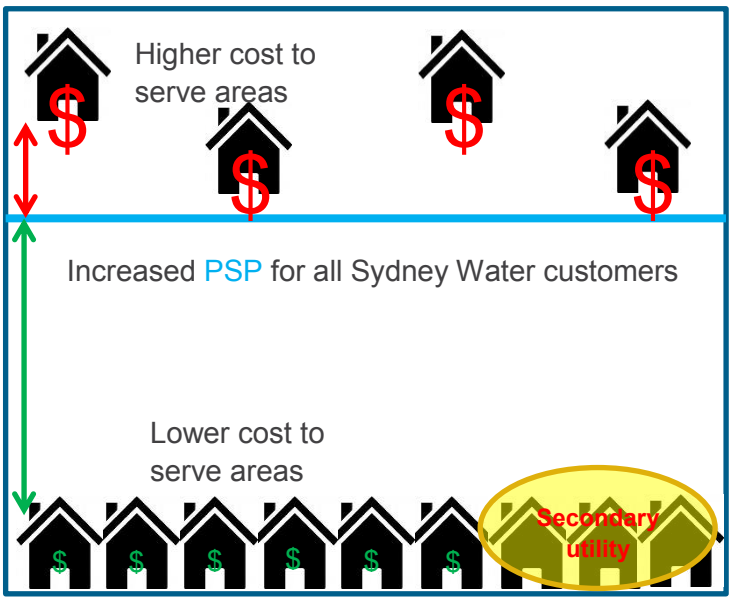

Figure 5-2 How an inefficient access price can inflate the postage stamp price for customers of the incumbent provider

Sydney Water's total network costs across all areas remain broadly the same when customers are serviced by a secondary water utility **and** that secondary water utility still requires access to our infrastructure. This is because the network must be sized to cater for peak demand/capacity to be able to supply an end-to-end service.

If a secondary water utility provides services to customers in a low cost to serve area **and** if a contribution to postage stamp pricing is not made through an appropriate access price, the wider Sydney Water customer base bears the additional costs and pays higher prices (see Appendix D). This is because there are less customers to share the total costs of expanding and operating the network. The result of this incorrect wholesale access price is a distortion in the market, with a perverse commercial and economic outcome: market entry and retail competition that does not drive prices downwards or encourage efficient entry. This results in customers being subject to higher prices or shareholders bearing the negative financial impact through lower returns.

The pricing principles under WICA's third party access regime require the access provider (that is, the incumbent public water utility) to set access prices in a competitively neutral way that is consistent with the "maintenance of postage stamp pricing". This means any access seeker (secondary water utility) must be able to make an appropriate contribution towards postage stamp pricing through the access price it pays, so as to retain the benefits that a postage stamp pricing provider provides for the entire community and still be efficient enough (weakly or strongly)[85] to

[85] Weak competitive neutrality is a short-run concept which achieves static efficiencies (production) and where an entrant is at least as efficient as the monopolist, but has a preferred pricing strategy. Strong competitive neutrality is a long-run dynamic concept in which an entrant is or can be more efficient that the monopolist and also retains an advantageous pricing strategy in a winner takes all retail pricing competition. N. Economides and J.W. Lawrence, 'Access and Interconnection Pricing: How Efficient is the 'Efficient Component Pricing Rule'?', Antitrust Bulletin XL (3), 1995, pp 557–579.

remain in business. The framework set out in WICA is consistent with other legislation, such as federal competition law, and frameworks used in other industries with monopoly infrastructure, such as telecommunications and electricity.

An insufficient contribution to postage stamp pricing from an inappropriately set wholesale access price would not promote efficient entry and effective competition, as it would allow access seekers to cherry pick customers in low cost to serve areas.

The challenge with introducing competition to a postage stamp pricing environment is that entrants will generally only target profitable regions. If the wholesale or access price does not allow Sydney Water to recover its efficient costs and induces inefficient new entry, over time this raises the postage stamp pricing for our remaining customers. Effectively, this results in a transfer of public money to fund inefficient private sector investment and entry. This can lead to ever increasing prices and inefficient entry. There is the potential for an inefficiently set wholesale access price to create “the death spiral” as seen in the energy industry (see Boxout 5–2 below). We must avoid inappropriate access charges that, combined with our universal service obligation, lead to increased charges for our customers, and exacerbating social disadvantage.

We do not feel it is appropriate for Sydney Water customers to be contributing to privately serviced schemes, due to a wholesale price that allows arbitrage opportunities for secondary water utilities. This potential situation is outlined in Figure 5-3.

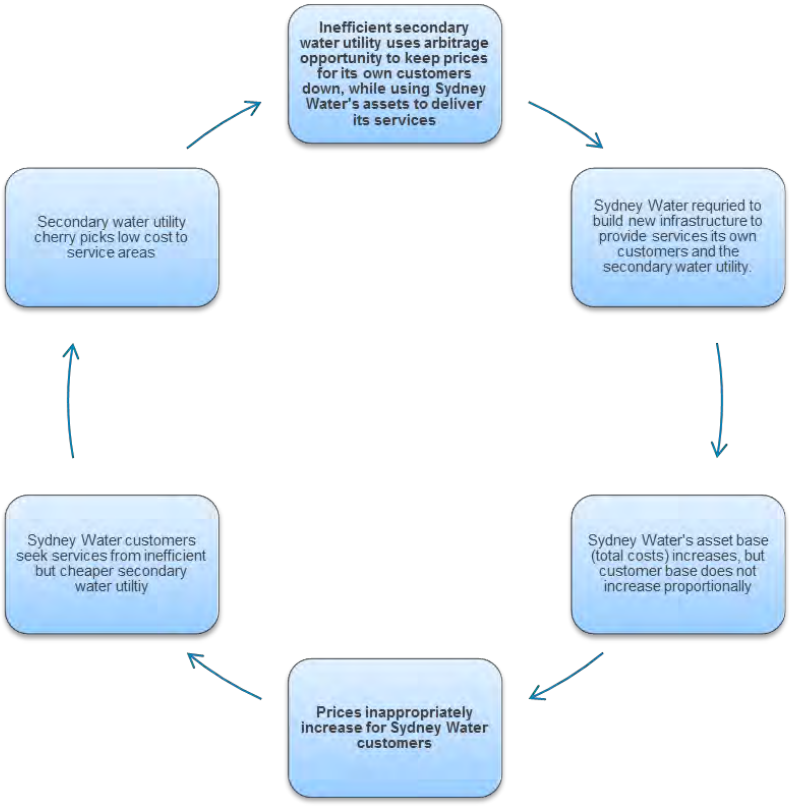

Figure 5-3 How inappropriate pricing can lead to negative outcomes for Sydney Water customers

Boxout 5–2 “Death spiral” of price increases for Sydney Water customers as a result of access seekers being charged an inappropriate access price

The energy sector death spiral

The concept of the death spiral in the energy sector exists where a utility builds new equipment based on peak demand rates and increases its prices to cover the investment in new infrastructure. The resulting rate increase leads to customers using less energy, forcing the utility to increase prices further.[86]

This situation can be compounded by government subsidies that induce customers to install solar PV systems. These customers use less energy again but are still connected to the grid and rely on it for their peak demand requirements.[87] As the electricity network is designed to manage peak demand, the utility must continue to invest in new infrastructure and further increase their prices accordingly, leading to further decreases in the customer base.[88] The circular nature of this predicament has led to it being labelled the ‘death spiral’.

5.3 Retail minus methodology

In its Issues Paper, IPART notes four alternative methodologies that could be used to set wholesale prices.

Sydney Water agrees with IPART’s preferred methodology, RMAC, as it is consistent with the access pricing principles under WICA and the approach determined by the ACCC for access to declared wastewater networks. Whether secondary water utilities are considered access seekers or wholesale customers, a RMAC methodology is appropriate.

The access pricing rules under WICA were designed to avoid perverse competitive outcomes. A RMAC approach for access pricing encourages market entry by more efficient entrants and prevents inefficient businesses from being able to “cherry pick”. RMAC pricing also ensures the integrity and preservation of postage stamp pricing, as entrants are effectively making the appropriate contribution to fund servicing in the higher cost areas (in lieu of this contribution being collected through retail prices).

This methodology is supported by underlying well established general economic principles, as outlined by economists Baumal[89], Willig[90], and Armstrong, Doyle and Vickers[91] (see Appendix D).

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[86] P. Simshauser and T. Nelson T, ‘The Energy Market Death Spiral – Rethinking Customer Hardship’ in *AGL Applied Economic and Policy Research,* 2012, Working Paper No. 31 – Death Spiral, pp 1–34.

[87] L. Wood and R. Borlick, ‘Value of the Grid to DG Customers’, *IEE Issue Brief*, September 2013, Updated October 2013.

[88] K.G.H. Baldwin, B. Chapman, U. Raya, ‘Using Income contingent Loans for the Financing of the Next Million Australian Solar Rooftops’, *CCEP Working Paper 1508,* The Centre for Climate and Economic & Policy, the Australian National University, August 2015

[89] R.D. Willig, “The Theory of Network Access Pricing”, *Issues in Public Utility Regulation*, H. M. Trebing (ed), Michigan State University Public Utility Papers, 1979.

Sydney Water also engaged Adrian Kemp from HoustonKemp Economists to provide his independent and expert opinion on what pricing methodology should be used to set wholesale access prices for access to Sydney Water's network. The complete report can be found at Attachment 2.

In this report, HoustonKemp supports RMAC as the most appropriate methodology as it:

- promotes efficient wholesale access where retail prices are set on a postage stamp pricing basis
- avoids cross subsidies between customers served by the wholesale access seeker and those served directly by Sydney Water.

Section 5.3.1 below outlines the decision by the ACCC in its determination on the access dispute between Sydney Water and Services Sydney Pty Ltd regarding an appropriate access price methodology. Sydney Water supports the ACCC's determination that the most appropriate access price is one based on the RMAC methodology.

5.3.1 ACCC determination on access prices for declared wastewater services

In December 2005, the Australian Competition Tribunal declared transport services provided by the North Head, Bondi and Malabar wastewater systems open to third party access. The declaration gives third parties the right to negotiate terms and conditions for access to the declared services for the provision of wastewater transport.

In early 2006, Sydney Water commenced negotiations with Services Sydney Pty Ltd (Services Sydney) on access to these declared services. The parties could not come to an agreed position on the appropriate access price methodology. In response, Services Sydney sought arbitration by the ACCC on the method for pricing access to the declared services. Each party proposed a different pricing methodology:

- Services Sydney proposed a building blocks plus methodology
- Sydney Water proposed a retail minus methodology.

The ACCC released its final determination in July 2007 which supported Sydney Water's position.

The ACCC determined that the charge per end use customer payable by Service Sydney should be calculated using a **retail minus methodology, plus costs attributable to facilitating access to the declared system**[92] (emphasis added). The methodology "for determining the per customer access charge is to be Sydney Water's retail price for sewerage/wastewater services relevant to each customer as determined (from time to time) by the Independent Pricing and Regulatory

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[90] W.J. Baumol, "Some Subtle Issues in Railroad Regulation", *International Journal of Transport Economics* 10, 1983, pp 341–55.

[91] M. Armstrong, C. Doyle and J. Vickers, "The Access Pricing Problem: A Synthesis", *Journal of Industrial Economics 44*, 1996.

[92] ACCC, *Access Dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, Arbitration report, 19 July 2007.

Tribunal, minus the avoidable costs for Sydney Water as a result of suppling the declared sewerage transportation services"[93].

The ACCC noted that the access price must include a contribution to postage stamp pricing.

The 2007 determination was the first application of access pricing in the water and wastewater industry in Australia. In determining the methodology the ACCC "had regard to the structural features of the sector, including that Sydney Water is a vertically integrated supplier with regulated retails prices set on a geographically uniform basis"[94]. It also considered the complexities that may be involved in applying pricing methodologies.

The ACCC decided that the RMAC plus facilitation cost methodology was the most appropriate methodology for a number of reasons including[95]:

- "A key consideration in the determination of the general access pricing methodology is that it should promote efficient entry such that the access seeker and vertically integrated service provider will compete on merit". [96] Using a RMAC methodology that uses avoidable costs, rather than avoided costs, best achieves this.
- Excluding a contribution to postage stamp pricing would not promote efficient entry and effective competition as it would allow Services Sydney to cherry pick customers, which may result in:

  pricing disparities between customers in the east and west of Sydney… [T]his would be undesirable to the extent to which there is public interest in having equity in prices across different geographic regions serviced by Sydney Water.[97]
- The bottom-up approach used in the electricity industry does not fit with the water industry as Sydney Water is vertically integrated and subject to full price regulation.
- A methodology that results in prices that deter efficient entry would be against the interest of all those with rights to use the service. A RMAC methodology provides access seekers with certainty regarding the scope for profitable entry into the market, and lead to firms being driven to innovate, reduce costs and improve productivity.
- A price that allows cherry-picking may adversely affect Sydney Water's ability to "recover the costs associated with its investment in its sewerage network, and may therefore not promote economically efficient investment in these assets".[98]
- "IPART is obliged to consider economic efficiency under the IPART Act in determining Sydney Water's retail prices, and as such IPART would have regard to the extent to which the retail price structure promotes allocative efficiency."[99]

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[93] Ibid, p 1.

[94] Ibid, p 2.

[95] ACCC, *Access Dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, Final determination and Statement of reasons, 22 June 2007.

[96] Ibid, p 52.

[97] Ibid, p 53.

[98] Ibid, p 55.

- A RMAC methodology for access pricing will incorporate the incentives for Sydney Water to reduce costs or improve productivity that results from IPART's regulation of Sydney Water's prices, in particular a CPI-X approach.[100]

5.3.2 How Sydney Water will calculate the RMAC

The wholesale access price would be calculated by subtracting the efficient avoidable costs from the relevant postage stamp price and adding any additional extra costs of providing access (facilitation costs).

Boxout 5–4 summarises how we would calculate the wholesale access price. An illustrative example is also provided in section 5.5.

Boxout 5–4 RMAC methodology

Retail minus avoidable costs methodology

The RMAC methodology is calculated as follows:

Access price = Retail price – Avoidable costs + Facilitation costs

Where:

Retail price =	Sydney Water's charges relevant to each customer as determined (from time to time) by IPART[101] - also known as the 'postage stamp price'
Avoidable costs =	the costs that Sydney Water would otherwise incur in providing the part of the service that could be avoided if it completely ceased providing that part of the service[102]
Facilitation costs =	the costs directly attributable to facilitating access services[103]

[99] Ibid, p 58.

[100] Ibid.

[101] Access Dispute between Services Sydney Pty Ltd (Access Seeker) and Sydney Water Corporation (Access Provider), Final Determination under Section 44V, 6 November 2006, plain English paraphrase of determination paragraph number four.

[102] In line with Access Dispute between Services Sydney Pty Ltd (Access Seeker) and Sydney Water Corporation (Access Provider), Final Determination under Section 44V, 6 November 2006, plain English paraphrase of determination paragraph number four.

[103] In line with Access Dispute between Services Sydney Pty Ltd (Access Seeker) and Sydney Water Corporation (Access Provider), Final Determination under Section 44V, 6 November 2006, plain English paraphrase of determination paragraph number four.

5.4 Wholesale price cap

In its Issues Paper, IPART proposes setting temporary wholesale water and wastewater price caps to apply until IPART approves a voluntary access undertaking covering the wholesale services or prices have otherwise been agreed between the incumbent and the wholesale customer.[104]

Sydney Water proposes that a reasonable price cap to apply to all wholesale customers (secondary utilities) across all products (water and wastewater) is the relevant retail price minus three per cent, with this deduction representing average cost to serve or retail operating costs for the water industry.

A flat price cap would be simple to apply across all schemes as an interim measure until a voluntary access undertaking is submitted by Sydney Water and approved by IPART. IPART suggests that the price cap would reflect "avoidable costs from retail services (for example, on-selling of water and wastewater service)"[105], noting 10% as an example reduction for these types of costs.

Instead, we recommend using the WSAA industry benchmark figure for retail 'cost to serve' costs. This provides transparency as it has been derived from an Australian wide, water industry study. The definition of retail 'cost to serve' in the *Customer Service Performance Improvement Study 2011* included:

- account management
- metering
- billing
- customer contact (including self-serve channels) and
- payments,

for water, wastewater and stormwater drainage services.

WSAA's 2011 study involved 16 water utilities throughout Australia, ranging from utilities serving fewer than 100,000 to those serving over 500,000 connected properties. It found that the average retail 'cost to serve' was $31 per customer. Sydney Water was found to be the industry leader at $18 per customer ($2010–11). In 2013–14, we internally estimated that this cost was $22 per customer, which we still consider current.

We feel that three per cent would be a reasonable deduction to represent avoidable retail costs, given an average Sydney Water residential customer bill for water and wastewater is about $1,000 ($1,114 for 2016–17 in our Pricing Proposal).

This figure of three per cent is supported by our submission to the Productivity Commission in 2010, as part of its review of the Australian urban water sector. We noted that a feature of the

[104] IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 – Water – Issues Paper*, September 2015, p 188.

[105] Ibid p 186

supply chain generally not appreciated outside the industry was that the retail cost component of the supply chain was very small.[106]

Figure 5-4 below illustrates the proportion of retail associated costs within Sydney Water's supply chain for urban water and wastewater services.

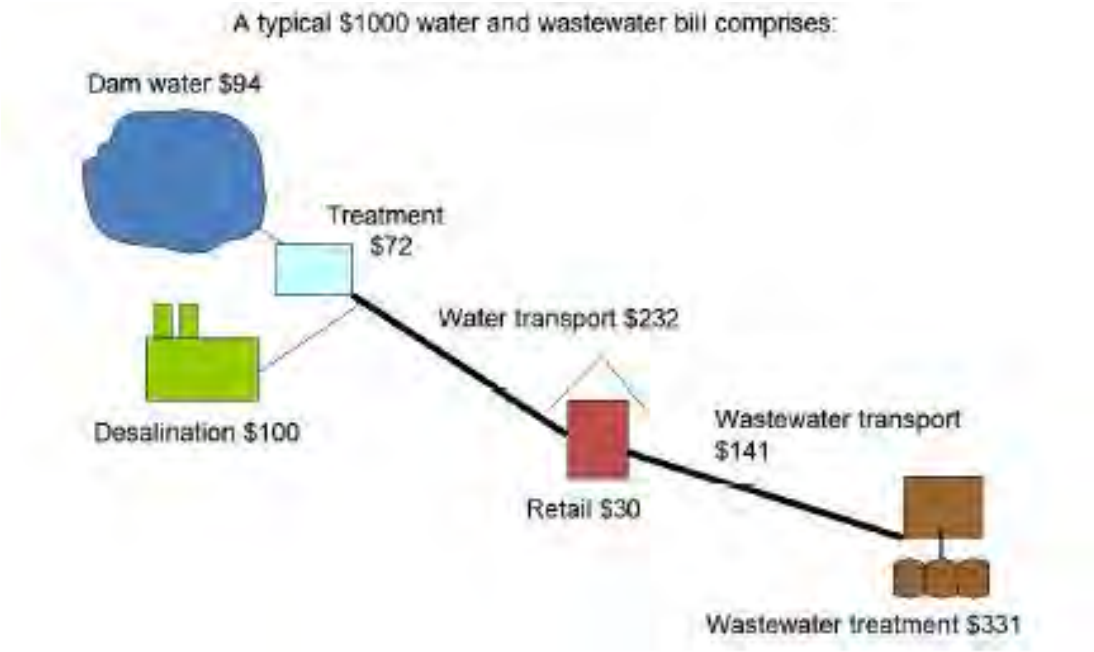

Figure 5-4 The supply chain cost for the cost of water for Sydney in 2010

Another point of reference we also considered was retail operating costs in recent energy price determinations. For example, in 2013, IPART's final report for electricity charges[107] determined that retail operating costs for electricity were about $100 per customer a year, which equated to five per cent of an average customer electricity bill at the time ($2,000 a year). These costs did not include customer acquisition and retention costs.

We feel that three per cent is a more appropriate figure to use as a representative deduction for retail operating costs in the water industry, in line with the WSAA water industry study referenced above.

The deduction for avoidable costs from retail services should be subtracted from the total bill for the service provided to the access seeker (that is, both fixed charges per end use customers and usage charges). We have included a worked example of how the price cap could be calculated below.

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[106] Sydney Water, *Australian Urban Water Sector – A submission to the productivity commission*, November 2010, p 8.

[107] IPART, *Review of regulated retail prices and charges for electricity Final Report*, June 2013, p 221.

Sydney Water acknowledges that such an interim price cap would not take into consideration other avoidable costs that are scheme specific. We believe this is balanced by the price cap also not taking into account facilitation costs directly attributed to facilitating access to monopoly infrastructure that Sydney Water would bear.

Also, any differences between the regulated 'price cap' and the actual avoidable costs could be dealt with by a back-dating mechanism once an undertaking is approved by IPART. This is discussed below.

5.5 The way forward

If it would contribute to certainty, we are open to progressing voluntary access undertakings for both water and wastewater services. We note that these undertakings would then be subject to approval by IPART, in accordance with Division 5A of WICA.

In 2012, Sydney Water lodged a draft voluntary access undertaking for potable water to IPART who provided comprehensive feedback on the undertaking. Due to there being low demand for access at the time, coupled with the significance of some of the issues raised by IPART, we chose not to finalise the undertaking or to seek IPART's approval at that time. However, as interest in access has re-emerged we would be open to progressing these undertakings, pending the outcome of IPART's decisions on wholesale pricing issues as part of this determination.

The preparation of a voluntary access agreement is likely to be a resource intensive exercise. We believe it would likely take around 18 to 24 months for us to prepare, consult on and seek approval of voluntary access undertakings for our water and undeclared wastewater services.

Given this, we agree that setting an interim wholesale price cap will increase certainty for industry, while also providing sufficient time to develop a robust access undertaking. The concept of interim charges is supported by the ACCC who argues that interim determinations may be appropriate if there is likely to be a lengthy time between the notification of a dispute and the final determination.[108]

We would also wish to see a back-dating mechanism if IPART is to set a temporary wholesale price. This mechanism is used in other regulated utility industries such as telecommunications. This would allow either the wholesale customer or Sydney Water to recover costs if the temporary wholesale price set by IPART is higher or lower than the price determined under the final IPART approved voluntary access agreement. The concept of a back-dating mechanism provides an incentive for access seekers and Sydney Water to engage in good faith in any interim period and decreases the incentive for parties to demand unreasonable terms and conditions.[109] It is also an inducement not to delay the negotiate/arbitrate process that exists under WICA.[110]

An alternative to IPART setting temporary wholesale water and wastewater price caps would be for Sydney Water to explore the option of making a promise, or a legally binding Deed Poll, to provide

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[108] ACCC, *Resolution of telecommunications access disputes – a guide*, March 2004 (revised).

[109] ACCC, *Guidelines relating to deferral of arbitrations and backdating of determination under Part IIIA of the* Trade Practices Act 1974*,* March 2007.

[110] Ibid.

services to a particular class of persons and apply an IPART recommended price as a transitional price, until IPART approves a voluntary access undertaking. This could be published to the industry and stakeholders as evidence of our commitment to make access available, and in the case of a Deed Poll would create an additional legal obligation for us to do so.

5.5.1 Example wholesale price caps

If IPART does make a temporary or permanent determination on wholesale pricing, the 2016 pricing determination should include a schedule providing for wholesale prices, and definitions of the entities and services which those prices should apply to. The table below includes examples of wholesale price caps, based on a three per cent deduction to represent retail costs.

Table 5-1 Example of wholesale charges for a scheme servicing residential customers ($real)

	2015-16	2016-17	2017-18	2018-19	2019-20
Water					
Residential – usage charge ($/kL)*	2.288	2.019	2.07	2.121	2.175
Wholesale – usage charge ($/kL)	2.219	1.95	2.008	2.057	2.11
Water					
Residential – service charge ($/year)*	103.55	100.983	103.508	106.015	108.748
Wholesale – service charge ($/year)**	98.52	97.954	100.403	102.912	105.486
Wastewater					
Residential – service charge ($/year)*	612.1	596.899	611.821	627.116	642.794
Wholesale – service charge ($/year)**	582.34	578.99	593.466	608.303	623.51

*Source Table 5-1 Sydney's Pricing Proposal 2015 with wholesale charges calculated by deducting 3% from retail prices.
**Charge per end use residential property serviced
***Assumes 2.5% inflation rate

5.5.2 Illustrative example

From 1 July 2016 through to 30 June 2017, a secondary water utility seeks access to Sydney Water infrastructure to provide 1,000 residential properties with water and wastewater services. During this year, the total water used by the secondary water utility was 220,000kL (This is representative of the average water use of 220kL/residential property/year.)

In this example, the wholesale charge would be as follows:

Water usage	= 220,000kL x $1.95	= $429,000
Water service	= 1,000 residential properties x $97.954	= $97,954
Wastewater services	= 1,000 residential properties x $578.99	= $578,990
Total access charge for 2016-17		= **$1,105,944**

6 Questions and answers

Length of the determination period

1 **What should be the length of this determination period?**

Sydney Water is happy with a determination period of four years.

This provides an opportunity for alignment of the next reviews of Sydney Water's Operating Licence and prices.

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.

2 **Should the determination periods of regulated utilities align? If so, across which utilities and why?**

The main issue of aligning determination periods of regulated utilities seems to be one of resourcing. Having a number of concurrent determinations places pressure on IPART Secretariat resources and potentially means that challenging or new issues may not be able to be considered in a robust and thorough manner. Utilities are also subject to resource constraints that require them to focus on their own determination process, which limits their ability to participate in the determination processes of other utilities. This may limit the effectiveness of these processes.

We note the compressed timeframe for responding to this Issues Paper (four weeks) has been challenging for Sydney Water. We understand that a similar period of time is scheduled for responding to the Draft Determination in 2016. While we recognise that IPART is also under time pressures associated with not only Sydney Water's price determination but also other water related determinations and activities in other sectors, we would appreciate a longer period of time to formally respond to the Draft Determination. If this is not possible, any other forms of early engagement on key elements of the Draft Determination that gives Sydney Water more time to respond would be appreciated.

A logical sequence for the timing of future determinations may be to conduct the determinations for Sydney Desalination Plant and Water NSW prior to Sydney Water's determination, given that these provide such key inputs for Sydney Water's determination.

Similarly, if there is a lack of flexibility in Sydney Water's determination to provide for unexpected costs mid-determination (a cost pass-through mechanism), it would be preferable for future Sydney Water determinations to occur after the periodic review of the *Metropolitan Water Plan*. This would allow us to take the outcomes of the review into account in our cost forecasts. We note this may be difficult, given the more flexible approach being adopted for the *Metropolitan Water Plan* review process, which is moving away from fixed term review cycles.

Operating expenditure

3 **Are Sydney Water's proposed operating costs over the 2016 determination period efficient, taking into account drivers of this expenditure and water management outcomes achieved?**

While continuing to improve its service, quality and environmental performance levels, Sydney Water expects the required efficient and prudent opex per property over the 2016–2020 regulatory period to significantly improve to a forecast $391 by 2019–20 from an actual amount of $467 in 2012–13 ($2015–16).

Figure 2-5 from Sydney Water Pricing Proposal to IPART, June 2015, illustrates the Sydney Water year-on-year opex trend per property. The opex efficiency improvements (decreasing spend) per property, drives 25% of the decline in forecast customer bills in the 2016–2020 regulatory period. This is a reflection of the expectation in part of the permanency of efficiency savings achieved in the 2012–2016 regulatory period.

Importantly the expected opex declines per property are achieved in an environment of increasing demand forecasts for water services[111], showing that the forecast opex is efficient. That is to say, (at least) the same or improved level of service, quality and environmental performance levels of Sydney Water's services are being provided to each of Sydney Water's end customers for less.

Sydney Water's forecast opex per property is driven by broadly controllable and uncontrollable costs. The controllable costs (core opex) constitute over 60% of opex per property, and are driven, in the main by labour, materials (energy, materials, etc) and contract services. All of these are subject to market testing through a strong governance program[112], which has seen large one-off efficiency gains[113] and are being proposed to be captured by an EBSS. These factors will ensure that the efficiency gains seen in the 2012–16 regulatory period are carried forward and are position to have the correct strong incentives to seek additional controllable opex efficiency improvements per property.

Uncontrollable costs make-up the remaining 40% of Sydney Water's costs and include mainly bulk water costs i.e. SDP, BOO and WACC. Despite these costs being largely out of Sydney Water's direct control, the governance process in place ensures that these costs are market tested, via contractor's rates and competitive tender processes.

In addition Sydney Water has made conservative assumptions regarding the parameters associated with the value of uncontrollable cost forecasts. For example, we have assumed:

- SDP will continue in water security shutdown, incurring fixed charges only
- making use of financing leases to fund upgrades of plants to meet the 2011 Australian Drinking Water Guidelines.

[111] Sydney Water, *Pricing Proposal to IPART*, June 2015, pp 308–25.
[112] Ibid, pp 156–60.
[113] Ibid, pp 158–59.

4 **What scope is there for Sydney Water to achieve efficiency gains over the 2016 determination period?**

The scope of efficiency gains for Sydney Water will be limited to those associated, in the main, with controllable cost or core opex, and are expected to be modest; with controllable opex expected to remain approximately constant. The large one-off efficiency savings seen in the 2012-2016 determination period were driven by structural or favourable market conditions in cost items such as improved energy procurement and efficiency initiatives, improved contracting, labour, material purchases and general improvements in 'how we do business'[114] .

However, with an EBSS being proposed for opex, which will explicitly capture controllable costs, Sydney Water is, if the EBSS is adopted, in a position to continue to seek improvements to these cost categories both internally and via market testing of these costs.

Although these costs are in general controllable via an allocative efficiency sense, they are still to some degree subject to variation of markets and weather. Therefore the scope of any efficiency gains beyond those forecast by Sydney Water are subject to the assumptions made in the prudent forecasting remaining constant and not off-setting any additional, as yet undiscovered efficiencies (if they exist), such as a stable regulatory environment, average weather conditions i.e. no extreme weather events, and stable markets (materials and labour).

Bulk water costs – WaterNSW

5 **Are Sydney Water's proposed bulk water costs from WaterNSW reasonable?**

WaterNSW is a new entity and we expect WaterNSW to:

- appropriately ring fence its costs (from recent consolidation) and only pass on the relevant costs to its customers
- realise some efficiencies and costs of corporate overheads from consolidation of rural and metro operations over the next 4 years, and appropriately pass these on to Sydney Water and its customers.

Sydney Water wants to continue working with WaterNSW to jointly achieve the least cost solution for an integrated end-to-end bulk treated water process that will deliver benefits to our end customers.

6 **How should bulk water costs associated with pumping from the Shoalhaven River be treated over the 2016 determination period, noting that our preference is to continue to pass these through on an expected cost basis?**

Sydney Water believes that, for costs outside the firm's control, we should only pass through these costs to customers if and when they occur. Accordingly, our first preference would be to adopt the alternative approach proposed by IPART for treating Shoalhaven pumping costs, that is, to have a cost pass-through mechanism that is similar to the one used by Sydney

[114] See Sydney Water, *Pricing Proposal to IPART*, June 2015, pp 136–44.

Water to pass-through SDP costs. This approach allows Sydney Water to recover the additional costs from customers using an agreed formula to adjust prices so that additional revenue will be recouped to cover additional costs, only if those costs are incurred.

However, for practical reasons, given what we understand regarding:

- the low magnitude of the estimated cost of transfer
- the added administrative costs of passing through what we estimated to be a very small (≈ 2cents/kL) increase through water prices

We would support, on balance, maintaining the existing ex-ante treatment of Shoalhaven pumping costs.

We assume that once a cost treatment method is determined, the same methodology will be adopted for both Sydney Water and WaterNSW.

7 **If a Raw Water Quality Incentive Payment is included in WaterNSW's prices to Sydney Water, is our proposal not to include these payments in Sydney Water's allowance for bulk water costs from WaterNSW appropriate?**

In our Pricing Proposal, Sydney Water assumes that incentive payment costs would be offset by the equivalent operational savings from the scheme. Thus, we have not specifically included this cost in our cost budget.

We support the principle of an incentive scheme. However, we would like to propose a joint review of the 'raw water quality incentive payment' provision in the Raw Water Supply Agreement as part of the determination process, in light of the recent changes in WaterNSW and the renegotiation of Sydney Water's key water filtration contracts. The proposed joint review should take into consideration recent changes and a better assessment of risks, treatment capability and costs by all parties.

Bulk water costs – Sydney Desalination Plant

8 **Should we continue to pass through variations in SDP's actual fixed costs because of changes to its operating modes through to water service charges at a 1-year lag?**

We agree with continuing the current pass through of variations in SDP's actual fixed cost to water service charges at a one-year lag.

Capital expenditure

9 **Is Sydney Water's past capital expenditure over the 2012 determination period prudent, taking into account drivers of this expenditure and service outcomes achieved?**

Yes. At the 2012 Determination, IPART set a capital investment allowance of $2.8 billion ($2015-16). Over the 2012–2016 determination period, we will spend $2.6 billion - $255 million less than the IPART capital allocation.

This amount of savings should be compared with $247 million of savings reported in our submission[115]. This variation is due to:

- the inclusion of $48 million NSW Government Housing Acceleration Fund (HAF) projects, at the request of IPART
- 2014–15 actual expenditure of $637 million (including HAF projects) – $56 million less than the 2014–15 forecast included in the Pricing Proposal. This variation is included in the Annual Information Return (AIR) and Special Information Return (SIR) submitted to IPART in September 2015.

The difference between our IPART allowed expenditure and actual expenditure is illustrated below in Table 6–1. Our achievements in terms of service outcomes are evident in service performance indicators and actual performance, in particular:

- we have met all our Operating Licence requirements
- we have maintained performance against requirements of our EPLs issued under the *Protection of the Environment Operations Act 1997*.

The prudency of investment is addressed within the Pricing Proposal and will be discussed in further detail within the upcoming efficiency audits.

Table 6–1 IPART allowance and savings against key drivers 2012–2016

Key drivers	IPART allowance	*Total expenditure as at end 2014–15	Variance
	$ millions $2015–16		
Maintain existing standards	1,597	1,492	(104)
Mandatory standards	213	109	(104)
Growth (includes Housing Acceleration Fund)	683	629	(54)
Government programs	209	206	(4)
Business efficiency	125	136	11
Total	2,827	2,571	(255)

*Note: *Total expenditure = 2012–2015 actuals + 2015–16 forecast*

[115] Sydney Water, *Pricing Proposal to IPART*, June 2015, pp 187

10 **Is Sydney Water's forecast capital expenditure program over the 2016 determination period efficient, taking into account expenditure drivers, scope for efficiency gains, and proposed water management outcomes?**

Yes.

The forecast capital investment program for 2016–2020 is $2.7 billion ($2015–16, excluding HAF). This is 7% ($184 million) higher than capital investment in the current price period. At an average of $691 million a year, it is still below the historic average capital investment which is about $720 million.

Table 6–2 below shows the main drivers of our proposed capital program and forecast expenditure against each of them.

Table 6–2 2016–2020 capital expenditure forecast by drivers

Drivers	Forecast expenditure $ million ($2015–16)
Existing standards	1770
Mandatory standards	158
Growth	684
Government program,	3
Business efficiency	149
Total	2764

Sydney Water's investment is governed by robust and efficient planning and delivery processes. As with all forecasting, there are areas of uncertainty. More significant risks to this forecast are related to potential changes to Environmental Protection Licences (EPLs), which are regulated by the Environment Protection Authority. We considered the investment impacts of the possible changes in EPLs in our Pricing Proposal and have included what we believe to be an appropriate level of expenditure.

11 **Is Sydney Water's proposed expenditure on IT (including its customer information system) efficient?**

Yes.

We are forecasting an IT capital investment of $328 million in the 2016–2020 period. Over 70% of this investment is for renewal, including $123 million to finalise the replacement of our billing system with a contemporary off-the-shelf solution.

Our billing system is 28 years old and its replacement is business-critical.

In 2014–15, we spent $40 million - around $8 million less than the IPART allowance of $48 million. This, and our planned budget for 2015–16, will keep the IT expenditure for 2012–2016 within IPART's allowance of $198 million.

We welcome IPART's review of our IT capital expenditure. More information on the proposed IT investment program will be made available through this review process.

12 **Is Sydney Water's proposed expenditure on assets to service growth efficient?**

Yes.

Growth is accelerating across Sydney and we propose to invest $684 million over 2016–2020on servicing growth.

Annual growth may exceed 30,000 new dwellings a year – the highest level for fifteen years.

Forecast expenditure of $684 million covers a number of growth areas. However the Northwest Growth Centre ($183 million or about 26%) and the Southwest Growth Centre ($114 million or about 17%) drive about 45% of the total investment in 2016–202020.

$196 million (or about 29% of our budget) is allocated for private sector delivered growth.

We bear the risk of these investments as Sydney Water has less certainty and control over growth than in the past, when growth projections were set out in the Metropolitan Development Program. More growth is now occurring 'out of sequence' and in different locations than expected.

Current dwelling approvals and observed growth are at the highest in around a decade. While this trend is expected to continue in the short-term, there is greater uncertainty about development activity and future land release programs in the medium-term.

13 **Is Sydney Water's proposed capital expenditure on projects relating to its Environment Protection Licences, including wet weather overflow abatement, efficient?**

Yes.

Our proposed program includes $158 million to meet new and revised environmental regulation requirements. The expenditure is mainly driven by:

- working to meet different wet weather overflow abatement (WWOA) standards, changing to risk-based regulation, for the four main coastal wastewater systems ($127 million or about 80%)
- upgrading Winmalee WWTP to reduce nutrient loads discharged to the Hawkesbury Nepean River ($26 million or about 16%).

The EPA is looking to better align any changes in licence requirements with price determination periods.

Managing WWOA

A risk analysis found that the existing regulation of wet weather overflows (based on frequency and volume limits) would in many cases create significant extra cost for potentially little environment or community benefit. While significant gains have been made over the past 15 years, under the current approach there are examples where environmental and community needs are not effectively met.

In December 2015, we will be proposing a change to the EPLs that will regulate wet weather overflows on the basis of risk of impact to the environment and community. If accepted by the EPA, this will allow us to target investment to address areas of risk rather than meeting deterministic targets. The change will allow Sydney Water to achieve environmental and community outcomes more cost-effectively.

In forecasting $127 million capex for wet weather overflow abatement, we have assumed that the EPA accepts our proposed changes to EPLs. If the EPA does not accept the change and it leads to higher expenditure, there is a risk that Sydney Water will bear the loss via some temporarily unfunded financing costs (assuming the capex will be incorporated into the regulatory asset base at the next price review). Any change to the EPLs will not be known until after December 2015.

Winmalee WWTP enhancements.

The current levels of nitrogen and phosphorous discharged from the Winmalee WWTP comply with the limits in the current EPLs. However, the EPA has issued a pollution reduction program (PRP) to lower the loads of nitrogen and phosphorus discharged by the plant.

A possible outcome is that the EPA requires nutrient loads to be lowered to a comparatively low level. Our analysis suggests that reducing loads to a very stringent level would drive expenditure of around $150 million. This would likely require us to implement very new technology at the plant. There is a risk that the high costs of implementing the new technology would not be justified in terms of the amount of benefit to the Hawkesbury-Nepean River system.

We are in the process of using our Hawkesbury-Nepean nutrient model to demonstrate that setting a low deterministic nutrient discharge target would not be an efficient way to achieve environmental improvement.

We have budgeted $26 million for capital works based on what we believe is an appropriate improvement to the nutrient discharge, given the risk to the environment. This assumes the EPA will impose conditions to achieve a medium level of nutrient reduction. If the higher expenditure option is required, as with wet weather overflows, Sydney Water would lose the financing costs associated with the additional expenditure in the current regulatory period (assuming it will be deemed prudent and incorporated into the regulatory asset base).

Sydney Water will undertake a cost-benefit analysis for the potential discharge options for Winmalee WWTP.

Asset disposals

14 **What is the appropriate regulatory treatment of asset disposals?**

Sydney Water agrees with the broad principles that IPART has outlined for asset disposals as well as the general 42% customer sharing rule. That is, we agree that an assets identifiable regulatory value ought to be deducted from the RAB at the time of disposal (indexed for inflation and depreciation as necessary).

Further, we agree that in so far as the business has benefited from the ownership of any assets that are disposed of – and customers from the use of those assets – the business should also bear any taxation obligations that are borne from the asset disposal.

However, where we do not agree with IPART, is that tax obligations borne out of asset disposals (primarily land) ought to be paid from regulatory profits it retains. If these tax obligations are paid for from regulatory profits, then this would necessarily cause Sydney Water to under recover its costs, resulting in an outcome and approach which would no longer be consistent with IPART's Financial Capital Maintenance (FCM) principle.

Further, IPART proposes that the capital gains tax in regards to the whole of any capital gain or loss is borne by Sydney Water. We agree with this approach if Sydney Water was to retain all of any capital gains. However, under IPART's approach (sales value x 42%) there is a likelihood that customers will share in capital gains yet not bear any of the capital gains taxes (CGT). Sydney Water's view is that if the capital gain/loss is shared between the customer and Sydney Water, the tax obligation on this gain should be similarly shared. We have proposed an approach to determining the appropriate CGT that should apply (see Appendix B).

We have concerns about IPART's approach to asset write-offs. By taking the asset value out of the RAB in line with its accounting treatment, it could have an asymmetric impact on an efficient business that has assets that are both long-lived and variable in life. For example, assets such as water mains and sewer mains that do not reach their final book life will incur a loss, which is not offset by any corresponding gain for those that outlive the book life. Therefore we question the appropriateness the 0.5% threshold, and/or believe that consideration should be given to excluding assets and/or asset classes that meet the two above criteria.

Finance leases

15 **What is the appropriate regulatory treatment of finance leases?**

Sydney Water's preferred regulatory treatment is for all finance lease payments to be treated as operating expenditure.

Alternatively Sydney Water can adopt the IPART preferred RAB approach with separate water and wastewater RABs for finance lease assets (or ideally a separate RAB for each finance lease asset) to be established by discounting future finance lease payments, using the prevailing regulatory WACC.

We are concerned that the IPART's suggested regulatory framework on finance lease (ie using an interest rate implied in a finance lease to discount future finance lease payments) may discourage businesses to use finance leases as a way to fund projects. This may lead to sub-optimal business decisions.

Businesses commonly use finance leases as a way to fund projects, and by doing so, transfer some of the asset ownership, interest rate and other risks to the lessor. In return, lessors would generally charge a risk premium, typically imbedded in the finance lease interest rate, compensating them for the risks that they have taken on over a typically long finance lease term.

In the IPART proposed regulatory framework, this value of risks transfer is not recognised or captured.

We argued that if the renegotiated lease reduces total costs and other risks for Sydney Water and its customers, we believe then that the regulatory arrangements for finance lease charges should provide us with a reasonable expectation that we can recover all efficient finance lease charges and associated taxes.

Sydney Water believes there will be tangible net benefits for customers. We expect the outcome from renegotiating the agreements would reduce the total expected costs (after factoring in quantifiable risks) to Sydney Water and its customers.

The risks transferred by lessee to lessors under some of our finance lease contracts are:

- Interest rate and refinancing risks – finance lease charges are fixed for the lease term, and are not subject to any adjustments with regard to movement in interest rates.
- The lessors have full responsibility over achieving the defined "good" asset condition at the end of each lease term.
- Prior to the end of the lease term the lessor is required to put in place asset condition/rectification bond/s in the value of outstanding asset maintenance and rectification works. The expected cost of raising the bond/s incurred by the lessor is factored into the finance lease charges.
- Finance lease charges get abated, should the warranted asset capacity not be available or other performance criteria are not met. Note that the availability of individual plant capacity is critical at all times due to limited interconnection between treatment plants.

We have listed our proposed treatment of finance leases[116] to recover the costs of the renegotiated leases. We would be open to consider any of our proposed alternative approaches that will provide us with a reasonable expectation that we can recover all efficient finance lease charges and associated taxes.

Note that due to further refinements, the split of charges into OPEX and CAPEX components for one of the leases could have changed (since our submission), resulting in an increase of RAB value for the lease (by an estimated $30m); balanced by a corresponding annual

[116] See Sydney Water, *Pricing Proposal to IPART*, June 2015, pp 287–88

reduction in the operating costs of that lease.

Please see our detailed response in Chapter 3 (Section 3.1).

Rate of return

16 **What is an appropriate rate of return on Sydney Water's assets?**

We emphasise that IPART should set its regulatory rate of return at a level that it can compensate an efficient entity for its prudent financing costs.

We support IPART's new WACC methodology and consider that it provides a more consistent market relevant approach to determining the WACC. Since IPART's decision evidence from the Reserve Bank of Australia (RBA) has become available to support an even greater weight being given to long-term averages (we provided details on Ch. 2.6). The current approach of 50:50 weighting given to long- and short-term averages is arbitrary and will potentially undercompensate investments. IPART should consider giving greater weight to the long-term averages when estimating the WACC point estimate.

We are concerned about current and near-future market conditions that may need IPART to deviate from setting the WACC at the mid-point of the long- and short-term averages. We are keen in early engagement with IPART on this issue given its potential impact on our customers through the bills.

Please see our detailed response in Chapter 2 (Section 2.6).

Regulatory depreciation

17 **Is Sydney Water's proposed allowance for regulatory depreciation, including the assumptions (eg, asset values and asset lives) underpinning this allowance, reasonable?**

Yes, it is reasonable.

IPART has specifically noted the issue in relation to the useful life of the proposed new billing system.

The useful lives of Sydney Water IT assets and projects differ in length according to the nature of the asset such as software having a shorter lifespan. Sydney Water has modelled the average weighted useful lives for the existing corporate IT assets, combining with the proposed forecast IT capex lives, and found that the estimated average weighted life to be approximately 11 years. This is close to the assumed 10 years regulatory useful life used currently for Corporate Electronics assets. Thus, Sydney Water proposes no change to the current useful life (including IT) used for the Corporate Electronics assets.

Form of regulation

18 **Are there any significant similarities or differences between the regulated sectors identified by Sydney Water (which have adopted the proposed incentive mechanisms and pricing flexibility) and the NSW urban water sector? What are the implications of these similarities or differences for Sydney Water's proposal?**

We make the following observations on the similarities and differences between the NSW urban water sector and other sectors that have implemented reform:

- Compared to the energy sector, the NSW urban water sector is more exposed to cost changes beyond its control, as it is required to meet stringent health and environmental standards, Operating Licence requirements and other planning requirements. The NSW urban water sector also faces external factors such as drought. That is, it faces considerably more uncertainty than the energy sector, where cost pass-throughs are permitted. In addition, geographic/topographic factors and climate are more significant in peer-to-peer benchmarking in water than energy.
- Market structures in the water sector differ between jurisdictions. For example, Hunter Water is a fully integrated water and wastewater business; in Sydney bulk water functions are separated; and in Melbourne both bulk water and wastewater functions are separated. These differences drive the economics behind incentives and costs (e.g. functional separation or disaggregation could improve the apparent cost effectiveness of some supply options) and again would need to be considered in any peer-to-peer benchmarking.
- We note the private ownership in some industries and jurisdictions. We consider that incentive schemes will be effective regardless of ownership, where there is appropriate governance and management direction.

19 **Does Sydney Water's proposal reflect an appropriate selection of incentive based approaches and mechanisms?**

We consider that we have common objectives to IPART in our approach to regulation: that is, efficiency, business sustainability and the long term interests of customers. We also support the commonly agreed principles of best practice regulation and regulatory processes: that regulation should be transparent, accountable, proportionate, consistent and targeted.

Our Pricing Proposal seeks to balance these objectives and share risks between Sydney Water and its customers so that we can maintain our current performance in terms of costs and customer satisfaction.

IPART's preliminary views change that balance of risks to Sydney Water. This occurs in particular in response to our proposals to modernise regulation, where IPART has adopted an asymmetric approach in its preliminary views. We consider that this calls into question the financial sustainability of our business and does not increase incentives or improve regulatory outcomes to the same extent as our proposal.

Please see our detailed response in Chapter 2.

20 **How successful have incentive mechanisms and pricing flexibility been in other jurisdictions or regulated sectors? What are the key determinants of success or failure?**

The schemes we have proposed for modernising regulation are well established in other industries (including those regulated by IPART) and jurisdictions and have been operating since the late 1990s. IPART's own research suggests that these schemes have been beneficial for consumers. We have summarised the available evidence on incentive mechanisms in Chapter 2 (see Boxout 2–1).

We consider experience with pricing flexibility in our response to Question 28 below.

Efficiency benefit sharing schemes

21 **Is our modified EBSS likely to remove the opportunity to game, while maintaining the incentive to achieve permanent efficiency savings? Are there alternative modifications to the EBSS that better achieve these objectives?**

We consider that our proposal for an EBSS:

- is in the long term interests of consumers
- would not adversely affect the financial sustainability of the business
- supports the principle of proportionate regulation.

In our view, IPART's proposed modifications do not meet these objectives, as they dilute the incentives faced by the business and increase the complexity and administrative costs associated with regulation. We recognise that IPART's proposed modifications have been made to address perceived problems around gaming. However, while these can be demonstrated in theory, we consider there is no strong evidence of gaming in response to incentives in other regimes. IPART's approach to assessing our proposals could give greater weight to the well-established history of these schemes and their operation.

We considered the concerns raised in other jurisdictions and industries and our proposal modifies the EBSS accordingly (e.g. limiting the coverage of the schemes, applying a cap and collar, ongoing role for IPART in setting expenditure allowances).

IPART's modified EBSS represents an asymmetric approach that increases the risk we cannot recover the efficient costs of service provision. The proposed options for the carryover period do not address the issue of the existing uneven incentives throughout the regulatory period. Finally, the exclusion of a capex EBSS prevents efficient substitution between opex and capex once expenditure allowances have been set, again increasing the risk that we cannot recover the efficient costs of service provision.

Please see our detailed response in Chapter 2 (Section 2.2).

22 **What is an appropriate holding period for permanent efficiency savings achieved by Sydney Water, taking into account observed outcomes in competitive markets and potential benefits to customers?**

As set out in Chapter 2, while it is important that customers benefit from cost savings, optimising efficiency of resource use is also important from a societal perspective. The decision on the carry-over period needs to balance the two. The carry-over period has to be at least as long as the determination period to equalise the incentive to reduce costs. That is, if the carry-over period is less than the regulatory period, then there is still a greater incentive to make gains in year 1 compared to the other years. This has been recognised by the Australian Energy Regulator (AER).

Our proposal is for a carry-over period equal to the determination period (ie a carryover period of 4 years and a holding period of 5 years). This is the minimum carry-over period required to equalise incentives, and results in customers receiving maximum benefit from cost savings. A carryover period of 4 years will provide Sydney Water with about 25% of the benefits/losses and the balance to its customers. This level compares to about 30% provided by UK and Australian incentive scheme arrangements, based on a 5 year carryover period (ie consistent with the length of the regulatory period).

IPART's proposed alternative of a 2 year holding period (or 1 year carryover period) reduces the existing incentives in the early years of the regulatory period and does not increase the overall incentive. We do not see this as an advance.

23 **Would an opex EBSS likely result in an increase in regulatory complexity, reduction in transparency or increase in administrative costs? If so what could be done to minimise these effects?**

The proposed EBSS would work in the same way the current regulatory process does. In our view, there is no need for IPART to start to audit and confirm efficiency gains. Our proposal envisages a continued role for IPART in setting expenditure allowances, which could include the interrogation of costs in years with an unusual level of spend.

We recognise that the efficiency carryover mechanism for the Sydney Desalination Plant (SDP) requires IPART to establish that an efficiency gain was the result of 'management action' rather than external factors (for example, changes in costs of inputs). However, we note that the SDP mechanism was designed to provide incentives for a specific operating asset with well-defined operating and contractual characteristics.

Sydney Water comprises a large range of assets and activities and therefore requires a flexible and relatively simple approach to incentive design. In addition we consider that, as a business is approaching best practice, cost changes due to both factors should be passed through. This is a feature of schemes implemented in other jurisdictions and industries.

24 **Are there complements or alternatives to an opex EBSS, such as productivity benchmarking, that can drive further efficiency gains?**

We consider that greater use of benchmarking would be consistent with the objectives of increasing incentives and decreasing the intrusiveness of regulation. We are supportive of using benchmarking to provide additional information to the regulatory process.

We see this as complementary to our proposed EBSS and not as an alternative approach to regulation. We note that benchmarking alone is rarely used as a means of regulation. In our view, benchmarking, the EBSS and the expenditure review are all components of the one regulatory package.

Furthermore we note that the reference points for assumptions on allowed costs and the rate of return must be consistent. For a regulated business the allowed returns on debt and equity are based on the market average or typical firm - not the most efficient firm. Hence, it would be inconsistent to assume a firm is on the efficiency frontier and provide it with the opportunity to earn only a market-average performance if it achieves that level of efficiency

Finally, we note that any benchmarking analysis will need to recognise changes in service quality requirements and the impact these have on efficient costs over time.

25 **What are the arguments for and against a capex EBSS? How would it deliver long term benefits to customers?**

In Chapter 2 we acknowledge that there is some precedent for regulators introducing an opex EBSS before a capex EBSS. However, we have proposed a capex EBSS that we consider addresses concerns around the benefits of one-off capex deferrals and gaming. In particular we have chosen capex categories for the EBSS related to expenditures a) that are more recurrent in nature and where we have recently achieved a major step reduction in costs and b) where there are clear opportunities for substitution between opex and capex solutions. We are of the view that this context around our proposal has not been properly considered by IPART.

In its Issues Paper, IPART raises a number of arguments against a capex EBSS. We have responded to these in our detailed response in Chapter 2.

26 **Can the capex EBSS be modified to remove incentives to over forecast, while maintaining incentives to achieve permanent efficiency savings?**

We recognise the incentive to over-forecast capex. However, we note that under our proposed EBSS there would still be an ex-ante review of forecast expenditure, to check for over-forecasting during future price resets.

Furthermore we have proposed that only a modest program of capex be covered by an EBSS in the first period (less than 15% of total capex). We have limited the scope of the capex EBSS to critical water mains and reticulation renewals and electricity where there are the least opportunities for gaming.

Finally we note that IPART's proposal to undertake benchmarking and analysis of productivity

trends will give it an additional tool with which it can assess forecast capex.

Please see our detailed response in Chapter 2.

27 **Are there complements or alternatives to a capex EBSS to drive further efficiency gains in capital expenditure?**

Please see our response to question 24 above.

Weighted average price cap

28 **What can we learn from the experience of other jurisdictions and regulated industries with WAPCs?**

Pricing flexibility has been a part of economic regulation in the UK water and energy sectors for more than two decades. It is an important part of what has, over time, been regarded as the best-practice framework for economic regulation. It also exists in other jurisdictions.

IPART has used pricing flexibility in its approach to electricity pricing, and is familiar with its benefits. For example, in its 2002 *Pricing principles and methodologies*, IPART recognised that judgement was required in setting prices, and that firms are better placed than the regulator to know their costs and their customers[117].

Pricing flexibility is also embedded in the national approach to electricity pricing, following the AEMC's rule change[118] in November 2014. The AEMC believes the rule change will mean individual consumers can make more informed decisions about how they use electricity, and can help them to participate more actively in the energy market. Distribution network businesses will have to develop prices that better reflect the costs of providing services, and revenue recovered from each network tariff must reflect the firm's total efficient costs of providing services to the consumers assigned to that tariff.

IPART has also moved to using greater flexibility in rail pricing, using a weighted average charge increase approach in its November 2012 Determination for RailCorp[119]. IPART noted that it chose to set a maximum average increase rather than individual fares to facilitate greater tariff choice (with the introduction of the Opal electronic ticket scheme). Without pricing flexibility, CityRail would not be able to optimise the structure and level of some current fares without losing revenue (which would mean taxpayers would pay more than their share of the costs).

We encourage IPART to draw on its experiences in other sectors and best-practice elsewhere to support its consideration of our proposals.

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[117] IPART, *Regulation of New South Wales electricity distribution networks, pricing principles and methodologies for prescribed electricity distribution services, Developed pursuant to clause 6.11(e) of Part E, Chapter 6 of the Code*, June 2002.
[118] AEMC, *National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, 27 November 2014, at http://www.aemc.gov.au/getattachment/de5cc69f-e850-48e0-9277-b3db79dd25c8/Final-determination.aspx
[119] Services were provided under the name 'CityRail'. See IPART, *Review of maximum fares for CityRail services from January 2013, Transport — Final Report*, November 2012.

29 **How can a WAPC be used to set more cost-reflective prices or enhance value to customers?**

The following cases illustrate the areas where a WAPC may be applied to develop more cost-reflective prices or enhance value to customers.

Non-residential discount for non-use of reticulation network

Some large industrial and commercial customers take water in such large volumes that they are typically connected to large diameter mains. Consequently, they do not use the smaller diameter reticulation network. This means they pay a proportion of the costs of that smaller pipe network without receiving any benefit. A more efficient cost allocation would recover the costs of the reticulation network only from those customers who use it.

Non-residential 'green' tariff

A few industrial and commercial customers have expressed an interest in a tariff that applies a higher usage price, to encourage more efficient use of water. Some have said they would be keen on a usage-only tariff, to increase the incentive to use water efficiently.

Non-residential seasonal tariff

Some non-residential customers have demand profiles that vary considerably during the year. Examples include racecourses, golf courses, and manufacturers of seasonal food. These customers may impose particular burdens on the water supply during parts of the year, and provide additional capacity in the network at other times of the year. A seasonal tariff could be developed that allocates the costs of supply more accurately throughout the year.

Non-residential capacity-based tariff

Some non-residential customers may have demand that is largely stable over time but on occasion can be much higher (for example food manufacturers that require large volumes to flush out production lines). This can involve Sydney Water essentially reserving capacity in the network specifically to enable supply to these customers, but which is not used for long durations. This capacity could be used to supply other customers, if it was not being held in reserve. It may be more efficient to charge these customers on the basis of reserved capacity, as well as a more conventional usage price for water delivered.

Non-residential interruptible tariff

Sometimes there can be constraints on the supply network caused by high demand or leaks and breaks, when it could be beneficial to Sydney Water to be able to quickly reduce the demand from customers. One way to do this would be to offer customers a tariff that allows their supplies to be temporarily suspended, where the customers were able to suspend or reduce their water demand, or switch to water stored on-site.

Non-residential, residential multiple water usage and service charge combinations

Our residential customer research has indicated that there could be distinct groups of customers who would prefer specific usage and service charge combinations. These tariff packages would typically be high usage and low service charges, and vice versa. The tariff

basket model could encapsulate more than one type of water tariff to different classes of customer on this basis. It could apply to both residential and non-residential customers.

Residential 'second home' tariff

Customers who enjoy the benefits of more than one home impose different costs and risks on Sydney Water, if the tariff they are charged is the same for each type of property. Usage at a second home would be lower than at the main residence, but we would still need to reserve capacity in the network to maintain supplies to the property. That reserved capacity could be used to supply other customers, if it was not being reserved for the second home. So it could be appropriate to charge those customers in a way that recovers the appropriate level of costs for that reserved capacity, perhaps through a higher fixed charge and lower usage charge.

Residential wastewater usage charge

There could be a strong case put forward that the principles supporting a water usage charge apply equally to the wastewater service. Some non-residential customers pay a usage component in their wastewater bill already, so it could be argued that residential customers should pay for this as well. Such tariffs are standard practice in other jurisdictions, and do not need wastewater volumes to be metered separately from water demand.

30 **Should a WAPC apply at first only to large non-residential customers? Should it apply to both water and wastewater services?**

We acknowledge IPART's view that increased cost reflectivity and value could be provided to large non-residential customers. Accordingly we propose only applying a WAPC to the prices faced by corporate customers for 2016–202020. We would look to apply a WAPC to a wider customer base as part of our 2020 pricing submission.

We propose a WAPC for each of our water and wastewater services for these customers. We consider that there is potential for increased cost reflectivity and enhanced value to customers in both services (as indicated by the examples we give in response to question 29).

Please see our detailed response in Chapter 2.

31 **What are suitable pricing principles and a pricing strategy to accompany a WAPC? In particular:**

- **What should be the relevance and role of long-run marginal cost pricing under a WAPC?**
- **Should the WAPC be used to transition away from postage stamp pricing?**

As set out in Chapter 2, we propose pricing principles in line with those included in our Pricing Proposal. The pricing principles include that we would have regard to the long run marginal cost (LRMC) of water supply. While we consider it appropriate for customers to be exposed to the costs of long run augmentation, we note that:

- There is considerable uncertainty in estimating LRMC (and at present it is a resource cost only and does not include network costs)

- Consumers' responses to prices often require investment in new equipment and processes (that is, not just a behavioural response). Hence, stability of price signals is important. Price volatility undermines the ability to respond and can strand consumer investment.
- Consumer preferences matter. This was recognised by IPART at the last Hunter Water price determination where IPART opted for price stability, having regard to consumer preferences.

We are continuing to engage with our corporate customers and their representatives to develop our initial pricing strategy. We are looking to provide IPART with a draft pricing strategy prior to the public forum.

We recognise the current Government policy of postage-stamp pricing and the implications this has for the application of a WAPC. Maintenance of postage stamp pricing would be one of the pricing principles that would guide our proposals.

Please see our detailed response in Chapter 2.

32 **What side constraints would we need to impose on the operation of the WAPC? Would allowing customers to opt out of regulated prices and opt into prices set by Sydney Water lead to better outcomes for customers?**

As set out in Chapter 2, as well as binding pricing principles we would accept side constraints to the WAPC, and we anticipate that both would form part of the price determination. On this basis, we do not support IPART's 'opt-in' model as we consider that a) binding pricing principles and side constraints provide adequate protection to large, non-residential customers and b) the 'opt-in' model would leave us exposed to revenue risk and generate an expectation that a prudent and efficient business would not be able to recover its costs.

Please see our detailed response in Chapter 2.

Water sales and customer numbers

33 **Are Sydney Water's forecasts of water sales and customer numbers reasonable?**

Yes.

34 **What regulatory mechanism, if any, should we use to account for demand volatility?**

The current mechanism that was put in place in the 2012 Determination to account for demand volatility adjusts Sydney Water's revenue if there is more than ±10% variation between the net level of actual water demand and the forecast demand used in making the determination, over the 4-year determination period.

As a business, Sydney Water accepts the revenue risk from normal deviations from average weather conditions. However, to mitigate revenue risks that flow from extreme weather conditions, we agree with IPART's preliminary view of retaining the same mechanism. However, we ask IPART to consider a lower dead band level of more than ± 5% over the

determination period.

Based on historical data and forward forecast demand over the next 4 years, we consider it to be highly unlikely that Sydney Water will trigger the "10% variation threshold over a full determination period" condition as stipulated in the current mechanism, even if restrictions were implemented at some point during the next 4 years.

Table 6–3 below shows our estimated percentage reductions of demand due to drought restrictions.

Table 6–3 Estimated reductions of demand due to drought restrictions

	as % of total demand	as % of revenue demand
L1	4%	5%
L2	8%	9%
Emergency	14%	16%

Based on these estimates, even in an extreme scenario where storage levels would start falling very rapidly and we went into L1 restrictions by 2017–18, and the highest "Emergency" level restrictions by 2018–19 and 2019–20, this would only result in an impact of -9% over the full four years, that is, this would not trigger the 10% threshold.

We note that in the last drought it took 7 to 9 years for storage levels to drop from full to 33%, the lowest level before the drought was broken. However, during that period there were periods when storage levels fell at a rate equivalent to about 25 percentage points per year. If such a rate were maintained over a period of three years the storage level for "Emergency" restrictions could indeed be reached.

So, we are of the view that if the mechanism is designed to cover Sydney Water for "abnormal" revenue risk from extreme demand volatility, the 10% demand variation dead band level over a full determination period is unrealistic.

We propose for the material level variation to be dropped to a level at more than ±5% for 2016 determination period (that is, representing an overall more than ±20% variation in demand over the 4 year period). Based on current high dam levels, we anticipate that this proposed level will only likely be triggered if we go into high level restrictions in the next two or three years.

We note that demand variations of >-5% will weaken our key credit metrics, in particular our FFO/Debt measure, which we estimate to fall to the lower bounds for investment grade.

35 **Is Sydney Water's proposed approach for forecasting chargeable wastewater volumes (including its assumptions) reasonable?**

Yes, Sydney Water's bottom-up approach of modelling chargeable wastewater volumes is reasonable.

We note that:

- The alternative aggregate approach would be vastly inaccurate, and would introduce errors and risks in forecasting chargeable wastewater volumes.
- As noted in Question 37, we consider IPART's proposal to set the discharge allowance at 150kL per year as reasonable.
- We also support the gradual decrease of the discharge allowance over the 2016 determination period in order to minimise customer impacts.
- Based on our bottom-up model, we have estimated the impact of decreasing the allowance from 300kL in 2015–16 to 150kL in 2018–19 and 2019–20 in Table 6–4 below.

Table 6–4 Impact on chargeable wastewater volume and properties due to the decrease in the discharge allowance

	2015-16	2016-17	2017-18	2018-19	2019-20
Discharge allowance (KL/year)					
Constant allowance	300	300	300	300	300
Decreasing allowance	300	250	200	150	150
Chargeable wastewater volume (GL)					
Constant allowance	66.4	66.4	66.4	66.4	66.4
Decreasing allowance	66.4	67.7	68.9	70.5	70.5
Volume Increase	**0.0**	**1.2**	**2.5**	**4.0**	**4.0**
No of Properties Paying Wastewater Usage Charge					
Constant allowance	39,836	40,197	40,559	40,920	41,282
Decreasing allowance	39,836	43,543	47,551	52,593	53,058
Increase in No of Properties	**0**	**3,346**	**6,992**	**11,673**	**11,776**

Rebasing water and wastewater service charges

36 **Is Sydney Water's proposal to rebase water and wastewater service charges to a 20mm meter equivalent reasonable, in terms of its impacts on different customer groups?**

We have no further comments. Sydney Water's proposal is consistent with IPART's price structure principles and current charging regime.

Wastewater discharge allowance

37 **Should the discharge allowance for non-residential customers remain at 300 kL a year as per Sydney Water's proposal, or be reduced to 150 kL to align with the average level of discharge for residential customers?**

As highlighted in our 2016 Pricing Proposal, reducing the annual discharge allowance below 300kL per year would result in a significant increase in the number of non-residential customers who will incur an explicit wastewater usage charge for the first time, and will also generate some customers confusion as they may get a chargeable volume in one quarter but

not the next.

With a reduction of discharge allowance to 150kL per year, Sydney Water forecasts that the change would lead to a 29% increase in the number of customers billed, but produces only a 6% increase in the chargeable volume. With this change, Sydney Water will have to manage customer issues such as call centre & customer complaints, customer management and education etc. It may take Sydney Water a reasonable period of time (a few quarters at least) to manage issues around customer complaints and educating customers in relation to wastewater usage charge.

However, to align the implicit residential discharges with the non-residential discharges, we consider IPART's proposal to set the discharge allowance at 150kL per year as reasonable. We accept that reducing the maximum discharge allowance for non-residential customers to 150kL per year would allow residential and non-residential customers with 20mm equivalent meters to recover residual wastewater costs through service charges on an equitable basis.

To minimise customer impacts, we support the gradual decrease of the discharge allowance over the 2016–2020 determination period as proposed by IPART.

Joint service arrangements

38 **Are Sydney Water's proposed changes to charges to joint service arrangements appropriate?**

Since 2012, Sydney Water has embarked on a reform process to reduce complexity when applying water and wastewater charges to properties with certain complex configurations; applying a "base" charge to various permutations of residential properties provided significant simplification. Sydney Water proposes to complete the simplification process to the remaining 1,245 non-residential multi premises joint-service properties.

We believe that the proposed changes will bring more consistency, and represent a more equitable charging basis for those properties with complex configurations.

If the proposed changes are supported, Sydney Water will have no requirement to accommodate this residual complexity in its specification for the future billing system we estimate this customisation would cost about $0.5 million in capex.

We note that the proposed 'base' water and wastewater charge referred to above is the residential water and wastewater service charge.

Dual occupancies

39 **Should dual occupancies be charged:**

- **a single water service charge and a wastewater service charge in line with Sydney Water's proposal; or**

- **as two distinct properties as is currently the case, where both the main dwelling and the secondary dwelling each attract a water service charge and a wastewater service charge?**

Sydney Water would like to charge dual occupancies one water and wastewater service charge since the two dwellings (main dwelling and granny flat) are linked by the owner and cannot be independently sold.

A dual occupancy is located on a single property and receives a single bill.

We note that to determine if a property is classified as a dual occupancy, Sydney Water staff must inspect each house to determine if it has a separate kitchen and bathroom. This often leads to definitional problems about whether a sink is a bathroom or a pie warmer is a kitchen. The arrangements at the property could also be altered after the inspection and without our knowledge to something that would require a different charging arrangement. In other words, identifying dual occupancies is not a simple automated procedure.

Our analysis shows that the water usage profiles of a single dwelling and a dual occupancy show very little difference. This is demonstrated in Figure 6-1 below.

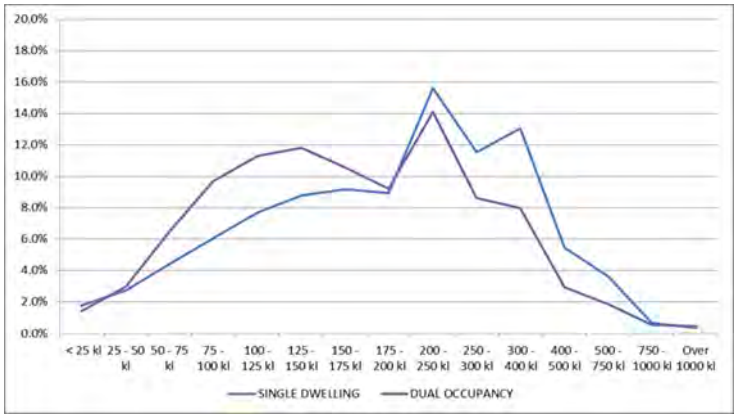

Figure 6-1 Average water consumption: single dwelling versus dual occupancy

Approximately 30% of dual occupancies currently have 2 meters. Charging properties differently if they had 2 meters would create further inconsistency and fairness concerns. An owner could simply have one meter removed to get a cheaper charging outcome. Again, to be consistent, we propose that a dual occupancy should be charged one water and wastewater service charge irrespective of the number of meters.

The key issue (as detailed in our Pricing Proposal) on this matter would still remain - Sydney Water is unable to apply the existing tariff structure to future dual occupancy properties flowing from a significant change to the planning requirements (in 2011) relating to dual occupancies. Our awareness of existing dual occupancies is also very limited.

Pricing terminology

40 **What is the most appropriate name for the current fixed 'service charge'?**

Sydney Water would support a move away from the term 'service charge'. We note that, for more than four years, Sydney Water has been referring to the service charge as a 'fixed charge' on our bills.

The use of the term 'service charge' creates potential confusion for customers, as observed recently in online surveys on preferred tariff structures. A number of customers surveyed reflected that they did not understand why they incurred this fixed charge, especially as, in their view, they did not receive any 'services'.

'Availability charge' is probably a more accurate term to reflect what this charge covers. Effectively, the charge recovers costs Sydney Water incurs in order to support networks that allow us to:

- have clean water available when customers turn on the tap
- have wastewater available to be taken away from the home and disposed of in a way that minimises environment and health impacts.

However, we would like to stress that if 'availability charge' is adopted, it is important to clarify that availability relates to properties that have a connection to the water or wastewater network. Prior to 2000, Sydney Water applied charges according to availability, which inadvertently led to customers being charged where the Sydney Water network ran past their properties, even if they had no connection. This meant that vacant land and properties that had no connection to the network (for example, properties that were in Priority Sewerage Program areas but had chosen not to connect or retail shops that did not use Sydney Water services) were being charged. From 1 July 2000, IPART rightly removed these 'availability charges'. This issue should be able to be avoided by careful defining of the term.

On a related note, we believe IPART should also consider replacing the term 'sewerage charge' with 'wastewater charge'. We understand that this technically may not be possible under the IPART Act, which covers monopoly sewerage services. However, if it possible, 'wastewater charge' better accords with how the product is referred to by Sydney Water and in other jurisdictions. We note that Sydney Water currently includes a dual reference to the product on our customer bills: wastewater (sewerage) charge.

Water usage charge

41 **Is Sydney Water's proposed water usage charge of $1.97 per kL reasonable? If so, why?**

Yes.

Our proposed water usage charge of $1.97 per kL is:

- well within the range of reasonable estimates for the long-run marginal cost of water
- appropriately provides customers with a degree of stability to assist them in making long-term investment decisions
- also takes into account customer preferences for tariff structures that provide them with greater bill control.

42 **Should the water usage charge be set with reference to the long-run marginal cost of water supply, or should greater weight be placed on customer preferences?**

As noted in our response to Question 41 above, Sydney Water's view is that both the long-run marginal cost and customer preferences should be considered when setting water usage charges. Our proposed charge is consistent with this approach.

43 **Should Sydney Water's water usage charges vary to make drought-response costs more transparent to end-use customers (ie, by reflecting the per kilolitre cost of desalinated water if Sydney Desalination Plant is activated)?**

Yes.

As per our proposal, we would vary water usage charge to reflect the SDP's variable costs, when SDP is activated. This would be in conjunction with an increase to the service charge, to reflect the increase in SDP fixed costs. Appendix E provides an overview of how the variance to these charges could occur in response to SDP activation.

Other charges linked to water usage charge (for example, recycled water charges, unfiltered water charges) should remain linked to the base, unadjusted water usage price.

After discussions with IPART, it is confirmed that there will be some form of true-up process for drought response costs. This reflects the principle that the costs borne by Sydney Water should be fully passed through to customers.

Water service charges

44 **Are Sydney Water's proposed water service charges reasonable?**

We have proposed a consistent approach between water and wastewater pricing, reducing the water service charge by the same proportion as the wastewater service charge (4.9%) and then reducing the water usage charge by the residual amount. This leads to a water usage price of $1.97 per kL and a service charge for residential customers of $98.52 a year. We consider this strikes the right balance between reflecting the principle of using LRMC to send a price signal about the sustainable cost of water supply and meeting customer preferences about tariff structures.

Please see our detailed response in Chapter 4.

Wastewater usage charges

45 **Is Sydney Water's proposal to maintain the current wastewater usage charge applied to non-residential customers of $1.10 per kL reasonable?**

We consider that both water and wastewater services should be priced to send efficient investment signals to consumers and suppliers, and we are concerned over the potential for the wastewater usage charge to further transition towards short run marginal cost (SRMC).

In particular we note that:

- Locational specific costs and postage stamp pricing are not unique to Sydney Water; however, there are few precedents for the use of SRMC pricing. LRMC or fully distributed pricing models are more common. IPART's SRMC pricing rule results in a systematic underestimation of efficient prices over time as it does not contain a long term pricing signal.
- With postage stamp pricing an LRMC rule will not be an accurate measure of marginal costs in each region and in each period. However, it will provide a system-wide average that will better approximate the average marginal cost over time.
- Given that consumer responses to prices require investing in equipment and processes to change use and discharge patterns, stable long term signals are more relevant to consumer decision-making.

We have proposed maintaining the wastewater usage charge at its current level for this determination. We consider that the way we charge for wastewater services as a whole should be subject to review and that it is prudent to avoid large changes in prices now when a future review may suggest that a different approach to pricing is appropriate.

We propose to complete our review of wastewater pricing for our 2020 pricing submission and we will seek customer feedback on the structure and level and charges. As part of this review we will examine using LRMC as the reference point for wastewater usage charges (as we consider it is an appropriate reference point for both water and wastewater usage charges).

46 **Should residential customers pay a wastewater usage charge?**

We acknowledge that introducing a wastewater usage charge for residential customers may more closely reflect the user pays principle and give these customers greater control over their bills. However, we note that there are difficulties with implementing such an approach given that discharges are not metered.

If we are to consider introducing a wastewater usage charge for residential customers, then it is important to do this in a considered way and with appropriate customer consultation.

Please see our detailed response in Chapter 4.

Wastewater service charges

47 **Are Sydney Water's proposed wastewater service charges reasonable?**

Sydney Water's proposed method for calculating wastewater service charge is consistent with IPART's typical approach, that is, wastewater charges are set to recover the residual costs, once usage revenue has been accounted for.

We have no further comments, except to note that with the proposed changes to wastewater discharge allowance, the wastewater service charges will have to be recalculated.

Stormwater drainage charges

48 **Are Sydney Water's proposed stormwater charges reasonable?**

To keep the level of revenue recovered from customers stable, Sydney Water has proposed that its stormwater prices slightly over-recover costs in the 2016 determination period and subsequently under recover costs in the 2020 period, so that stormwater prices are set on an NPV-neutral basis over the next eight years

We intend to consider the provision of stormwater services more generally for our 2020 pricing submission. This will include investigating the potential to broaden the stormwater customer base in the future, if wider community benefits are experienced and a wider customer group supports this. To this end, we have started engaging with customers and testing their attitude and feedback on this issue.

Please see our detailed response in Chapter 4.

49 **Should stormwater charges transition further towards strict area-based charges?**

We do not support a further transition towards more strict area-based charges at this stage. Property size is an important factor in demand for stormwater services but it is not the sole determinant. It is not apparent that a more strict application of area-based charging would increase the cost reflectivity of these charges.

Sydney Water proposes to maintain the existing structure of charges and reduce all charges by 2.9%. We intend to consider stormwater charging more broadly for the 2020 determination.

Please see our detailed response in Chapter 4.

Trade waste charges

50 **Are Sydney Water's proposed changes to trade waste charges reasonable?**

We have no further comments. IPART has stated that it is inclined to accept Sydney Water's proposal.

Late payment fees

51 **Is Sydney Water's proposed late payment fee reasonable?**

Yes.

Our proposed fee of $4.10 is to recover our costs associated with late payment of bills. Late payment drives up operating costs for Sydney Water, and, ultimately, for all customers of Sydney Water. Costs include printing and posting reminder bills and overdue notices, phone calls and other follow up actions. Borrowing costs are also significantly increased due to the delay in collecting revenue. For example, in 2013–14, late payment cost Sydney Water and its customers an additional $2.5 million in interest on borrowing.

Our benchmarking indicates that our proposed fee is well below the level of similar fees applied by utilities in other industries. We also understand that our proposed fee is lower than the late payment fee charged by Flow Systems ($10).

Our residential bills are due for payment 21 days after issue. We intend to allow an additional period of seven days' grace before a late payment fee would be applied.

In accordance with our *Customer Contract 2015–2020*, we will only apply a late payment fee after a review by IPART. This review will cover the maximum late payment fee amount and potential terms and conditions.

52 **What type of customers should be exempt from late payment fees?**

Our *Customer Contract 2015–2020* guarantees that we will not charge the late payment fee to any customer that is on a deferred payment plan or any other payment arrangement with us.

It also notes that Sydney Water will be required to apply the fee in accordance with any terms and conditions specified by IPART as part of their review.

We note that several stakeholders expressed interest in this issue as part of the recent review of Sydney Water's Operating Licence. As noted at the review's public forum, stakeholders such as the Public Interest Advocacy Centre and the Office of the Energy and Water Ombudsman were not opposed to the introduction of a late payment fee by Sydney Water, provided that it was not applied to hardship customers and that the fee was calculated on a cost recovery basis.

Miscellaneous and ancillary charges

53 **Are Sydney Water's proposed changes to its miscellaneous and ancillary charges reasonable?**

Sydney Water considers these charges as reasonable as we conducted an extensive review of the miscellaneous and ancillary charges for the 2012 determination. These charges were developed in line with cost-reflective pricing principles. IPART considered Sydney Water's charging method as a reasonable interpretation of its pricing principles, and appropriate for

Sydney Water's circumstances.

New charges – Remote meter reading services

Sydney Water has considered the question that IPART has raised regarding the perpetual application of these charges when considered against the intent of the charge and ease of understanding for the customer. The intent of the charge is to recover the costs incurred by Sydney Water to fit and maintain the more expensive remote meter reading technology, including future replacements and the lost value of the existing meter (where applicable). The intent is also that the customer who has installed or made the meter inaccessible be responsible for those costs. When a property is sold, the quarterly charge would continue to be applied to the property with a new owner which may lead to confusion, complaints, and unwillingness to pay.

We therefore submit for consideration a revised alternative upfront charge which still represents pricing with NPV close to zero over a 20 year period and that would be better for customers in terms of:

- clarity – the charge is paid once, when the new meter is installed. It includes the cost for replacement of the meter in the 20 year timeframe.
- fairness – the owner responsible when the meter is installed or made inaccessible pays for the solution. The cost burden is not passed on to future owners of the property.
- ease of administration – the charge is applied once to the customer's bill then the meter access issue is resolved permanently.

With regard to expansion to larger sizes, our original Pricing Proposal only contained pricing to 50mm light meters. The pricing has now been carried out for all meter sizes up to 100mm and meter sizes have been grouped together to simplify the number of charges, as noted in Table 6–5. This allows for large commercial and industrial customers, who may have security or safety reasons for wanting to have their meter read remotely, to take up the technology as well.

Table 6–5 Prices for remote read meters

Ancillary Service	Meter Size	$2015-16
Remote read meter – new property	ALL	$225.50
Remote read meter – existing 20mm meter	20mm	$225.50
Remote read meter – existing 25-40mm (consolidated price)	25mm	$288.74
	32mm	
	40mm	
Remote read meter – existing 50-100mm (consolidated price)	50mm light	$463.64
	50mm heavy	
	80mm	
	100mm	

New unregulated service – Hot water meter reading – multi level individually metered properties

IPART has requested Sydney Water to provide additional information regarding a proposed new unregulated service for hot water meter reading for multi-level individually metered (MLIM) properties. As this information includes proprietary information, it has been attached as a confidential appendix (see Appendix F).

Rouse Hill charges

54 **Is the proposed level of the Rouse Hill stormwater drainage charge reasonable?**

Yes.

In our 2012 pricing submission, Sydney Water presented the results of modelling of the historical operating costs for Rouse Hill stormwater drainage. We found that the charge under-recovered operating expenditure in the past, but, if maintained in real terms, the charge would recover all cumulative operating expenditure by 2022–23.

While revenues from the Rouse Hill stormwater drainage charge have increased due to higher actual growth increasing the number of properties that receive stormwater services, costs have also increased, primarily due to higher contractor costs. Our latest financial forecasts indicate that recovery of all cumulative operating expenditure will now be delayed beyond 2022–23.

For this determination, Sydney Water is happy to maintain the charge in real terms. Sydney Water will continue reviewing the cumulative financial position of Rouse Hill stormwater drainage product for future pricing reviews.

55 **Who should pay the additional costs of land acquisition for the stormwater drainage system in Rouse Hill?**

Sydney Water maintains that it is reasonable for additional land acquisition costs to be funded by the broader wastewater customer base. This land will be used for both stormwater and wastewater management purposes.

A condition of approval for the Rouse Hill Wastewater Treatment Plant requires Sydney Water to manage stormwater in a manner that mitigates the impacts on nutrients from the wastewater treatment plant on the Hawkesbury Nepean River. The stormwater management system was considered critical for maintaining the effectiveness of the effluent management activities (wetlands and riffle zones) associated with the wastewater treatment plant.

The integrated approach to sewerage and stormwater management for the Rouse Hill Development Area has been progressively implemented over the last 25 years. The primary purpose for acquiring land now is to satisfy the original condition of approval.

In response to the queries raised by IPART regarding our proposal to extend the recovery period for the Rouse Hill land charge, Sydney Water is seeking to extend this charge so that it will apply to any new properties connecting until 2025–26. This generally aligns with our current growth projections.

Please see our detailed response in Chapter 3 (Section 3.3).

Unfiltered water charges

56 **Is the $0.30 per kL discount used to calculate the unfiltered water charge still appropriate?**

Yes, we believe $0.30 per kL is still reasonable. Sydney Water has maintained the same approach of setting unfiltered water charges that IPART allowed in the 2012 Determination. This approach averages water filtration costs across all of Sydney Water's BOO water filtration plants.

The average forecast filtration cost for 2012–2016 is $0.27 per kL ($2015–16 real), only marginally lower than the current discount. However, filtration costs vary widely across Sydney Water's nine water filtration plants (WFPs), for example, Illawarra WFP (which supplies to our one unfiltered water customer) has a reasonably high cost. On balance, the $0.30 per kL discount rate is still valid, and within a possible range of average filtration costs.

Unmetered water charges

57 **Should the 180 kL per year of deemed usage embedded in the unmetered water charge increase to reflect the current average residential consumption of 200 kL per year or the current average consumption for metered single houses of 220 kL per year?**

Sydney Water does not wish to adjust the kL per year for the unmetered water charge.

Sydney Water considers 180kl per year as representative of these properties as 80% of these properties are:

- small inner-city terraces (more like apartments), or
- small non-residential shops.

Minor service extension charges

58 **Should the methodology used to determine minor service extension charges be changed? If so, how and on what basis?**

Sydney Water supports the current minor service extension methodology to be applied over the 2016 determination period.

The current method is to divide the capital costs, less net operating revenue, among directly benefitting properties. This is consistent with IPART's user pays principle.

Wholesale pricing

59 **What is the most appropriate methodology or basis for setting wholesale prices?**

Sydney Water considers a retail minus avoidable costs (RMAC) methodology appropriate for charging wholesale customers and access seekers. This would also include the addition of facilitation costs of providing access.

This approach is consistent with:

- the pricing principles under WICA's third party access regime
- the approach determined by ACCC for access to Sydney Water's declared network, and
- an independent expert economist opinion.

RMAC supports efficient new entry and competition, in the context of postage stamp pricing. It avoids opportunities of arbitrage and perverse outcomes for Sydney Water's customers.

Please see our detailed response in Chapter 5 (Section 5.3).

60 **What is a reasonable retail-minus avoidable costs price cap to apply to all wholesale customers?**

Sydney Water supports IPART setting interim wholesale price caps for water and wastewater services to increase industry certainty.

If a simple approach is taken of deducting a standard percentage from the relevant retail price for the service to represent avoidable retail costs, we feel that a deduction of 3% would be an appropriate proxy. This is in line with the WSAA water industry study referred to in section 5.4.

The deduction should be subtracted from the relevant total retail price for the service, including both the fixed charge for each end use customer serviced by the secondary water utility and usage charges, as applicable.

Please see our detailed response in Chapter 5 (Section 5.4).

61 **Should wholesale prices be regulated under the WIC Act, IPART's price determination or a combination of both?**

Sydney Water supports an interim price cap being set by IPART until a voluntary access undertaking is approved by IPART. We are happy to continue to progress our draft access undertaking for water services, and to develop a draft access undertaking for our undeclared wastewater services.

We agree that setting an interim wholesale price cap will increase certainty for industry while also providing Sydney Water sufficient time to develop robust access undertakings, which is

likely to take 18 to 24 months.

As part of setting the temporary wholesale price, our preference would be to include allowance for a back-dating mechanism, in order to account for differences between the assumed deduction and actual avoidable costs after an agreement has been reached between the incumbent utility and the access seeker/wholesale customer. This is standard fare in other regulated utility industries such as telecommunications.

The 2016 pricing determination should include a schedule providing for wholesale prices, and definitions of the entities and services for which those prices apply.

We welcome IPART's recent announcement to conduct a separate forum on the issue of wholesale pricing.

Please see our detailed response in Chapter 5 (Section 5.5).

Recycled water

62 **Is Sydney Water's proposed recycled water price of 1.77 per kL (set at 90% of its proposed drinking water charge) reasonable for its mandated schemes?**

Yes.

We believe that if we continue to set the recycled water usage price at 80% of what we charge for drinking water, we increase the risk that recycled water revenues will be too low to recover costs.

To reduce this risk, we propose to set the recycled water usage price at 90% of the charge for drinking water from 2016–17.

In general, we note that there are a number of issues with the current funding framework for recycled water. In principle, the recycled water funding framework is designed to provide full recovery of relevant costs and result in new development areas meeting the costs of the recycled water services provided. However, there are a number of anomalies within the current framework which means that any efficient business investing in recycled water could not expect to recover its efficient costs. The framework ultimately needs to ensure that Sydney Water would have a reasonable expectation of recovering costs based on the charges we can levy.

We believe there is a strong case for a general review of the recycled water funding framework following the completion of this price review. In particular, the *Recycled Water Developer Charges, Determination No. 8, 2006* requires updating.

63 **Should all of Sydney Water's mandated recycled water schemes charge the same recycled water price, regardless of their use of potable top-up water?**

Following discussions with IPART, we understand that this question is aimed to query the application of a uniform price for recycled water across all Sydney Water schemes, as well as how Sydney Water recovers its costs of purchasing potable water used to 'top up' recycled

water plants.

Potable water is used to supplement or replace recycled water from recycled water plants:

- during times of peak demand
- when the plant may be offline (for example, for maintenance)
- when recycled water demand is not large enough for the plant to operate effectively (for example, in the early stages of a development)
- to prevent salinity impacts from recycled water irrigation.

Potable water top-up requirements may vary from period to period or year to year, depending on a number of factors affecting storage, production and usage levels, such as seasonal changes and weather conditions.

We agree with the principle that costs of potable water for recycled top up should not be recovered from potable water customers.

As with all cost differences between schemes, the cost variations in servicing different development areas that have different longer term potable water top-up levels would be reflected in the developer charges for that recycled water scheme, by applying the IPART's methodology for fixing the maximum price we may charge for recycled water developer charges under the *Recycled Water Developer Charges, Determination No. 8, 2006*.

An alternative method would be to implement a variable recycled water price for each scheme. The ability to do this would need to be considered in the context of the current recycled water determination that sets out the methodology for calculating DSP charges. In addition, equity impacts of charging customers the potable water price for water that is supplied through the recycled water network would need to be considered, as customers would not be able to use this product for potable water purposes.

At this point in time, we plan to continue to charge the same recycled water usage price for all mandated schemes, regardless of their use of potable top-up water. As noted in our response to Question 62, there are a number of issues with the *Recycled Water Developer Charges, Determination No. 8, 2006* that require review. For example, the methodology to determine DSP charges includes a prescriptive volume for recycled water usage that is not reflective of contemporary recycled water demand.

Our view is that any major changes to recycled water pricing structures should be considered within the context of a general review of recycled water funding arrangements. We would strongly support such a review taking place after the conclusion of the price determination.

We note that currently we only have two mandated recycled water schemes, Rouse Hill (with <10% potable water top-up level) and Hoxton Park (with ongoing potable water top up being used until the recycled water plant is operational). All other minor schemes are still under consideration/development and have not yet been constructed.

7 Appendices

7.1 Appendix A: Extract from Rouse Hill Sewage Treatment Plant Determining Authority's report

Determining Authority's Report
Proposed Rouse Hill Sewage Treatment Plant
Water Board, June 1991

It is therefore necessary that these mitigative measures be incorporated into stage 1 of the STP so that their effectiveness may be assessed. It *is* not appropriate at this stage to place emphasis on implementing one measure at the expense of the other.

A management plan for the wetlands describing the monitoring and maintenance of these areas should be prepared. It would also assess the effects of storm flows, mosquito control, weed invasion and the impacts on fauna and flora.

5.5 Impacts on groundwater

Submission Nos : 10 36

The impacts of the STP on groundwater were not assessed in the EIS. It is appropriate that this issue be considered in the assessment of the effects of the artificial wetlands, particularly the impacts of higher water tables on vegetation.

The Department of Water Resources has advised that the disposal of tertiary treated effluent from the STP to Second Pond Creek is unlikely to have any adverse impact on the local groundwater resources. It was stated that only some additional localised recharge may occur as the groundwater gradients are generally towards the main creek systems. Similarly, the current marginal quality of the groundwater was unlikely to be degraded by the proposed effluent disposal. Urban runoff was identified as likely to cause a greater problem in the longer term.

5.6 Lack of an integrated approach to sewerage and drainage

Submission Nos : 2 5 7 9 10 12 13 26 32 35 36 37 41 43

The EIS highlights the necessity to apply an integrated approach to the provision of stormwater drainage and sewerage, and the treatment of the effluent. The recent drainage investigations undertaken for the Rouse Hill Urban Release Area are also cited in the EIS - referring to the proposed system of dry, wet, and dry and wet stormwater detention basins. The conclusion of this discussion is that the impacts on the receiving waters of hydraulic and pollutant loads from the proposed treatment plant would be less during storms than during dry weather conditions. It is critical that drainage and sewage effluent disposal be considered concurrently.

It is also proposed that the artificial wetland would be integrated with the stormwater drainage system so that they may be used to provide some stormwater treatment. Wetlands for stormwater treatment are likely to be additional to those necessary for sewage effluent treatment.

As many submissions on the EIS have identified, the potential for urban stormwater runoff to offset any gains made through improved sewage treatment is significant. For this reason it is essential that the two be addressed in an integrated way to avoid an incremental deterioration in water quality.

The trunk drainage strategy for Rouse Hill has been further refined by Sinclair Knight & Partners for the Rouse Hill Infrastructure Consortium Pty Ltd. Two major considerations in the formulation of the trunk drainage strategy were that flood flows and water quality should not be impacted by urban runoff. The Water Board intends to implement a drainage policy for the development area to ensure water quality control of stormwater under a Total Catchment Management approach. The strategy includes a Water Quality Management Plan which incorporates erosion and sediment control, trash interception, nutrient control, oil and grease control, and heavy metal control.

The stormwater management plan will incorporate eleven wetlands which have been designed to control water quality. The final scheme for Rouse Hill comprises 29 basins (either wet, dry, or wet and dry basins) and 8.7km of grass lined floodways (to increase the capacity of the existing system).

The measures proposed for Second Ponds Creek include:

* a wet basin upstream of Smalls Creek to control the quality of urban runoff;
* a wet and dry basin upstream of Schofields Road to attenuate peak flows and provide water quality control;
* two dry basins, one near Schofields Road and the other at Parklea Prison, to attenuate peak flows; and
* approximately 1.1km of floodway works downstream of Parklea Prison.

The implementation and successful operation of these measures is likely to be critical to the effectiveness of the wetlands and riffle zones associated with the STP. It is suggested in the EIS that wetlands could be located along Second Ponds Creek between Schofields Road and Cattai Creek. In this location they could be incorporated into the drainage system. It is essential that this take place as part of the further wetland investigations for this location. The dual purpose of treating both urban runoff and sewage effluent must form the basis for such investigations

7.2 Appendix B: Calculation of the correct taxation rate for asset disposals given customer overcompensation

This appendix calculates the appropriate taxation rate that should be applied to Sydney Water, and the resulting additional revenue allowance that should be considered, from Sydney Water systematically overcompensating customers from asset disposals.

This overcompensation is a direct result of the application of asset sales sharing rule proposed by IPART, sales value x RAB/DRC ratio (the ratio). The issues stems from the fact that the ratio, although theoretically correct, has no direct relationship to the sales value with which it is multiplied.

The direct implication of this is that given historical evidence that the growth in Sydney's property prices has outpaced inflation[120] (the inflator of RAB assets), customers are very likely to be overcompensated with such an approach and the accuracy (biased upwards relative to the true RAB value) of the approach in proxying RAB asset values in future periods (should trends continue) declines rapidly.

Further, IPART has ruled that Sydney Water benefits from holding assets via capital gains and should pay all capital gains taxation from 'regulatory profits', yet as discussed in Section 3.4, customers share in capital gains through IPART's proposed approach. As such Sydney Water believes customers should bear some of the capital gains taxation burden. That said, this appendix outlines a framework which determines a formula to calculate the quantum of that burden and provides an example of what that burden might look like.

To begin the analysis, the following terms are defined:

- $SV_i = sales\ value\ at\ line\ in\ the\ sand$
- $RAB_n = RAB\ value\ at\ time\ n$
- $SV_n = sales\ value\ at\ time\ n$
- $RAB_i = RAB\ value\ at\ line\ in\ the\ sand, noting\ that\ RAB_i = SV_i\theta_{CS}, where\ i = 1$
- $\theta_{CS} = \frac{RAB_i}{DRC_i} or\ the\ customer\ sharing\ portion\ of\ sales\ vale\ determined\ by\ IPART\ to\ be\ 42\%$
- $DRC_i = depreciated\ replacment\ cost\ of\ assets\ in\ year\ i$
- $TV_n =$ $taxable\ value\ of\ the\ asset\ assumed\ equal\ to\ difference\ between\ SV_n - RAB_i for\ simplicity$
- $\dot{G} = (constant) average\ growth\ rate\ of\ market\ value\ of\ assets$
- $\dot{r} = inflation\ rate, assumed\ to\ be\ approximately\ constant$
- $\tau = corporate\ taxation\ rate$
- $i = 1, \dots, n$

[120] See ABS, *6416.0 – Residential Property Price Indexes: Eight Capital Cities*, June 2015

Using simple formulae the sales value in period n assuming a constant growth rate $\dot{\mathrm{G}}$ of the value of market assets, assuming no depreciation (i.e. land) can be calculated as:

$$SV_n = SV_i\left(1 + \dot{G}\right)^n. \quad (1)$$

The RAB value in period n assuming a constant inflation rate of $\dot{r}$ can be expressed as:

$$RAB_n = RAB_i(1 + \dot{r})^n = SV_i\theta_{CS}(1 + \dot{r})^n. \quad (2)$$

Therefore, combining equation (1) and (2) would yield the value from holding the asset. That is the value accruing to the asset owner from holding the asset over and above the value that ought to be shared with customers from use of the asset. Letting HV_n be the holding value at the time of sale. Then HV_n can be defined as:

$$\begin{aligned} HV_n &= SV_i\left(1 + \dot{G}\right)^n - RAB_i(1 + \dot{r})^n \\ &= SV_i\left(1 + \dot{G}\right)^n - SV_i\theta_{CS}(1 + \dot{r})^n \\ &= SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}(1 + \dot{r})^n\right] \end{aligned} \quad (3)$$

Under in essence there is an increase/decrease in value from the period of the establishment of the RAB that has not been recognised in the RAB. This higher/lower value has not been reflected in the prices paid by customers. IPART's approach proposes to share this capital gain/loss with customers in proportion to the ratio of the RAB to DRC. However, IPART proposes that the capital gains tax (CGT) in regards to the whole of the capital gain or loss is borne by Sydney Water rather than being similarly shared between the customers and Sydney Water. Sydney Water's view is that if the capital gain/loss is shared between the customer and Sydney Water, the tax obligation on this gain should be similarly shared.

Given equations (1), (2) and (3), the customer share in dollar terms, $\mathrm{CS_n}$, over and above that which they have paid for and have accrued from use of the asset in period n when an asset is sold can be expressed as:

$$\begin{aligned} CS_n &= SV_i\left(1 + \dot{G}\right)^n\theta_{CS} - RAB_i(1 + \dot{r})^n \\ &= SV_i\theta_{CS}\left(1 + \dot{G}\right)^n - SV_i\theta_{CS}(1 + \dot{r})^n \\ &= SV_i\theta_{CS}\left[\left(1 + \dot{G}\right)^n - (1 + \dot{r})^n\right] \end{aligned} \quad (4)$$

Where the left-hand side of the first line of equation (4) represents the customer's share of the period n sales value of the asset; is proposed by IPART to equate to the implied regulatory asset value at the time of sale. That is, the value shared with customers that ought to equate to the value paid for use of the asset. The right-hand side represents the actual RAB value paid for by customer via indexation via inflation $\dot{r}$ through the RAB.

What should be obvious is that the difference between the left and right-hand sides of equation (4) represents the overcompensation customers receive that occurs from IPART's proposed sharing scheme i.e. $SV_n x\ \theta_{CS}$. This overcompensation is clearly funded by Sydney Water from value

obtained from holding the asset, a value which must be used to pay capital gains tax (CGT). The logic then extends that if customers receive the some of the holding value benefits, then the overcompensation should attract some amount of CGT.

The corollary of this is that Sydney Water should bear a lower portion of the overall CGT bill. Logically the adjustment should be in proportion to the holding value retained by Sydney Water. The proportion of the holding value retained by Sydney Water can be defined from equations (3) and (4) as $(1 - CS_n/HV_n)$. Where CS_n/HV_n is equal to customers share of the total holding value. The tax bill can be defined as the taxable value that attracts CGT, or $TV_n = SV_n - RAB_i$ (from the initial definitions). Therefore adjusted tax bill, TB_{SW}^{τ}, for Sydney Water given the tax rate τ, can be expressed as:

$$\begin{aligned} TB_{SW}^{\tau} &= (1 - CS_n/HV_n)[SV_n - RAB_i]\tau \\ &= (1 - CS_n/HV_n)\left[SV_i\left(1 + \dot{G}\right)^n - SV_i\theta_{CS}\right]\tau \\ &= (1 - CS_n/HV_n)SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}\right]\tau \end{aligned} \quad (5)$$

To determine the appropriate tax rate, τ^*, that should apply to adjust for the overcompensation to customers via the holding value the tax bill that applies currently is defined using $\tau^*$and then set equal to equation (5) and solved for τ^*.

$$\begin{aligned} \left[SV_i\left(1 + \dot{G}\right)^n - RAB_i\right]\tau^* &= TB_{SW}^{\tau} \\ \left[SV_i\left(1 + \dot{G}\right)^n - SV_i\theta_{CS}\right]\tau^* &= TB_{SW}^{\tau} \\ SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}\right]\tau^* &= (1 - CS_n/HV_n)SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}\right]\tau \\ \tau^* &= \frac{(1 - CS_n/HV_n)SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}\right]\tau}{SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}\right]} \\ \tau^* &= (1 - CS_n/HV_n)\tau; \textit{ where } (1 - CS_n/HV_n) < 1 \end{aligned} \quad (6)$$

Substituting CS_n and HV_n into equation (6):

$$\begin{aligned} \tau^* &= \left(1 - \frac{SV_i\theta_{CS}\left[\left(1 + \dot{G}\right)^n - (1 + \dot{r})^n\right]}{SV_i\left[\left(1 + \dot{G}\right)^n - \theta_{CS}(1 + \dot{r})^n\right]}\right)\tau \\ \tau^* &= \left(1 - \frac{\theta_{CS}\left[\left(1 + \dot{G}\right)^n - (1 + \dot{r})^n\right]}{\left[\left(1 + \dot{G}\right)^n - \theta_{CS}(1 + \dot{r})^n\right]}\right)\tau \end{aligned} \quad (6)$$

Redefining $\frac{\theta_{CS}[(1+\dot{G})^n-(1+\dot{r})^n]}{[(1+\dot{G})^n-\theta_{CS}(1+\dot{r})^n]}$ as φ_{HV}^{CS}, equation (6) can be simplified to:

$$\tau^* = (1 - \varphi_{HV}^{CS})\tau. \quad (7)$$

The implication of equation (6) and (7) is that the adjusted tax rate, $\tau^* < \tau$, now reflects the fact that customers are overcompensated via IPART's method by an amount equal to the value of the capital gain multiplied by (30%-τ^*). Therefore to adjust for this overcompensation, Sydney Water's allowable revenues or regulatory taxation should be adjusted upward by a value equal to capital gain x (30%-τ^*).

In addition, the appropriate tax rate τ^* is a function of only several known or easily estimable parameters and is agnostic of the RAB value of assets at the line in the sand, and the actual sales value. The parameters which are of relevance to the estimation of $\tau^*$are from equation (7), θ_{CS}= 42%, $\dot{r}$ = 2.5%, n = 15, $\tau = 30\%$, $\dot{G}$, which has be proxied/estimated using the Australian Bureau of Statistics (ABS) data for Sydney's residential property price index[121] to be equal to an average annual growth rate of approximately 4.80%[122] between September 2003 to June 2015. These numbers combine in equation (7) to estimate an applicable taxation rate (τ^*) of approximately 24.90%.

To give these figures a degree of relativity, and making using the capital gains figures presented by Sydney Water in Table 11.3 of its Pricing Proposal, the total capital gain on actual and forecast property sales between 2012–13 to 2019–20 is $314.7 million. This gives an equals to an overpayment to customers equal to approximately $16.06 million in nominal terms over the periods ween 2012–13 to 2019–20.

[121] ABS, *6416.0 – Residential Property Price Indexes: Eight Capital Cities*, June 2015

[122] Calculated as 4.80% = $(149.8/85.3)^{(1/12)}$

7.3 Appendix C: Revised stormwater prices

In Sydney Water's Pricing Proposal, vacant land with stormwater service had not been taken into account in prices modelling. With the appropriate treatment for vacant land, Sydney Water has re-modelled the prices for stormwater.

The revised stormwater prices ($2015–16) are summarised in the following table.

Table 7-1 Revised stormwater prices

	2016–17 ($)	2017–18 ($)	2018–19 ($)	2019–20 ($)
Proposed Stormwater Prices in Submission (June 2015)				
Residential				
Single	83.96	81.54	79.20	76.92
Multi	30.79	29.90	29.04	28.21
Non residential				
Small	30.79	29.90	29.04	28.21
Medium	83.96	81.54	79.20	76.92
Large	419.80	407.73	396.01	384.63
Very large	1,865.75	1,812.12	1,760.04	1,709.45
Largest	4,664.40	4,530.32	4,400.10	4,273.63
Multi	30.79	29.90	29.04	28.21
Revised Stormwater Prices with Data including Vacant Land (Sept 2015)				
Residential				
Single	83.86	81.36	78.93	76.57
Multi	30.75	29.84	28.95	28.08
Non residential				
Small	30.75	29.84	28.95	28.08
Medium	83.86	81.36	78.93	76.57
Large	419.32	406.81	394.67	382.89
Very large	1,863.65	1,808.03	1,754.08	1,701.73
Largest	4,659.13	4,520.09	4,385.20	4,254.34
Multi	30.75	29.84	28.95	28.08

7.4 Appendix D: Economic proof of retail minus as the efficient access price given postage stamp pricing

The Efficient Components Pricing Rule (ECPR), is also known colloquially as 'Retail-Minus' (RM)[123] (henceforth RM is used to refer to ECPR), was promoted as an access-pricing regime that would induce efficient outcomes, whilst still ensuring that a vertically integrated incumbent (incumbent) received fair and efficient compensation for the use of its essential infrastructure. Pickford describes RM as the access price "which would leave the incumbent indifferent as to whether it or the rival supplies the unit of final product".[124]

To formally analyse RM as the appropriate access price in a postage stamp pricing (PSP) world, the simple framework outlined by Pickford and Armstrong, Doyle and Vickers (ADV)[125] is adopted. Within this framework the RM access price a^{RM} can be written as:

$$\begin{aligned} a^{RM} &= c_w + (PSP - MC_l) \\ &= c_w + (PSP - c_w - c_l) \\ &= PSP - c_l \\ &= PSP - (\text{avoidable retail costs}) \end{aligned} \qquad (1)$$

Where, $MC_l = c_w + c_l$, is the marginal cost of the incumbent wholesaler, and c_w is the marginal cost of self-supplying access (e.g. raw water, filtration, transportation, etc,) c_l, is the (avoidable) marginal cost of retailing the service, and PSP is the postage stamp price required to be set by the incumbent in the retail market

From (1) it is evident that RM links the access and retail price charged by the incumbent,[126] and the difference between the PSP and the access charge a^{RM} (i.e. the margin PSP- a^{RM}) is equal to the incumbent's (avoidable) marginal cost of retailing the service in the contestable downstream activity c_l (as $c_l = MC_l - c_w$).

Baumol and Sidak,[127] (BS) show and Oxera Consulting in a note on wholesale access pricing for the UK[128], discuss that the RM access price creates incentives for production efficiency as it encourages the incumbent to allow entry by a firm with a lower (avoidable) marginal cost of

[123] Also known as the parity pricing principle or Baumol-Willig (B-W) Rule. See R.D. Willig, "The Theory of Network Access Pricing", *Issues in Public Utility Regulation*, H. M. Trebing (ed), Michigan State University Public Utility Papers, 1979, and, W.J. Baumol, "Some Subtle Issues in Railroad Regulation", *International Journal of Transport Economics* 10, 1983, pp 341–55.

[124] M. Pickford, "Pricing Access to Essential Facilities", *Agenda* 3, 1996, pp 165–76.

[125] M. Armstrong, C. Doyle and J. Vickers, "The Access Pricing Problem: A Synthesis", *Journal of Industrial Economics* 44, 1996, pp 131–50.

[126] J-J Laffont and J. Tirole, *Competition in Telecommunications*, MIT Press, Cambridge, 2000, p 119, refers to ECPR as a "partial (incomplete) regulatory rule that links retail and wholesale prices".

[127] W.J. Baumol and J.G. Sidak, *Towards Competition in Local Telephony*, MIT Press, Cambridge, 1994.

[128] Oxera, *The future of water upstream?,* Agenda, September 2015.

retailing the service than its own, and hence can earn a profit.[129]. In order to achieve positive profit, an entrant must have a lower marginal cost (equal the access price, a plus its own retailing costs c_E, $MC_P = a + c_E$) of retailing the service than the incumbent.[130]

ADV illustrate that the RM-based access price, is an efficient outcome when there is a a distortion away from marginal cost based pricing. The retail price charged by the incumbent may be inefficiently distorted away from the marginal cost MC_I, because of such things as[131]having to fund the common costs (CC) of providing the service or being required to cross-subsidise costs (including common costs) of suppling markets because of the requirement to set a PSP.

This means that the incumbent supplies simultaneously q_E units of wholesale access to entrants and output Q_I to the retail market. Entrants price efficiently at marginal cost so each unit of output Q_E will be priced at $P_E = MC_P = a + c_E$. The difference between the retail price and the social marginal cost of production is therefore equal to the difference between the access price and the marginal cost of supplying the wholesale access service (i.e. $P_E - MC_E = a - c_w$)[132].

Pickford and ADV's work can be illustrated in a diagram, which can be used to explain that the initial outcome in this market, where there is an access price which is based on marginal cost, $a^0 = c_w$., that is below a RM-based access price. Figure 7-1shows this outcome.

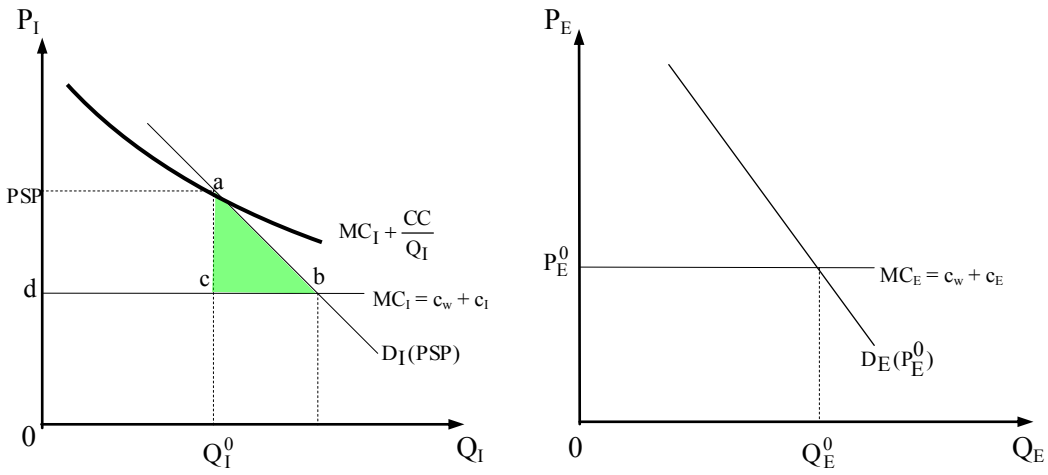

Figure 7-1 The marginal cost based access price

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[129] To see this note that under RM the incumbent will be indifferent between providing the final product in the retail market and essential access in the wholesale market, as assuming there are no common costs of production here, the incumbents overall profit will remain unchanged, i.e. $\pi_I = (PSP - MC_I)Q_I^0 = (a^{RM} - c_w)Q_I^0$.

[130] That is to say extending the above footnote $\pi_E = (PSP - MC_p)Q_I^0 = (PSP - a^{RM} - c_E)Q_I^0 = (c_I - c_E)Q_I^0 > 0, \text{ iff.} c_I > c_E$

[131] M. Armstrong, "The Theory of Access Pricing and Interconnection", *Handbook of Telecommunications Economics*, Volume 1, M.E. Cave, S.K. Majumdar and I. Vogelsang (eds.), Elsevier Science B.V, 2002.

[132] Further, as the marginal cost of retailing the service for entrants c_E is constant, it follows that $dP_E = da$, and as q = Q, it implies that $\partial Q_E/\partial P_E = \partial Q_E/\partial a$, $\partial Q_I/\partial P_E = \partial Q_I/\partial a$, and that $dQ_E = dq_E$

The figure illustrates that the quantity served by the incumbent, at the PSP, the (average) network CC is recovered (PSacd) and the efficiency loss from distorting price away from the (long-run) marginal cost is equal to the green-shaded triangle area abc. If access is priced at the incumbents marginal cost of supplying access to itself ($a = c_w$), without a contribution by entrants (access seekers) to CC (or the cost of universal service) under PSP, the entrant's price P_E^O becomes equal to the social marginal cost of production MC_E for the market the entrant services. That is to say, marginal cost pricing results in there being no market distortion i.e. productive and allocative efficiency in the competitive fringe.

Although efficiency in the market the entrant services occurs with an access price equal to c_w, overall welfare is not maximised and any under-recovery by the incumbent puts upward pressure on the cost of universal service via the PSP, which is (equal to any under-recovery. The welfare issue can be highlighted by examining the marginal welfare change resulting from a marginal increase in the regulated access charge a.

Remembering that that the level of output produced by the entrant (or number of customers served) [133], Q_E^O, also represents the level of access supplied by the incumbent to entrants; from which no CC contribution towards the cost of universal service is able to be recovered and acts as a subsidy from the incumbent to the entrant. Meaning, an increase in the access charge (to recover the cost of universal service) translates into an increase in the retail price for the entrant[134], and as the incumbent and entrant's products are (perfect) substitutes, at the given PSP, there will be an increase in the quantity of output demanded for the incumbent[135] (a shift in the demand curve).

Increasing the access price above the marginal cost of providing access — and subsequently increasing the retail price above the entrants social marginal cost, involves trading off a welfare gain in the retail market served by the incumbent,[136] with a deadweight-loss in the competitive fringe served by entrants. This is highlighted in Figure 7-2 for an arbitrarily higher access price above marginal cost, $a' > c_w$.[137]

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[133] A unit of access q is required to produce a unit of output Q,

[134] Technically $da = dP_E$ and $\partial Q_I / \partial P_E = \partial Q_I / \partial a$

[135] $dQ_I > 0$

[136] This is a Harberger welfare rectangle trade off. See A. Harberger, "Three Basic Postulates for Applied Welfare Economics: An Interpretative Essay", *Journal of Economic Literature* 9, 1971, pp 785–97.

[137] The outcome that a price above marginal cost in the competitive fringe leads to a higher level of welfare is consistent with the rule of second best outlined by Lipsey and Lancaster (1956-57). This states that where there is an existing irremovable distortion in a market, it may not be optimal to set price equal to marginal cost in the related market. See R.G. Lipsey and K. Lancaster, "The General Theory of Second Best", *Review of Economic Studies* 24, 1956–7, pp 11–32.

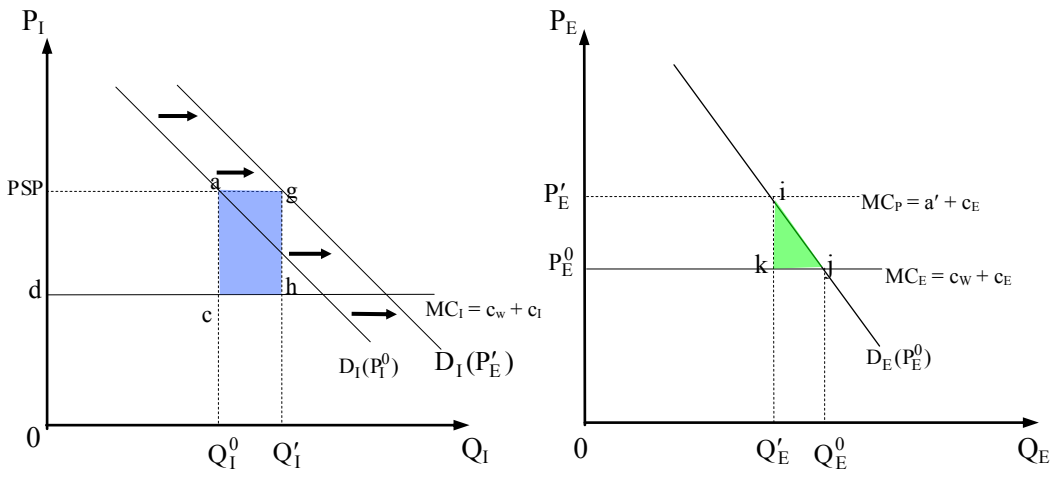


Figure 7-2 Above marginal cost access price

The right-hand of Figure 7-2 illustrates that the above marginal cost access price a′ leads to entrants facing a private marginal cost and charging a retail price of $P_E^{'} = MC_P^{'} = a' + c_E$. This exceeds the social marginal cost of production $MC_E = c_W + c_E$. The implication being an allocative inefficiency equal to the green-shaded triangle ijk and a productive inefficiency equal to area $P_P^{'}ikP_E^O$. However, as the productive inefficiency is equal to the increased cost recovery or reversal of subsidy from the incumbent to the entrant providing access, there is no deadweight-loss associated with it.

The right-hand of Figure 7-2 illustrates the resulting shift in the level of demand for the incumbent from the higher retail price charged by the entrant. To maximise welfare given the PSP in the incumbents retail market, a regulator must maximise the difference between the rectangle welfare gain for the incumbent (aghc) and the deadweight-loss triangle in the entrants market (ijk). This is achieved by setting the access price to equate the marginal welfare gain with the marginal deadweight-loss. Hence, the (second-best) efficient access price a^* must satisfy the welfare (W) condition, where dW refers to the total derivative or change in welfare:

$$dW = (PSP - MC_1)dQ_1 + (P_E^* - MC_E)dQ_E = 0, \text{ where } P_E^* = a^* + c_E. \quad (2)$$

Substituting P_E^*, MC_E, dQ_I, dQ_E and solving for a^* gives[138],

$$\begin{aligned} a^* &= c_w + \sigma_a(PSP - MC_I) \\ &= c_w + (PSP - c_w - c_I) \\ &= PSP - c_I \\ &= PSP - (\text{avoidable retail costs}) \\ &= a^{RM}, \end{aligned} \quad (3)$$

[138] It follows the retail price of entrants will be $P_E^* = c_E + c_w + \sigma_a\left(P_I^0 - MC_I\right)$, where $\sigma_a = -\frac{\partial Q_I / \partial a}{\partial Q_E / \partial a}$

where $\sigma_a = (\frac{\partial Q_I}{\partial a}) / \left(-\frac{\partial Q_E}{\partial a}\right) = 1$.

Crucially σ_a is known as the *'displacement ratio'* (see ADV at p 139). It captures the rate of substitution by consumers between the incumbent and entrant for a change in the access price. Which in this case the (water) products are perfect substitutes (i.e. $-\partial Q_E/\partial a = \partial Q_I/\partial a$), and so is σ_a equal to +1, and the access price a^* simplifies to the RM access price outlined in equation (B.1).

The conclusion from (3) is that the optimal access price, a*, which maximises welfare in a PSP world with common costs, reduces to the RM access price, a^{RM}.

7.5 Appendix E: Water charges when the desalination plant is operating

Under current NSW Government policy, the Sydney Desalination Plant (SDP) is turned on when dam levels fall to 70%. It continues to operate until dam levels recover to 80%. When the SDP is operating, Sydney Water incurs additional costs compared to when the plant is on stand-by. We currently recover these costs by increasing water service charges.

From 1 July 2016, we are proposing additional costs of turning the SDP on should be recovered through:

- a smaller increase in the service charge at a one year lag, and
- an immediate increase in the water usage price.

An example is included in Table 7-2 below. This way, customers who continue to use water in the same way pay a greater share of the costs, and those who reduce their demand can save money. Increasing water usage charges to recover desalination costs was strongly supported in our customer research. The increase in charges will be based on a formula approved by IPART.

Variation to the water service charge

After the SDP is turned on, we will increase the water service charge from the beginning of the next financial year, the same way service charges are increased now. The increased service charge will apply until the end of the financial year after the SDP is turned off. For example, if the SDP was turned on in January 2017 and turned off in January 2018, the increased water service charge would apply from 1 July 2017 to 30 June 2019.

Variation to water usage charges

The water usage charge will be increased for the same dates that the SDP is operating. This means that the price for each kilolitre of water used will be higher when the SDP is on.

Table 7-2 Example of increase to water charges when Sydney Desalination Plant is operating

Type of charge	Without SDP on	With SDP on
Water usage charge	$1.97 per kilolitre	$2.10 per kilolitre[a]
20mm service charge	$24.63 a quarter	$24.63 a quarter *from time of activation until beginning of next financial year*
20mm service charge	$24.63 a quarter	$27.15 a quarter[b] *from beginning of financial year following activation*

[a] The increased price of $2.10/kL = ($1.97+$0.13)/kL. Source: Table 10.3, *Review of prices for Sydney Water Corporation*, Water – Issues Paper, IPART, September 2015

[b] The increased price of $27.15 = ($98.52+$10.08)/4. Source: Table 10.3, *Review of prices for Sydney Water Corporation*, Water – Issues Paper, IPART, September 2015

Communication of changes

If accepted by IPART, Sydney Water will inform customers of how this will affect water usage and service charges. We will do this when IPART makes its final determination in 2016 and if the SDP is activated during the price period. We will do this by making a public announcement and providing information to customers in their bills.

7.6 *Confidential* Appendix F: Hot water meter reading – multi level individually metered (MLIM) properties

This appendix has been provided to IPART as a confidential submission.

8 Attachments

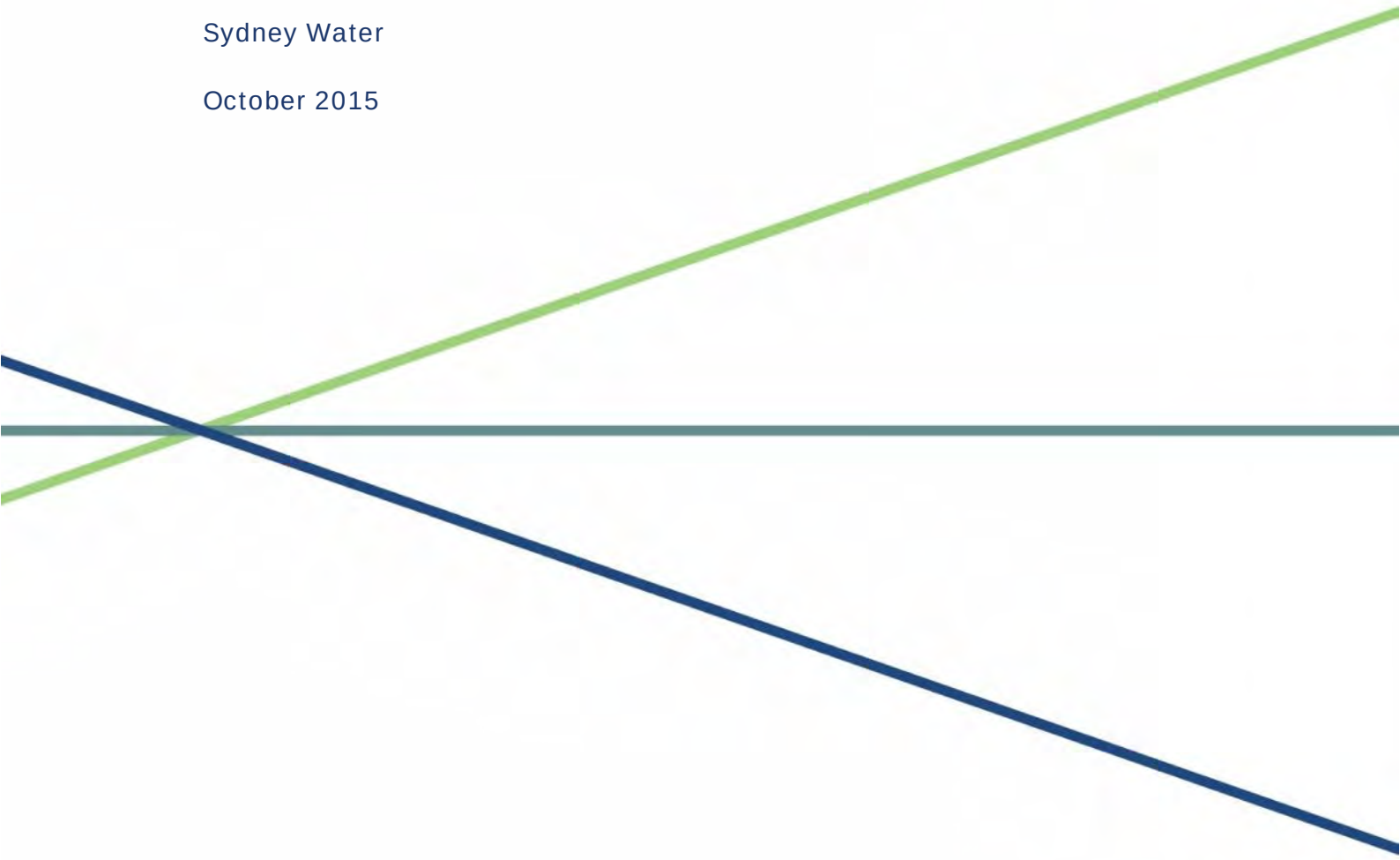
8.1 Attachment 1: Incenta Economics Consulting report

8.2 Attachment 2: HoustonKemp Economists report

Cost-efficiency incentive schemes for Sydney Water: Comment on the IPART Issues Paper

Sydney Water

October 2015



INCENTA
ECONOMIC CONSULTING

Table of Contents

1. Introduction and summary

1.1 Introduction and scope of work

1. As part of its proposal to the Independent Pricing and Regulatory Tribunal (IPART), Sydney Water Corporation (Sydney Water) proposed including incentive arrangements to enhance the incentives provided for cost-efficiencies in relation to operating and capital expenditure. The scheme in relation to operating expenditure was proposed to apply across all of operating expenditure except Sydney Water's payments for bulk water, and to a subset of capital expenditure, being projects to serve new growth areas.

2. IPART raised a number of issues with the schemes as proposed, and I have been asked to respond to those issues, including whether:

   a. The issues that IPART has raised are valid, and

   b. IPART's proposed response to the issues it has identified is the most appropriate response, or whether an alternative correction to the model as proposed by Sydney Water would be preferred.

3. This report has been prepared by Jeff Balchin. I am the Managing Director of Incenta Economic Consulting, a firm that specialises in advising in relation to economic regulation issues in the infrastructure sector. I have 20 years of experience in relation to economic regulation and pricing issues across the electricity, gas, ports, airports and water sectors in Australia and New Zealand, having advised governments, regulators and major corporations on issues including the development of regulatory frameworks, regulatory price reviews and with respect to the negotiation of charges for unregulated infrastructure services. As part of this, I have undertaken substantial work on the design of incentive schemes for cost and other dimensions of efficiency, which included assisting with the design of the original cost-efficiency incentive schemes in Victoria (which were introduced for electricity distribution in 2001).

1.2 Summary of findings

4. IPART has raised different issues in relation to the incentive scheme in relation to operating and capital expenditure, and so I address these separately in turn. IPART also raised a question about the appropriate power of incentive schemes. As this is an issue that is common to both schemes, I address this third below.

1.2.1 Incentive scheme in relation to operating expenditure

Summary of the issue

5. Sydney Water proposed an incentive scheme that integrated the method for rewarding cost improvements (compared to the regulatory allowance) in one regulatory period with the approach that is then used to forecast operating expenditure for the subsequent period. Under the scheme:

a. the incremental efficiency gain or loss made in each year is held for five years (the year in which the gain or loss is made, plus four years) and then passed on to customers, with an amount to be carried over into the next regulatory period to the extent necessary to achieve this holding period

b. the "passing on" to customers results from actual expenditure at the end of one period being used mechanistically when setting the expenditure allowances for the next regulatory period, and

c. more specifically, it was proposed that actual expenditure in the penultimate year of the prior regulatory period (referred to as the base year) would be used as the starting point for deriving the regulatory allowance for the next regulatory period, with adjustments then made for the expected trend in expenditure, and where any step changes in expenditure are expected.[1]

6. IPART identified two principal concerns with Sydney Water's proposed operating expenditure scheme, which were that:[2]

a. a business could obtain a reward simply by deferring or advancing expenditure into the "base year" that was used to deriving the new expenditure allowance, thus providing an incentive for perverse behaviour (and a windfall transfer from customers), and

b. a business could be rewarded through the efficiency carry-over merely by shifting expenditure between years.

7. IPART was also concerned that the linking of the operating expenditure allowance to actual expenditure in a base year would limit its capacity to challenge the efficiency of the expenditure. IPART has proposed instead that the carry—over of efficiency benefits from one period to the next would only apply in cases where actual expenditure during the period in question was lower than the allowance. It also proposed retaining the discretion to used benchmarking and other techniques when setting the new expenditure allowance.

Commentary

Potential incentive to shift expenditure into the base year

8. IPART was correct in its analysis that the scheme that Sydney Water proposed would be expected to provide an incentive for perverse behaviour and the consequent potential for adverse outcomes. However, the source of this outcome was an oversight in the detailed specification of the scheme as proposed.

a. The detailed specification of the Sydney Water scheme proposed using the penultimate year of one regulatory period as the base year for setting the allowance

[1] Sydney Water also proposed that a $50 million limit apply to the aggregate reward or penalty that is to be carried over under the scheme to cap any windfall gain or loss that may apply as a consequence of enhancing the incentives.

[2] IPART, 2015, Review of prices for Sydney Water Corporation from 1 July 2016: Issues Paper, September, p.84.

for the next regulatory period. Sydney Water also proposed calculating an efficiency carry-over amount for the final year of the regulatory period and applying this to the next period.

b. The oversight in the scheme is that if the penultimate year of the regulatory period is used as the base year, then there should not be an efficiency carry-over amount calculated in respect of the final year of the regulatory period and carried forward into the next period. To the extent that an incremental gain is made in the last year of the regulatory period, then the reward for this gain is implicit in the fact that this gain is not factored into the new allowance (i.e., because the base year for the new forecast is the penultimate year – rather than the final year – of the regulatory period, then the allowance will be higher than otherwise).[3]

9. The perverse incentive that IPART observed resulted, in effect, from the same gain being rewarded twice. I show that once this oversight in the Sydney Water model is corrected, then the perverse incentives that IPART observed disappear. I observe that, once this aspect of the scheme is corrected, the incentive scheme that Sydney Water has proposed is virtually identical to the "efficiency benefit sharing scheme" that the Australian Energy Regulator (AER) applies in relation to energy networks, which itself is virtually indistinguishable from the "efficiency carry-over" scheme that was applied previously by the Victorian economic regulator, and which in turn was closely modelled on the scheme that applied to the UK water sector from the 1994 price review. There is substantial experience with the application of these schemes and the incentives created.

Incentives to shift expenditure within a regulatory period more general

10. IPART's more general concern that the efficiency carry-over will provide a reward (or penalty) from shifting expenditure within a regulatory period are misplaced, however. The incentive problems that arise in the absence of an efficiency carry-over are that:

a. Permanent efficiency gains (or losses) are under-rewarded (or penalised), and perverse incentives can exist at the end of the regulatory period, but

b. Transitory changes in expenditure – whether this is a one-off saving or expense, or where expenditure is deferred or advanced – are over-rewarded or penalised. This occurs because these actions are wholly contained within a regulatory period and so the whole of the benefit or cost from these one off event is received or borne by the regulated business. The outcome of this is that the business's incentives with respect to transitory items are much greater than is desirable.

11. In terms of changes to the timing of expenditure, Sydney Water's proposed scheme (with the correction identified above) would operate as follows.

a. Where operating expenditure can be deferred, a timing benefit (i.e., reduction in the opportunity cost of funds) is created, and Sydney Water initially retains the whole of this benefit. However, the efficiency carry-over creates an offsetting penalty after a

[3] If the penultimate year is used as the base year, then an adjustment is also required to how the efficiency gain for the first year of the new regulatory period is measured. This is discussed in the body of the report.

period of five years. This provides customers with their share of this transitory benefit – the fact that Sydney Water held the benefit for five years before passing this on is consistent with the intention that it bear all efficiency changes (transitory or permanent) for this period.

b. Equally, where operating expenditure is advanced, the reverse occurs – Sydney Water initially bears the timing cost, this is held for five years, and then passed on to customers. While it is the case that the efficiency carry-over will contain an apparent reward for Sydney Water, this is not a "free lunch" – advancing the expenditure in the first place was costly, and it is this cost that is reversed after the intended period.

Setting the new expenditure allowances

12. IPART is correct that the incentive scheme Sydney Water proposed assumes that the actual expenditure in the penultimate year of one regulatory period is used as the starting point for the allowance in the next regulatory period. This assumption is inherent in how the efficiency gain (and resulting benefit) is calculated under the scheme – that is, the sharing of the efficiency benefits achieved in one period between the regulated business and customers is premised on a mechanistic translation of actual expenditure into the new allowance.[4]

13. Having said that, however, there is nothing inherent in the incentive scheme that precludes an assessment of Sydney Water's efficiency – and the potential disallowance of cost – and this is indeed the AER's current practice. However, the nature of the incentive scheme means that certain cautions are warranted.

    a. First, when an efficiency carry-over is applied, then one-off events that affect expenditure in the base year expenditure create an almost offsetting impact on the new expenditure allowance and the efficiency carry-over. Such events should, therefore, be of less of a concern, with the appropriate focus of an assessment of prudence and efficiency being upon underlying expenditure (that is, after the removal of one-off or unusual events that may have affected the base year).[5]

    b. Secondly, in the case where a disallowance of expenditure is to be applied, the flexibility should also be retained to decide whether it is reasonable to apply the accrued efficiency carry-over from the previous regulatory period. In particular, if a business had overspent in the previous period – and had an accrued negative carry-over – then it is possible that applying a disallowance to their operating expenditure allowance may result in the regulated business bearing more than 100 per cent of the "inefficiency". In this case, it would be reasonable not to apply the accrued negative carry-over.

14. I would highlight, however, that the intention of the incentive scheme that Sydney Water has proposed is to provide a greater financial incentive to be efficient with respect to

[4] The mechanics of the scheme are that any incremental efficiency gain or loss is held for five years (the year in which the gain or loss is made, plus four) and then passed on to customers. The "passing on" to customers results from flowing actual expenditure through into the new allowance.

[5] That is, an additional $1 in the base year would raise the allowance by $1 per annum, but reduce the efficiency carry-over by the same amount for three of the four years of the next regulatory period.

operating expenditure, and for this information to be used when setting the new expenditure allowances, so that less reliance need be placed upon more traditional tests of prudence and efficiency. It should be expected, therefore, that if Sydney Water responds to the financial incentive scheme, then the role of direct testing of the prudence and efficiency of operating expenditure should diminish over time.

15. I also note for completeness that some care is required over how the base year expenditure is translated into the new allowances. It is assumed implicitly in the scheme that the accrued efficiency gain over a regulatory period is a permanent gain. Consistent with this, when setting the new allowance the assumed trend change in expenditure (as well as any step changes) should ignore the ebbs and flows of the quantity of work volumes required in any regulatory period and focus instead on the longer term relationship between the level of output and operating expenditure.

Comment on IPART's suggested alternative scheme

16. From the discussion above, I think IPART's proposal to continue to test the efficiency of base year expenditure is not unreasonable, and is not inconsistent with the Sydney Water scheme. There are, however, some deficiencies in the incentive properties of the alternative scheme.[6]

    a. First, a consequence of the asymmetric nature of the scheme is that the rewards or penalties for transitory events will be distorted (and potentially materially) in cases where expenditure in any year is greater than the allowance.

        i. In the specific case that IPART has presented in Appendix G (table G.3) a mere change to the timing of expenditure during one regulatory period will generate a materially adverse outcome for Sydney Water in the next regulatory period.[7]

        ii. In contrast, the corrected Sydney Water incentive scheme will create an outcome for Sydney Water in the next period that aligns with the social costs and benefits created and is proportionate to the issue.

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6 The alternative scheme assumes that year 4 is used as the base year for expenditure forecasts, rather than year 3. This is an alternative method for correcting the oversight in the Sydney Water proposal, discussed above.

7 This outcome is not apparent in the results in Table G.3 because this table focusses only on the efficiency carry-over in the next period, rather than the effect of the efficiency carry-over and new expenditure allowance combined. While the situation depicted in Table G.3 will result in an efficiency carry-over of +10 into the next period, it will result in the new allowance being 10 less than underlying expenditure (this follows because the example assumes that expenditure in the first period was merely shifted between years), implying a net outcome in the second regulatory period of -30. This is a substantial penalty for what was merely a change to the timing of expenditure within the first period. If the Sydney Water scheme were modified to be consistent with the IPART alternative scheme (i.e., year 4 is used as the base year and the holding period is reduced to four years) then the efficiency carry-over into the second period would be +40, which is the same as the sum of the loss from the operating expenditure allowance being lower than underlying expenditure. A small loss would be suffered under the modified scheme when the time value of money is taken into account; however, this is reasonable because it would reverse the small timing gain that was made in the first regulatory period.

b. Secondly, as the scheme is asymmetric, it provides less of an incentive to constrain expenditure where this is above the allowance, and retains the incentive to bring-forward expenditure into the base year in order to inflate the regulatory allowance in cases where the business is overspending. This is subject to the sanction that IPART may set a new expenditure allowance below actual expenditure – but this is a common component of both schemes.

17. One assumption in IPART's proposed alternative scheme is that the holding period for efficiency gains is reduced from five years to four years. If desired, this is a change that could be made to Sydney Water's proposed scheme.

1.2.2 Capital expenditure efficiency scheme

18. Sydney Water also proposed an efficiency scheme in relation to defined classes of capital expenditure, being critical water mains and reticulation renewals and electricity. The broad operation of the proposed scheme is that:

a. The efficiency gain that is made during a regulatory period is measured, being the difference between forecast (the allowance) and actual capital expenditure, in present value terms, and the share of this intended for the regulated business is determined[8]

b. The benefit received during the period is calculated, being the saving in financing costs during the period, again in present value terms, and

c. The difference between the intended benefit and the benefit received is carried forward to the next period so that the regulated business receives the intended reward.

19. IPART raised a number of issues with the proposed capital expenditure incentive scheme, including that

a. There was a risk that the rewards would reflect error in the original forecasts rather than true gains, and

b. It will be hard to distinguish between cases where expenditure is avoided from those where it is merely deferred.

Commentary

20. I agree with the sentiment in IPART's discussion that incentive schemes for capital expenditure are more difficult to apply (and to create the right incentives) than schemes for operating expenditure. The two comments from IPART summarised above point to particular issues.

a. First, unlike for the operating expenditure scheme, the incentive scheme for capital expenditure does not provide a starting point for forecasts. Rather, the purpose of the scheme is to provide greater confidence that only efficient expenditure is included in

[8] This form of the efficiency carry-over calculation can also be expressed in terms of a carry-over like the model applied for operating expenditure.

the regulatory asset base. Traditional assessment techniques for capital expenditure forecasts will continue to be required.

b. Secondly, the rewards and penalties under the capital expenditure incentive scheme assume implicitly that cost reductions (or increases) are permanent. Thus, while changes to the timing of projects within a regulatory period are accommodated appropriately, where projects shift between regulatory periods there is a potential (that is, unless an adjustment is made) for excessive rewards (for project deferrals) or penalties (for project advancements) to accrue.

21. Having said that, there are material costs to not applying an incentive scheme in relation to capital expenditure. As in the case of operating expenditure, in the absence of such a scheme:

a. The incentive to permanently reduce costs declines over the course of the regulatory period, and

b. Excessive incentives are created with respect to transitory changes in cost, because the regulated business retains the whole of the benefit from deferring a project, and bears the whole of the cost of advancing a project, rather than an appropriate share of these.

22. This latter point is quite important because it can encourage inefficient choices between capital and operating expenditure where there is a trade-off. It is important, therefore, that the decision of whether to put in place an incentive scheme for capital expenditure reflects a realistic assessment of these costs and benefits.

23. In terms of the class of capital expenditure to which Sydney Water has proposed a capital expenditure efficiency carry over apply, in my view the potential deficiencies in the scheme are manageable, and the benefits of applying such a scheme should be material.

a. First, the class of expenditure – critical water mains and reticulation renewals and electricity – are those where I understand that Sydney Water is required to make a very deliberate trade-off between capital and operating expenditure. Accordingly, a material benefit should be expected from ensuring that the regulatory regime provides a financial incentive for this trade-off to be optimised.

b. Secondly, for the class of projects that have been targeted, it seems to me that it would be reasonably straightforward to monitor whether the forecast volumes or works were being performed during a period, or whether there were a material quantity of deferrals or advancements. In the case of deferrals, I note that the correct response is to omit the deferred capital expenditure from the forecasts (allowance) for the next regulatory period.

c. Thirdly, as IPART observes, the targeted classes of capital expenditure are relatively stable over time. This fact should serve to alleviate concerns about the potential for the rewards to reflect error in the forecasts.

1.2.3 Incentive power of the schemes

Summary of the issue

24. Sydney Water has proposed incentive schemes that provides a holding period of gains or losses of five years, or a share that is equivalent (in present value terms).

25. IPART has commented that the choice of the incentive rate for a scheme is complex, and requires a consideration of a number of factors and the exercise of judgement.

Commentary

26. I agree with IPART that the selection of the incentive rate, in principle, is a complex matter, and the way that IPART has expressed the choice – that of maximising the benefit to customers – is consistent with how this issue has been analysed in the past.

27. Having said that, in my view, some guidance can be taken from the decisions that other regulators have made. The five year holding period is lower (by 1 year) than what is applied in the energy sector in Australia. Moreover, the incentive rates that are applied in Australia are much lower than those currently applying in the UK (where incentive rates above 50 per cent are the norm).

28. In addition, the choice of the holding period will also affect the complexity of the scheme. With a holding period of 5 years, the incentive scheme for operating expenditure can be applied without the need for estimates or subsequent adjustments being applied.

29. Lastly, I note that the incentive schemes that Sydney Water has proposed could be applied with any holding period for the gains and losses, albeit with the need for ongoing or subsequent corrections to be applied.

1.3 Structure of the remainder of the report

30. The remainder of the report elaborates upon the analysis underpinning the conclusions above and in more detail, and addresses the comments in relation to:

    a. the operating expenditure scheme in Chapter 2

    b. the capital expenditure scheme in Chapter 3, and

    c. the appropriate incentive power of both schemes in Chapter 4.

2. Incentive scheme for operating expenditure

2.1 Issue

31. Sydney Water's proposed incentive scheme consisted of an integrated method for rewarding cost improvements (compared to the regulatory allowance) in one regulatory period with the approach that is then used to forecast operating expenditure for the subsequent period. Under the scheme:

    a. the incremental efficiency gain or loss made in each year is held for five years (the year in which the gain or loss is made, plus four years) and then passed on to customers, with an amount to be carried over into the next regulatory period to the extent necessary to achieve this holding period

    b. the "passing on" to customers results from actual expenditure at the end of one period being used mechanistically when setting the expenditure allowances for the next regulatory period, and

    c. more specifically, it was proposed that actual expenditure in the penultimate year of the prior regulatory period (referred to as the base year) would be used as the starting point for deriving the regulatory allowance for the next regulatory period, with adjustments then made for the expected trend in expenditure, and where any step changes in expenditure are expected.[9]

32. IPART identified two principal concerns with Sydney Water's proposed operating expenditure scheme, which were that:[10]

    a. a business could obtain a reward simply by deferring or advancing expenditure into the "base year" that was used to deriving the new expenditure allowance, thus providing an incentive for perverse behaviour (and a windfall transfer from customers), and

    b. a business could be rewarded through the efficiency carry-over merely by shifting expenditure between years.

33. IPART was also concerned that the linking of the operating expenditure allowance to actual expenditure in a base year would limit its capacity to challenge the efficiency of the expenditure. IPART proposed for consultation an alternative scheme, in which the carry—over of efficiency benefits from one period to the next would only apply in cases where actual expenditure during the period in question was lower than the allowance. It also proposed retaining the discretion to used benchmarking and other techniques when setting the new expenditure allowance.

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9 Sydney Water also proposed that a $50 million limit apply to the aggregate reward or penalty that is to be carried over under the scheme to cap any windfall gain or loss that may apply as a consequence of enhancing the incentives.

10 IPART, Issues Paper, p.84.

34. Some of IPART's concerns stemmed from an oversight in the detailed specification of the Sydney Water scheme, which I discuss first. Once this oversight is remedied, I find that the incentives under the Sydney Water scheme are appropriate, whereas there are material problems with the alternative scheme. Lastly, in my view, IPART's concern to want to test the efficiency of Sydney Water's expenditure levels is reasonable, but I note that caution is required when applying an efficiency adjustment. I discuss why below.

2.2 Oversight in the detail of Sydney Water's proposal

35. As noted above, IPART has identified an incentive problem with the scheme Sydney Water has proposed, namely that the business would receive an undue reward if it was to advance operating expenditure from the final year of the regulatory period to the final year of the regulatory period. This can be illustrated by the following simple example. The green circles identify the actual expenditure that flows into the new regulatory allowance.

Figure 1: Illustration of the oversight in Sydney Water's proposed scheme (expenditure advanced from year 4 to year 3)

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	105.00	105.00	105.00	105.00	100.00
Actual expenditure		100.00	100.00	105.00	95.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		-	-	-5.00	5.00	5.00	5.00	5.00	5.00	-
Incremental improvement (decline)		-	-	-5.00	10.00	5.00	-	-	-	-
Carryover calculations	***1***	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*	-	-
	4	-	-	-	*10.00*	*10.00*	*10.00*	*10.00*	*10.00*	-
	5	-	-	-	-	*5.00*	*5.00*	*5.00*	*5.00*	*5.00*
Within period benefit (loss)		-	-	-5.00	5.00	5.00	5.00	5.00	5.00	-
EBSS carry-over (from years 1 to 4)						5.00	5.00	5.00	10.00	
EBSS carry-over (from year 5)										5.00
Total benefit (loss)		-	-	-5.00	5.00	10.00	10.00	10.00	15.00	5.00

36. As illustrated above, by advancing $5 from year 4 to year 3, for a very small cost in the first regulatory period (the time cost of advancing expenditure by one year), a substantial gain in the following period would be made, which would persist into the following regulatory period.

37. However, this outcome is a result of an oversight in the detail of the scheme that Sydney Water proposed, which was to:

    a. use the penultimate year of the first period to set the new allowance, as well as

    b. calculating and applying a carry-over amount for the final year of the first period.

38. The correct approach is to either:

    a. Use the final year of the first regulatory period as the base year when setting the new regulatory allowances and calculate and apply an efficiency carry-over for the final year (in practice, this requires an estimate of the final year and a subsequent correction), or

b. To use the penultimate year of the first regulatory period to set the new allowance, and to make two further adjustments:

   i. First, to assume that there is no incremental change in efficiency between years 3 and 4, which results in a zero carry-over for that year (this ensures that the efficiency carry-over is calculated in a manner that is consistent with how the new expenditure allowance has been set), and

   ii. Secondly, when calculating the incremental efficiency change for the first year of the second regulatory period, to adjust for the difference between the assumed level of expenditure in the final year of the previous period and the actual expenditure (this ensures that the efficiency improvement in the first year of the new period is measured as if the new allowance had been set using actual expenditure for the final year of the previous regulatory period).

39. These two approaches result in an identical outcome. While the first is simpler in concept, the second has the advantage of not requiring an adjustment in the following period to account for the fact that information on expenditure in the final year will not be known at the time of the price determination. The following two figures show the outcome for the regulated business if the incentive scheme that Sydney Water proposed is corrected using the above methods. The green ovals again show how actual expenditure flows into the new allowance, and the blue ovals in the second scheme show the corrections required where the penultimate year is used to set the new allowances.

Figure 2: Expenditure advanced from year 4 to year 3 – new allowance and carry-over based on final year

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	95.00	95.00	95.00	95.00	100.00
Actual expenditure		100.00	100.00	105.00	95.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		-	-	-5.00	5.00	-5.00	-5.00	-5.00	-5.00	-
Incremental improvement (decline)		-	-	-5.00	10.00	-5.00	-	-	-	-
Carryover calculations	*1*	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*	-	-
	4	-	-	-	*10.00*	*10.00*	*10.00*	*10.00*	*10.00*	-
	5	-	-	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*
Within period benefit (loss)		-	-	-5.00	5.00	-5.00	-5.00	-5.00	-5.00	-
EBSS carry-over (from years 1 to 4)						5.00	5.00	5.00	10.00	
EBSS carry-over (from year 5)										-5.00
Total benefit (loss)		-	-	-5.00	5.00	-	-	-	5.00	-5.00

Figure 3: Expenditure advanced from year 4 to year 3 – new allowance and carry-over based on penultimate year

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	105.00	105.00	105.00	105.00	100.00
Actual expenditure		100.00	100.00	105.00	*95.00*	100.00	100.00	100.00	*100.00*	100.00
Deemed actual expenditure (used in EBSS and allowance)					105.00				100.00	
Under (over) spend		-	-	-5.00	-5.00	5.00	5.00	5.00	5.00	-
Incremental improvement (decline)		-	-	-5.00	-	5.00	-	-	-	-
Adjusted incremental improvement (decline)		-	-	-5.00	-	-5.00	-	-	-	-
Carryover calculations	***1***	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*
Within period benefit (loss)		-	-	-5.00	5.00	5.00	5.00	5.00	5.00	-
EBSS carry-over (from years 1 to 4)						-5.00	-5.00	-5.00	-	
EBSS carry-over (from year 5)										-5.00
Total benefit (loss)		-	-	-5.00	5.00	-	-	-	5.00	-5.00

40. Thus, when the scheme is applied correctly, the effect of advancing expenditure from year 4 into year 3 is that:

    a. A loss (equal to the time value of money) is made initially, and

    b. That loss is reversed after a period of five years, meaning that the loss will be partially offset (after allowing for the time value of money), and the outcome will be adverse overall.

41. The consequence, therefore, is that once the Sydney Water scheme is corrected in this manner, there is no incentive to advance expenditure deliberately into the base year, irrespective of whether the final year or penultimate year is used as the base year.

2.3 Incentive properties of the corrected Sydney Water scheme

42. The incentive properties of the Sydney Water proposed scheme, when corrected, are quite well known because it is virtually identical to a series of schemes that have been applied by a number of regulators, dating back to Ofwat's 1994 water price determination in the UK. These incentive properties include the following:

    a. A permanent decline in operating expenditure will be retained by Sydney Water for five years, comprising the year in which the gain is made and a further four years. Given the level of WACC proposed by Sydney Water, this implies a sharing of incremental efficiency gains between the regulated business and customers of approximately 23%:77%.

    b. A one off change to expenditure (whether an increase or decrease) results in a corresponding reversal five years later. The effect of this is that the regulated business and customers also share changes in one-off expenditure in the same ratio as above 23%:77% (i.e., after allowing for the time value of money calculated at the WACC). In the absence of an efficiency carry-over, one off events are borne wholly by the regulated business.

43. In relation to this latter point, while providing an incentive for permanent reductions in operating expenditure is important, it is also important for regulated businesses to bear an appropriate incentive in relation to transitory operating expenditures. In particular, if regulated businesses bear all of the consequences of a transitory increase in operating expenditure then the incentive to raise operating expenditure in order to defer capital expenditure may be diminished substantially for part of the regulatory period.

2.4 Incentive properties of the alternative scheme raised for consultation

44. IPART has set out for consultation an alternative incentive scheme intended to address the perceived shortcomings in the Sydney Water scheme. There were three changes made to the Sydney Water scheme:

a. The final year (rather than penultimate year) would be used as the basis for the new allowance, which is the change recommended above (an assessment of prudence and efficiency would also be applied, which I say below could also be applied to the Sydney Water model)

b. The holding period for gains was reduced from five years to four years, which could equally be applied to the Sydney Water model,[11] and

c. Incremental gains or losses would only be counted in the efficiency carry-over calculation if expenditure is below the allowance. This last aspect is a material change to the model that Sydney Water proposed.

45. I have reproduced below the example presented in Appendix G of the Issues Paper (Table G.3), and replicated IPART's results. IPART's analysis extended only to the consequences of the different schemes for the efficiency carry-over, and so did not consider the combined effect of the efficiency carry-over and the new expenditure allowance. I have added this below. I have assumed that, because IPART's particular concern was with the ability for a regulated business to earn a substantial reward merely by deferring or advancing expenditure between years, the true underlying level of expenditure remains at $100.

[11] If a holding period of four years was applied, then an additional adjustment would be required if the penultimate year was used to set the new expenditure allowances because five years of benefit would initially be earned from incremental gains in the final year of the first period. In this context, there would be little advantage from using the penultimate year compared to using an estimate of final year expenditure to set the new allowance and efficiency carry-over, and so the outcome of the latter method is shown here.

Figure 4: Results presented in Table G.3 – IPART alternative model, extended to include the impact of the new expenditure allowance

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	90.00	90.00	90.00	90.00	100.00
Actual expenditure		90.00	90.00	130.00	90.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		10.00	10.00	-30.00	10.00	-10.00	-10.00	-10.00	-10.00	-
Adjusted under (over) spend		10.00	10.00	-	10.00	-	-	-	-	-
Incremental improvement (decline)		10.00	-	-10.00	10.00	-	-	-	-	
Carryover calculations	*1*	*10.00*	*10.00*	*10.00*	*10.00*	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-10.00*	*-10.00*	*-10.00*	*-10.00*	-	-	-
	4	-	-	-	*10.00*	*10.00*	*10.00*	*10.00*	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		10.00	10.00	-30.00	10.00	-10.00	-10.00	-10.00	-10.00	-
EBSS carry-over (from years 1 to 4)						-	-	10.00	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		10.00	10.00	-30.00	10.00	-10.00	-10.00	-	-10.00	-

46. It is clear from these results that once the combined impact of the new expenditure allowance and the efficiency carry-over are considered, then the outcome for a regulated business for whom the timing of their expenditure changes is inappropriate. That is, whereas a small (positive) efficiency carry-over is earned in the second period (+$10), this is more than outweighed by the fact that more than the allowance will be spent in each year, resulting in a substantial negative outcome (-$30). This is a disproportionate outcome given that the only difference between forecast and actual expenditure in the first regulatory period was a change to the timing of expenditure (and even then, only a modest change in present value terms).

47. The figure below shows the outcome that is achieved by the (corrected) model proposed by Sydney Water, if the same expenditure profile is observed (and after changing the Sydney Water model to deliver a four year holding period for consistency).

Figure 5: Results presented in Table G.3 – Sydney Water model (adjusted to deliver a four year holding period)

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	90.00	90.00	90.00	90.00	100.00
Actual expenditure		90.00	90.00	130.00	90.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		10.00	10.00	-30.00	10.00	-10.00	-10.00	-10.00	-10.00	-
Incremental improvement (decline)		10.00	-	-40.00	40.00	-10.00	-	-	-	-
Carryover calculations	*1*	*10.00*	*10.00*	*10.00*	*10.00*	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-40.00*	*-40.00*	*-40.00*	*-40.00*	-	-	-
	4	-	-	-	*40.00*	*40.00*	*40.00*	*40.00*	-	-
	5	-	-	-	-	*-10.00*	*-10.00*	*-10.00*	*-10.00*	-
Within period benefit (loss)		10.00	10.00	-30.00	10.00	-10.00	-10.00	-10.00	-10.00	-
EBSS carry-over (from years 1 to 4)						-	-	40.00	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		10.00	10.00	-30.00	10.00	-10.00	-10.00	30.00	-10.00	-

48. The outcome for the regulated business in the second period is zero overall, and slightly negative after allowing for the time value of money. This is an appropriate outcome – in the first period, a modest gain was made (as expenditure was, on average, deferred), so

that it is appropriate for the same modest gain to be provided to customers to pass on their share of this gain.

49. More generally, the alternative model will provide an incorrect incentive in all cases where expenditure exceeds the allowance, in particular:

a. Where there is a one-off change to expenditure, then a greater proportion of this cost will be borne by the regulated business than intended under the incentive scheme

b. Where there is a step-up in expenditure, then a smaller share of this cost will be borne by the regulated business than intended under the incentive scheme, and

c. In cases where the regulated business is already overspending, the reward from reducing expenditure is diminished, and an incentive may be created for deferring the efficiency initiative to the next regulatory period.

50. These outcomes are illustrated by the following three examples:

a. The first assumes that the business is spending at the allowance, except for in year 2 when there is the ability to spend additional operating expenditure to defer a capital project

b. The second assumes that there is a step up in expenditure above the allowance in year 4, and

c. The third example assumes that the business has been spending above the allowance until year 3, but then the opportunity to reduce costs substantially arises.

51. The outcomes under the IPART scheme and the amended Sydney Water scheme are provided in Figures 6 to 11 below.

Figure 6: One off expenditure above the allowance – IPART alternative scheme

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Actual expenditure		100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		-	-20.00	-	-	-	-	-	-	-
Adjusted under (over) spend		-	-	-	-	-	-	-	-	-
Incremental improvement (decline)		-	-	-	-	-	-	-	-	
Carryover calculations	*1*	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-	-20.00	-	-	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						-	-	-	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-	-20.00	-	-	-	-	-	-	-

Figure 7: One off expenditure above the allowance – amended Sydney Water scheme

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Actual expenditure		100.00	120.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Under (over) spend		-	-20.00	-	-	-	-	-	-	-
Incremental improvement (decline)		-	-20.00	20.00	-	-	-	-	-	-
Carryover calculations	*1*	-	-	-	-	-	-	-	-	-
	2	-	*-20.00*	*-20.00*	*-20.00*	*-20.00*	-	-	-	-
	3	-	-	*20.00*	*20.00*	*20.00*	*20.00*	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-	-20.00	-	-	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						-	20.00	-	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-	-20.00	-	-	-	20.00	-	-	-

52. Comparing the previous two figures, it is clear that the regulated business will bear 100 per cent of this one-off expense under the alternative scheme, whereas the intended share of the one-off cost would be borne by the regulated business under the amended Sydney Water model.

Figure 8: Step up expenditure – IPART alternative scheme

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	120.00	120.00	120.00	120.00	120.00
Actual expenditure		100.00	100.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00
Under (over) spend		-	-	-20.00	-20.00	-	-	-	-	-
Adjusted under (over) spend		-	-	-	-	-	-	-	-	-
Incremental improvement (decline)		-	-	-	-	-	-	-	-	
Carryover calculations	*1*	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-	-	-20.00	-20.00	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						-	-	-	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-	-	-20.00	-20.00	-	-	-	-	-

Figure 9: Step up expenditure – amended Sydney Water scheme

Regulatory period		1	1	1	1	2	2	2	2	3
Year		1	2	3	4	5	6	7	8	9
Regulatory allowance		100.00	100.00	100.00	100.00	120.00	120.00	120.00	120.00	120.00
Actual expenditure		100.00	100.00	120.00	120.00	120.00	120.00	120.00	120.00	120.00
Under (over) spend		-	-	-20.00	-20.00	-	-	-	-	-
Incremental improvement (decline)		-	-	-20.00	-	-	-	-	-	-
Carryover calculations	*1*	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-20.00*	*-20.00*	*-20.00*	*-20.00*	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-	-	-20.00	-20.00	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						-20.00	-20.00	-	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-	-	-20.00	-20.00	-20.00	-20.00	-	-	-

53. Comparing the two previous figures, the regulated business would bear only the first two years of the step up in expenditure under the alternative model, but would bear the intended four years under the Sydney Water model. It is noted that these outcomes assume that IPART does not make an efficiency adjustment to the base year expenditure when setting the new allowance; however, as discussed further below, the potential to make an efficiency adjustment is common across the models.[12]

Figure 10: Opportunity for substantial efficiency gain – IPART alternative scheme

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	90.00	90.00	90.00	90.00	90.00
Actual expenditure		120.00	120.00	120.00	90.00	90.00	90.00	90.00	90.00	90.00
Under (over) spend		-20.00	-20.00	-20.00	10.00	-	-	-	-	-
Adjusted under (over) spend		-	-	-	10.00	-	-	-	-	-
Incremental improvement (decline)		-	-	-	10.00	-	-	-	-	
Carryover calculations	***1***	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	*10.00*	*10.00*	*10.00*	*10.00*	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-20.00	-20.00	-20.00	10.00	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						10.00	10.00	10.00	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-20.00	-20.00	-20.00	10.00	10.00	10.00	10.00	-	-
Incremental benefit from year 4 initiative		-	-	-	30.00	10.00	10.00	10.00	-	-

Figure 11: Opportunity for substantial efficiency gain in year 4 – amended Sydney Water scheme

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	90.00	90.00	90.00	90.00	90.00
Actual expenditure		120.00	120.00	120.00	90.00	90.00	90.00	90.00	90.00	90.00
Under (over) spend		-20.00	-20.00	-20.00	10.00	-	-	-	-	-
Incremental improvement (decline)		-20.00	-	-	30.00	-	-	-	-	-
Carryover calculations	***1***	*-20.00*	*-20.00*	*-20.00*	*-20.00*	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	*30.00*	*30.00*	*30.00*	*30.00*	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-20.00	-20.00	-20.00	10.00	-	-	-	-	-
EBSS carry-over (from years 1 to 4)						30.00	30.00	30.00	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-20.00	-20.00	-20.00	10.00	30.00	30.00	30.00	-	-
Incremental benefit from year 4 initiative		-	-	-	30.00	30.00	30.00	30.00	-	-

54. Comparing the above figures, under the alternative model there is a much lower payoff from implementing the efficiency reduction under the alternative model than there is under the amended Sydney Water model. Moreover, there may be a benefit to the regulated business from delaying the initiative into the new regulatory period, depending upon perceived risk of an efficiency adjustment being made to the new expenditure

[12] It is remarked below that if an efficiency adjustment is proposed in circumstances where there is an accrued negative carry-over, then it is appropriate not to apply the negative carry-over. Under this situation, the two models would deliver the same outcome.

allowance, which is the key perverse incentive that the application of an efficiency carry-over is intended to avoid.

2.5 Applying an efficiency adjustment in the context of an efficiency carry over

55. It was observed earlier that where an efficiency carry-over scheme is being applied and an efficiency adjustment is being contemplated, there are two factors of which to be aware.

56. First, to the extent that base year expenditure is affected by one-off events, then the existence of the efficiency carry-over means that those factors will have a much less pronounced impact on prices than otherwise. In particular, while a higher operating expenditure allowance may result, this would be offset by the efficiency carry-over in all except the last year of the next regulatory period. This is shown in the figure below.

Figure 12: One off factors that affect the base year (amended Sydney Water scheme, penultimate year, 5 year holding period)

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	105.00	105.00	105.00	105.00	100.00
Actual expenditure		100.00	100.00	105.00	*100.00*	100.00	100.00	100.00	*100.00*	100.00
Deemed actual expenditure (used in EBSS and allowance)					105.00				100.00	
Under (over) spend		-	-	-5.00	-5.00	5.00	5.00	5.00	5.00	-
Incremental improvement (decline)		-	-	-5.00	-	5.00	-	-	-	-
Adjusted incremental improvement (decline)		-	-	-5.00	-	-	-	-	-	-
Carryover calculations	***1***	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
Within period benefit (loss)		-	-	-5.00	-	5.00	5.00	5.00	5.00	-
EBSS carry-over (from years 1 to 4)						-5.00	-5.00	-5.00	-	
EBSS carry-over (from year 5)										-
Total benefit (loss)		-	-	-5.00	-	-	-	-	5.00	-

57. The implication of this is that one-off events should be seen as less of a concern. As a consequence, it is important when testing efficiency to separate out the effect of any such one-off factors and to attempt to focus on the underlying efficiency.

58. Secondly, if an efficiency reduction is to be applied, then it is appropriate not to apply an accrued negative carry-over if one exists.[13] To the extent that both are applied, then the regulated business would be expected to bear more than 100 per cent of the deemed inefficiency in the following regulatory period.

59. This is illustrated in the example below, where it is assumed that expenditure stepped up late in the first regulatory period, and this was deemed to be inefficient and disallowed.

13 The previous case – where the base year is affected by one off factors – also falls into this category.

Regulatory period		**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**
Year		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Regulatory allowance		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Actual expenditure		100.00	100.00	105.00	*105.00*	105.00	105.00	105.00	*105.00*	105.00
Deemed actual expenditure (used in EBSS and allowance)					105.00				105.00	
Under (over) spend		-	-	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00
Incremental improvement (decline)		-	-	-5.00	-	-5.00	-	-	-	-5.00
Adjusted incremental improvement (decline)		-	-	-5.00	-	-5.00	-	-	-	-5.00
Carryover calculations	***1***	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	*-5.00*	*-5.00*	*-5.00*	*-5.00*	*-5.00*
Within period benefit (loss)		-	-	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00
EBSS carry-over (from years 1 to 4)						-5.00	-5.00	-5.00	-	
EBSS carry-over (from year 5)										-5.00
Total benefit (loss)		-	-	-5.00	-5.00	-10.00	-10.00	-10.00	-5.00	-10.00

60. In this case, the penalty suffered by the business would be doubled for most of the regulatory period as a consequence of the negative carry-over and efficiency adjustment applying in tandem.[14] The appropriate course of action in this context would be not to apply the negative efficiency carryover.

61. I would highlight, however, that the intention of the incentive scheme that Sydney Water has proposed is to provide a greater financial incentive to be efficient with respect to operating expenditure, and for this information to be used when setting the new expenditure allowances, so that less reliance need be placed upon more traditional tests of prudence and efficiency. It should be expected, therefore, that if Sydney Water responds to the financial incentive scheme, then the role of direct testing of the prudence and efficiency of operating expenditure should diminish over time.

62. I also note for completeness that some care is required over how the base year expenditure is translated into the new allowances. It is assumed implicitly in the scheme that the accrued efficiency gain over a regulatory period is a permanent gain. Consistent with this, when setting the new allowance the assumed trend change in expenditure (as well as any step changes) should ignore the ebbs and flows of the quantity of work volumes required in any regulatory period and focus instead on the longer term relationship between the level of output and operating expenditure.

[14] The -10 outcome in the first year of the third regulatory period assumes that the efficiency carryover scheme is applied again, as well as an efficiency adjustment. If an efficiency adjustment is applied, however, a strong argument would exist for not applying the efficiency carryover in the next period, which is what that the AER has done in relation to the NSW electricity distributors for which efficiency adjustments were made.

3. Capital expenditure efficiency scheme

3.1 Issue

63. Sydney Water also proposed an efficiency scheme in relation to defined classes of capital expenditure, being critical water mains and reticulation renewals and electricity. The broad operation of the proposed scheme is that:

a. The efficiency gain that is made during a regulatory period is measured, being the difference between forecast (the allowance) and actual capital expenditure, in present value terms, and the share of this intended for the regulated business is determined[15]

b. The benefit received during the period is calculated, being the saving in financing costs during the period, again in present value terms, and

c. The difference between the intended benefit and the benefit received is carried forward to the next period so that the regulated business receives the intended reward.

64. IPART raised a number of issues with the proposed capital expenditure incentive scheme, including that:[16]

a. There is little incentive to defer capital expenditure within a regulatory period, which is different to the case of operating expenditure

b. There was a risk that the rewards would reflect error in the original forecasts rather than true gains, and

c. It will be hard to distinguish between cases where expenditure is avoided from those where it is merely deferred.

3.2 Comment

65. I agree with the sentiment in IPART's discussion that incentive schemes for capital expenditure are more difficult to apply (and to create the right incentives) than schemes for operating expenditure. The second of the two comments from IPART summarised above point to particular issues.

a. First, unlike for the operating expenditure scheme, the incentive scheme for capital expenditure does not provide a starting point for forecasts. Rather, the purpose of the scheme is to provide greater confidence that only efficient expenditure is included in the regulatory asset base. Traditional assessment techniques for capital expenditure forecasts will continue to be required.

b. Secondly, the rewards and penalties under the capital expenditure incentive scheme assume implicitly that cost reductions (or increases) are permanent. Thus, while

[15] This form of the efficiency carry-over calculation can also be expressed in terms of a carry-over like the model applied for operating expenditure.

[16] IPART, Issues Paper, p.89.

changes to the timing of projects within a regulatory period are accommodated appropriately, where projects shift between regulatory periods there is a potential (that is, unless an adjustment is made) for excessive rewards (for project deferrals) or penalties (for project advancements) to accrue.

66. Having said that, there are material costs to not applying an incentive scheme in relation to capital expenditure. As in the case of operating expenditure, in the absence of such a scheme:

a. The incentive to permanently reduce costs declines over the course of the regulatory period, and

b. Excessive incentives are created with respect to transitory changes in cost, because the regulated business retains the whole of the benefit from deferring a project, and bears the whole of the cost of advancing a project, rather than an appropriate share of these.

67. This latter point is quite important because it can encourage inefficient choices between capital and operating expenditure where there is a trade-off. It is important, therefore, that the decision of whether to put in place an incentive scheme for capital expenditure reflects a realistic assessment of these costs and benefits.

68. Turning to the first of IPART's as I summarised earlier, the above discussion means that IPART has overstated the case that the differences between capital and operating expenditure means that there is not a material incentive issue from not applying a capital expenditure efficiency carry-over. Rather:

a. While IPART is correct that there is seldom an incentive to advance expenditure in order to inflate the "base year" in relation to capital expenditure (this is because capital expenditure forecasts cannot be set using the "base + step + trend" method)

b. The fact that the reward from reducing cost declines over a regulatory period means there is a risk of imprudent and/or inefficient expenditure being incurred later in the period and included in the RAB, and

c. A bias will be created to defer capital expenditure within a regulatory period (as 100 per cent of the gain from such a deferral is retained), and potentially to incur inefficient operating expenditure to achieve this end.

69. In terms of the class of capital expenditure to which Sydney Water has proposed a capital expenditure efficiency carry over apply, in my view the potential deficiencies in the scheme are manageable, and the benefits of applying such a scheme should be material.

a. First, the class of expenditure – critical water mains and reticulation renewals and electricity – are those where I understand that Sydney Water is required to make a very deliberate trade-off between capital and operating expenditure. Accordingly, a material benefit should be expected from ensuring that the regulatory regime provides a financial incentive for this trade-off to be optimised.

b. Secondly, for the class of projects that have been targeted, it seems to me that it would be reasonably straightforward to monitor whether the forecast volumes or works were being performed during a period, or whether there were a material quantity of deferrals or advancements. In the case of deferrals, I note that the correct response is to omit the deferred capital expenditure from the forecasts (allowance) for the next regulatory period.

c. Thirdly, as IPART observes, the targeted classes of capital expenditure are relatively stable over time. This fact should serve to alleviate concerns about the potential for the rewards to reflect error in the forecasts.

4. Determining the sharing of the benefits between customers and regulated businesses

4.1 Issue

70. Sydney Water has proposed incentive schemes that provides a holding period of gains or losses of five years, or a share that is equivalent (in present value terms).

71. IPART has commented that the choice of the incentive rate for a scheme is complex, and requires a consideration of a number of factors and the exercise of judgement.

4.2 Comment

72. The power of the incentive is determined by the proportion of any benefit or cost that is retained by the business. I agree with IPART that the selection of the incentive rate, in principle, is a complex matter. Further, the way that IPART has expressed the choice – that of maximising the benefit to customers – is consistent with how this issue has been analysed in the past. That is:

    a. While the long-term purpose of the expenditure incentive schemes are to provide benefits to customers

    b. A regulated business must also receive some share of this to encourage the effort to look for gains, with a greater share of the savings motivating more gains to be made in total (albeit with customers receiving a smaller share of the larger pie), and

    c. In principle, there would be expected to be an incentive power that maximises the payoff to customers, although solving this would require knowledge of the relationship between the reward received by a regulated business and the efficiency gains generated, which would be expected to depend upon a number of factors.

73. In addition to the question of the level of incentive power than may maximise customer benefits, other valid considerations when determining the strength of the financial incentives for cost reduction include the risk of windfall gains or losses being created (which is a function a number of factors, including the potential for exogenous events to affect expenditure needs and the difficulty of forecasting expenditure needs) and the potential for financial incentives on cost to have a deleterious effect on service performance. In turn, some of the potential concerns that may be raised from higher power incentives can be addressed through complementary measures. For example, depending on the context, it may be possible to incorporate adjustments within the incentive schemes to allow for exogenous events (like growth), and it may be possible to apply financial incentives or administrative/regulatory measures to ameliorate concerns that cost may be reduced at the expense of service performance.

74. In practice, the choice of the incentive power is something that will require some judgement. This was the conclusion reached by the Office of the Regulator General of

Victoria (ORG) when it was designing one of the first incentive schemes applied in Australia, after considering the same issues as IPART:[17]

"There is no predetermined "optimal" sharing of gains. The optimal relationship between gains retained and efficiencies achieved depends on the underlying assumptions regarding the responsiveness of the regulated businesses (in terms of cost reduction and innovation) to changes in the share of efficiency gains they retain. Importantly, the "optimal" sharing ratio also depends on considerations of allocative as well as productive efficiency."

75. Recognising that there has been extensive experience in applying such schemes in Australia and in the United Kingdom, in my view, some guidance can be taken from the decisions that other regulators have made. For instance, the five year holding period is lower (by 1 year) than what is applied in the energy sector in Australia. Moreover, the incentive rates that are applied in Australia are much lower than those currently applying in the UK (where incentive rates above 50 per cent are the norm).

76. In addition, the choice of the holding period will also affect the complexity of the scheme. With a holding period of 5 years, the incentive scheme for operating expenditure can be applied without the need for estimates or subsequent adjustments being applied.

77. Lastly, I note that the incentive schemes that Sydney Water has proposed could be applied with any holding period for the gains and losses, albeit with the need for ongoing or subsequent corrections to be applied.

[17] Office of the Regulator General, Victoria, Electricity Distribution Price Determination, 2001-2005, Volume 1, Statement of Purpose and Reasons, September 2000, pp.91-92.

HOUSTONKEMP
Economists

Pricing for Access to Sydney Water's Water and Wastewater Infrastructure

An Expert Report for Sydney Water

2 October 2015

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Disclaimer

Contents

Executive Summary

The Independent Pricing and Regulatory Tribunal (IPART) has commenced its investigation in the maximum prices to be charged by Sydney Water for its water and wastewater services, commencing 1 July 2016. One matter that is being considered by IPART is the methodology to use to determine the wholesale price charged for water and wastewater services provided to licensed *Water Industry Competition Act 2006* (WICA) retailers and operators (collectively WICA providers). These WICA providers purchase wholesale water and wastewater services from Sydney Water, either for on-selling to end-use customers or as part of its operations (eg, disposal of residual waste resulting from the production of recycled water).

I have been asked by Sydney Water Corporation (Sydney Water) to provide my independent expert opinion on the appropriate pricing methodology to determine wholesale water and wastewater service prices. In so doing, I have been asked to consider this question from an economic theory perspective, taking into account the use of postage stamp pricing for Sydney Water's water and wastewater services.

What is wholesale access to infrastructure?

Wholesale access arises when a WICA provider:

- purchases water directly from Sydney Water for subsequent on-selling to end-use customers, typically within a bespoke water network, thereby relieving Sydney Water of the obligation to supply those end-use customers directly; or
- wishes to supply water from alternative sources into Sydney Water's water infrastructure for the purpose of on-selling to end-use customers; and/or
- seeks to use Sydney Water's wastewater infrastructure as a backup to a water recycling plant, and/or to dispose of waste from the recycling plant.

The implications for Sydney Water's costs will vary according to the specific type of wholesale access that is desired by the WICA provider.

The economics of wholesale access

As a matter of economic principle, wholesale access should be promoted where it promotes efficient use of and investment in Sydney Water's water and wastewater infrastructure. It follows that wholesale pricing should promote wholesale access when:

- it is incrementally cheaper for a WICA provider to supply the water or wastewater service compared to Sydney Water; or
- the WICA provider is providing value added services such that the end-user is willing-to-pay more for the service compared to what it would have paid Sydney Water for its water or wastewater service.

In both of these circumstances, efficiency is promoted for the benefit of all consumers.

Wholesale access pricing methodologies

There are two principal approaches that are used for pricing wholesale access to infrastructure, namely:

- a '**bottom up**' or '**cost of service**' approach – which is sometimes referred to as the 'building block approach'. This involves explicitly identifying the service to be provided, (say, transport of recycled water effluent via Sydney Water's sewerage system), and determining the specific costs that will be incurred to provide this service; and

- a '**top down**' or '**retail minus**' approach,[1] which starts with the price for the wider, bundled service (say, wastewater services) and subtracts the cost of those functional elements of the bundled service that the wholesale access seeker does not require, thereby leaving a charge for the access service on its own.

Both methodologies will result in similar wholesale access prices where the regulated asset base value is near to an estimate of the depreciated optimised replace cost for the assets, and there are no distortions between the current tariff and the cost to service in a particular geographic location. Unfortunately, both of these conditions are unlikely to hold for Sydney Water.

A retail minus methodology is to be preferred for Sydney Water

In choosing between the alternative pricing methodologies, consideration therefore needs to be given to the incentives each approach gives for efficient wholesale access.

A cost-of service approach is likely to be more administratively costly than a retail minus approach and promote inefficient wholesale access in the presence of pricing distortions resulting from the application of postage stamp pricing. This arises from the scope for a WICA provider to arbitrage the difference in the prevailing postage stamp retail price and the cost to serve in a particular location. This arbitrage opportunity creates no benefits for Sydney Water in terms of cost reductions and so will result in other customers paying for the lost revenue.

A retail minus methodology eliminates this problem, and so will promote efficient wholesale access, ie where a WICA provider is able to provide services more cost effectively than Sydney Water or it is providing value added services for which a customer is willing to pay.

To apply a retail minus methodology it is necessary to determine how to calculate the costs to be subtracted from the retail price. In my opinion all actual and future costs that can be avoided as a consequence of the provision of wholesale access should be subtracted from the retail price to determine the wholesale price. I anticipate that in many instances, the actual costs avoided (ie, the short-run costs) will likely be the best estimate of these costs given the potentially minimal impact of wholesale access on future capital costs.

[1] This is sometimes also referred to as the efficient component pricing rule (ECPR), which was first proposed by William Baumol – see Baumol, W., (1983), "Some Subtle Issues in Railroad Deregulation", 10 *International Journal of Transport Economics*, p.341.

1. Introduction

I have been asked to prepare this report by Sydney Water Corporation (Sydney Water) in the context of the current Independent Pricing and Regulatory Tribunal's review of prices for Sydney Water's water and wastewater infrastructure services. Its focus is on the pricing principles that should be applied to wholesale access to Sydney Water's water and wastewater infrastructure, given the constraint of a retail postage stamp pricing obligation.

1.1 Terms of reference

Specifically, I have been asked to provide an independent expert opinion as to:

> What pricing methodology should be used to set wholesale access prices for Sydney Water's water and wastewater infrastructure?

In so doing, I have been asked to approach this question from an economic theory perspective, providing practical examples from other industries as relevant. In addition, I have been asked to consider what impact, if any, the postage stamp pricing obligation on Sydney Water affects the choice of a preferred pricing methodology.

1.2 Qualifications

I am a founding Partner of the economic consulting firm, HoustonKemp. I am an economist with over 18 years of experience in the application of economics to infrastructure regulation, public policy, energy water markets. In that time, I have advised governments, regulators and businesses across a wide range of regulatory and market analysis assignments. My industry experience spans water, wastewater, electricity, gas, ports, roads, rail and airports.

Relevant to this report, I have previously advised on the pricing principles that should be applied to third party access to water and wastewater infrastructure in the context of SA Water's infrastructure. I also advised the Victorian Department of Treasury and Finance on similar questions in the context of their consideration of the development of an effective state-based access regime for Melbourne's water and wastewater infrastructure. I am also deeply familiar with the economic theory of infrastructure pricing, having advised extensively on infrastructure pricing as applied to the water and electricity industries.

I hold a Masters of Economics from the Australian National University, which I was awarded in 2001. I also hold a Bachelor of Economics with honours and a Bachelor of Laws from the University of Western Australia, which I was awarded in 1997.

1.3 Structure of the report

The remainder of my report is structured as follows:

- Section 2 provides on overview of Sydney Water's water and wastewater infrastructure, and the current opportunities and/or arrangements for wholesale access to this infrastructure;
- Section 3 sets out the economic principles underpinning infrastructure access pricing, and the main methodologies that have been applied to determining access charges. In this section I also provide a number of examples of the application of these principles in other sectors; and
- Section 4 summarises my conclusions in relation to the question that I have been asked.

2. Opportunities and Arrangements for Wholesale Access to Sydney Water's Infrastructure

This section provides an overview of Sydney Water's water and wastewater infrastructure, and provides information on the opportunities and current arrangements for wholesale access to water and wastewater infrastructure.

2.1 Overview of Sydney Water's water and wastewater infrastructure

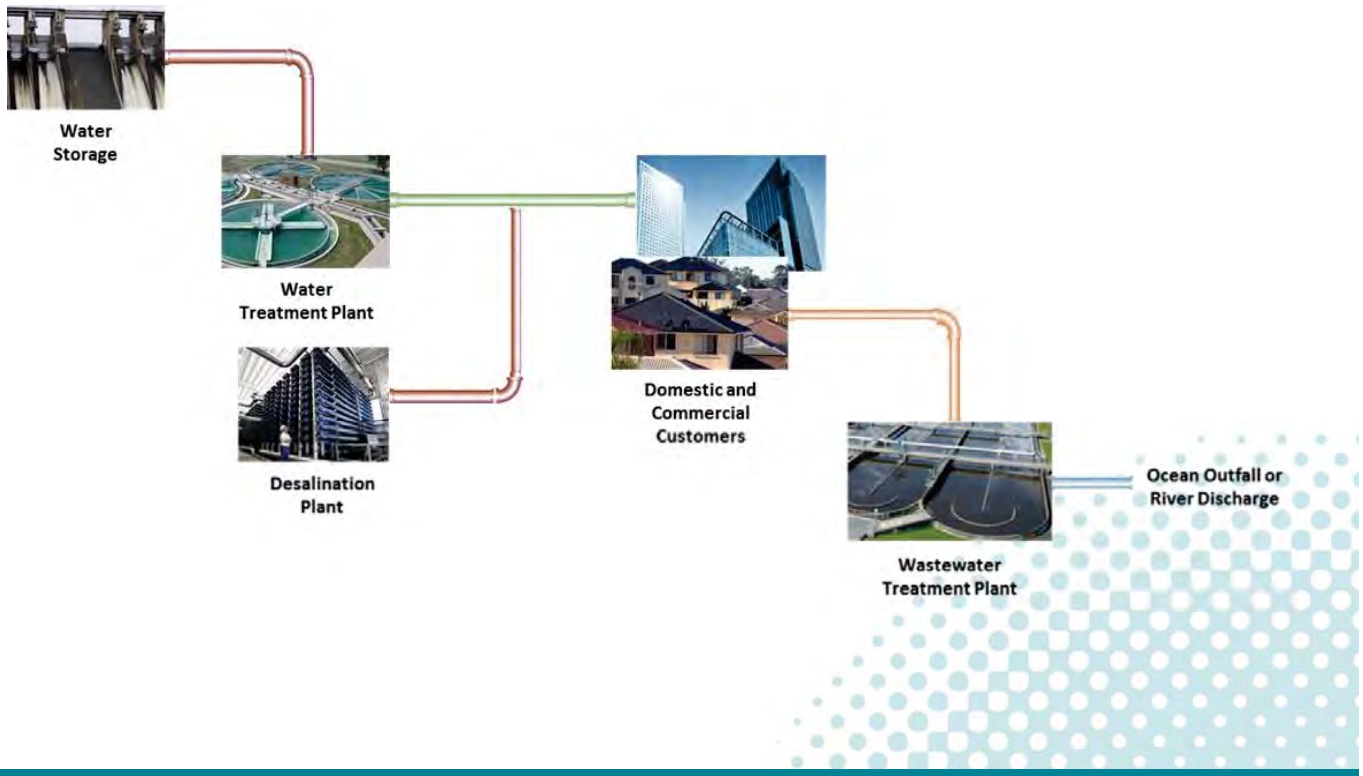
Sydney Water supplies water and wastewater services to residential, commercial and industrial customers across the Sydney, Illawarra and Blue Mountains areas. It purchases raw dam water from WaterNSW and treated water from the Sydney Desalination Plant as needed and supplies treated water to customers throughout its area of operations. It then receives wastewater from customers for subsequent transport, treatment and disposal, via sewerage treatment plants that operate in accordance with health and environmental obligations.

It follows that Sydney Water has an extensive network of water and wastewater infrastructure comprising:

- water treatment plants;
- water and wastewater pipelines;
- water meters;
- sewerage storage facilities; and
- wastewater treatment plants.

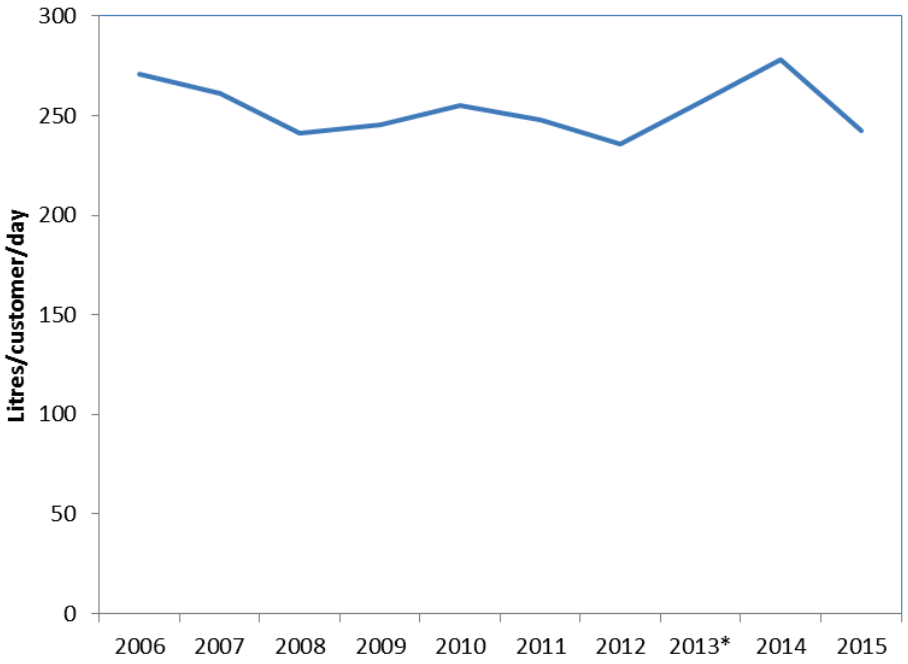
Figure 1 provides a high-level schematic overview of a typical water and wastewater infrastructure system.

Figure 1: Schematic of a water and wastewater infrastructure system



Water demand in Sydney Water's area since 2006 has been typically flat on a per customer basis, and so growth in demand is driven principally by increases in the number of customers – Figure 2. I understand that generally, infill growth in Sydney can currently be serviced using existing infrastructure. However, servicing new areas will likely require network expansions and upgrades to existing plants.

Figure 2: Historical water consumption per customer per day, Sydney Water



Source: Sydney Water Annual Information Return, 2015. * Interpolated figure due to a change in denominator calculation from properties to dwellings.

2.2 What is wholesale access to infrastructure?

Sydney Water is an integrated water and wastewater service provider that supplies treated water to end-use customers, and transports and treats wastewater received from those customers. As a monopoly service provider, Sydney Water is subject to economic regulation as to the prices it can charge its customers, within a regulatory framework that promotes efficient use and provision of the necessary infrastructure.

In some circumstances, entities wish to obtain wholesale access to water and wastewater infrastructure so as to either:

- on-sell the associated water or wastewater services to end-use customers, thereby relieving Sydney Water of the obligation to supply these customers directly; or
- provide a means of disposing of waste arising from the provision of recycled water, and as a back up means of treating end-customer wastewater.

These wholesale services differ from water and wastewater services provided by Sydney Water to end-use customers because:

- the nature of the service may differ, for example the disposal of waste from recycled water processes as compared to ordinary wastewater services, or the provision of access say to wastewater flows, etc; and/or
- it relieves Sydney Water from its obligations to supply the affected end-use customers directly, thereby avoiding any incremental operational and infrastructure related costs.

It follows that wholesale access can be considered a different service to the typical services provided by Sydney Water to its customers, thereby warranting the provision of a different charge.

2.3 Current legal arrangements for wholesale access

The current arrangements for third party access to water and wastewater infrastructure is governed by the *Water Industry Competition Act 2006* (WICA). Any entity wishing to provide water or wastewater services to end-use customers must be licenced by IPART. The two forms of licence are:

- a network operator's licence, which authorises the licensee to construct, maintain and operate water industry infrastructure (section 6(1)(a)); and
- a retail supplier's licence, which authorises the licensee to supply water or provide sewerage services by means of water industry infrastructure (section 6(1)(b)).

Part 3 of the WICA governs third party access to water and wastewater infrastructure services. Section 21 sets out the objective for third party access arrangements, specifically:

> The object of this Part is to establish a scheme to promote the economically efficient use and operation of, and investment in, significant water industry infrastructure, thereby promoting effective competition in upstream or downstream markets.

The WICA provides a mechanism for Sydney Water to develop a voluntary access undertaking, which would set out its arrangements for the provision of wholesale access to its infrastructure services – Division 5, WICA. In the absence of a formal undertaking, Sydney Water can negotiate the terms and conditions for providing wholesale access to water and wastewater infrastructure including in relation to prices. Importantly, any arrangements for wholesale access should be consistent with the promotion of efficiency objective as set out in the WICA.

2.4 Wholesale access to water infrastructure

The opportunity for wholesale access to water infrastructure can arise in a number of circumstances, namely:

- a redevelopment of a brownfield site (eg, conversion of previous industrial land into residential and/or commercial properties) or a greenfields development, where the WICA provider[2] wishes to supply water services to end-users within the redeveloped area (eg, Central Park in Ultimo); and
- a WICA provider wishes to access Sydney Water's water supply infrastructure, for the purposes of supplying potable water to customers as an alternative supplier to Sydney Water.[3]

In each of these circumstances, the WICA provider takes on some of the responsibilities that Sydney Water would otherwise have to supply the end-use customers. However, the specific nature of the service provided by the WICA provider differs between the examples set out above, which likely affects the nature of the wholesale service provided by Sydney Water to the WICA provider.

For example, in the first two circumstances a WICA provider takes on the water retailing function for the end-use customers by purchasing wholesale water from Sydney Water, and delivering it via a local network to multi-premises. This removes the obligation for Sydney Water to undertake the retailing function associated with the supply of water to those end-use customers. The retailing function would principally involve individual customer meter reading, billing and a customer service function for billing or supply enquiries.

We would expect that a WICA provider would be willing to take on this responsibility where it can undertake the retail function at the same price, or more cheaply, than Sydney Water. In so doing it would be able to offer the service more cheaply than Sydney Water and so promote efficient operation of and investment in water infrastructure in line with the WICA objectives.

[2] I use the term 'WICA provider' to mean an entity that has obtained either a network operator's licence or a retailer licence (or both) in accordance with the requirements of the WICA.

[3] In principle, the third party water supply could also supply raw water or potable water to Sydney Water, which is analogous to the current arrangement between Sydney Desalination and Sydney Water. This circumstance is a wholesale water supply, and so should not be considered as being wholesale access to Sydney Water's infrastructure.

In the third circumstance, a WICA provider makes use of Sydney Water's infrastructure so as to supply water from alternative water sources, for transport to its end use customers. This removes the obligation for Sydney Water to manage water supply security for those customers. In this circumstance the WICA provider would be taking on the retailing function as with the previous example, but also takes on the function of managing the security of water supply to that customer.

Such a circumstance promotes competition in the supply of water by allowing customers to potentially choose a different level of water security compared to the water security provided by Sydney Water.

2.5 Wholesale access to wastewater infrastructure

A WICA provider can provide wastewater services directly to end-use customers, thereby removing the obligation for Sydney Water to provide wastewater services to those customers. In most instances, a WICA provider captures and treats wastewater for the purposes of providing recycled water.

The need for wholesale access to Sydney Water's wastewater infrastructure arises in this circumstance where the WICA provider needs to:

- dispose of the residual waste resulting from the provision of recycled water; and/or
- dispose of all of its customers' wastewater during periodic maintenance of its recycled water or wastewater treatment facility, (ie, as a back-up service).

Importantly, when providing wholesale access to its wastewater infrastructure in this circumstance, Sydney Water needs to ensure that it has the network capacity to meet these needs of the WICA provider.

These examples highlight the general principle that wholesale access to Sydney Water's water and wastewater infrastructure involves the provision of a service that differs from that provided to ordinary end-use customers. It follows that consideration would need to be given to the nature of the wholesale service in each circumstance. In addition, consideration would need to be given to how such access affects the costs borne by Sydney Water compared to the counterfactual circumstances where there is no WICA provider and so Sydney Water retains responsibility to supply water and/or transport, treat and dispose of the wastewater directly from the end-use customers.

3. Economic Principles for Wholesale Access to Infrastructure

There are well established economic principles for providing wholesale (or third party) access to monopoly infrastructure so as to promote efficient investment in and use of the infrastructure. In this section I set out the alternative wholesale access pricing methodologies, and the relevant considerations for choosing between the alternative approaches.

3.1 The economics of wholesale access

Water and wastewater infrastructure is considered a natural monopoly because it is most cheaply provided to users by a single provider, in this case Sydney Water. It is well recognised that having multiple providers of water and wastewater infrastructure would potentially lead to unnecessary duplication of infrastructure, and associated higher costs for the provision of water and wastewater services to end-use customers.

That said, there is in theory opportunities for competition to develop in the provision of aspects of the water and wastewater service provided by Sydney Water (eg, water and wastewater retailing). Providing wholesale access to Sydney Water's water and wastewater infrastructure provides the opportunity for such competition to develop, and so promotes innovation and new technologies to supply water and wastewater services more cheaply than Sydney Water. In this way it promotes efficiency in the provision of water and wastewater services to end-users.

It follows that for a WICA provider seeking wholesale access, the associated wholesale access charges should reflect any real reductions in Sydney Water's cost to supply water and wastewater services to all end users, to be consistent with the WICA efficiency objective. This ensures that the wholesale pricing arrangements should promote wholesale access only where:

- it is incrementally cheaper for a WICA provider to supply the water or wastewater service compared to Sydney Water; or
- the WICA provider is providing value added services such that the end-user is willing-to-pay more for the service compared to what it would have paid Sydney Water for its water or wastewater service.

In both of these circumstances, efficiency is promoted for the benefit of all consumers.

However, if these conditions do not hold, then there is the potential for a wholesale access seeker to increase the total cost of providing water and wastewater services, as any of Sydney Water's costs that might otherwise have been recovered from the WICA provider's customers, would need to be recovered from the remainder of Sydney Water's customers.

In the remainder of this section we discuss the alternative wholesale access pricing methodologies that can be applied, and the implications for the promotion of efficient use and provision of water and wastewater infrastructure.

3.2 Wholesale access pricing methodologies

There are two principal approaches that are used for pricing wholesale access to infrastructure, namely:

- a '**bottom up**' or '**cost of service**' approach – which is sometimes referred to as the 'building block approach'. This involves explicitly identifying the service to be provided, (say, transport of recycled water effluent via Sydney Water's sewerage system), and determining the specific costs that will be incurred to provide this service; and

- a '**top down**' or '**retail minus**' approach,[4] which starts with the price for the wider, bundled service (say, wastewater services) and subtracts the cost of those functional elements of the bundled service that the wholesale access seeker does not require, thereby leaving a charge for the access service on its own.

In addition to these costs for making use of the existing infrastructure, there may be costs associated with:

- the processing of an access application;
- costs incurred to facilitate the physical connection to the infrastructure; and
- the costs associated with any expansion to the downstream infrastructure which is caused by the connection and might not be otherwise of benefit to other users of the network.

In the remainder of this section I describe in greater detail each of the two approaches to pricing for wholesale access to infrastructure.

3.2.1 Cost of service pricing methodology

The cost of service pricing methodology involves summing across all of the elements used in providing the service, and setting a unit price so that all of these costs are recovered from the users of the service, which can include the infrastructure provider as well as the wholesale service user.

The cost of service approach is usually applied when a service has been unbundled into natural monopoly and potentially competitive components. This makes the determination of charges for the natural monopoly service costs more easily observed.

There are two specific pricing methodologies that can be used to determine the cost of service, namely:

- the building block methodology; and
- the total service long run incremental cost (TSLRIC).

The building block methodology estimates the cost of providing the components used in the wholesale service by summing:

- the return on capital required by equity and debt holders which will depend on both:
  - the value of the assets used to provide wholesale services, noting that a starting asset value must be determined when regulation is introduced and that this asset value will change over time to reflect depreciation (reduces the asset base) and new capital expenditure (which increases it); and
  - the rate of return required by equity and debt holders given the prevailing conditions in financial markets and the risk involved in delivering the service;
- the return of capital (depreciation allowances);
- the cost of operating and maintaining the assets; and
- an allowance for corporations tax liabilities.

Relevantly, the building block methodology requires consideration to be given to the efficient cost of the pure natural monopoly elements of the water and wastewater service provided by the water corporation. In practical terms, this requires consideration of the asset value for that part of the infrastructure used to provide the service, which necessitates allocating the current regulated asset base across the detailed asset categories that are used to provide the service. This requires consideration of cost allocation methodologies for those assets that are used to provide both wholesale and retail services.

Box 1 explains the use of the building block methodology for determining access prices to rail infrastructure and telecommunications.

[4] This is sometimes also referred to as the efficient component pricing rule (ECPR), which was first proposed by William Baumol – see Baumol, W., (1983), "Some Subtle Issues in Railroad Deregulation", 10 *International Journal of Transport Economics*, p.341.

Box 1: Building block methodology for pricing access in rail and telecommunications

Access to interstate rail infrastructure owned by the Australian Rail Track Corporation is regulated in accordance with an access undertaking developed in accordance with PartIIIA of the *Competition and Consumer Act 2008*. The regulatory framework is in the form of a price negotiation between an access seeker and the ARTC, with the undertaking setting out prices for indicative services, which forms the basis for price negotiation.

Prices are determined for each rail line segment, which restricts revenue to be earned from that segment to an efficient revenue bound where:

≠ the floor is set at the costs that would be avoided if the rail line segment was removed from the network; and

≠ the ceiling is set at the full economic costs, based on a building block cost assessment to recover operating costs plus a return on and of the regulated asset base, which is determined using a depreciated optimised replacement cost methodology.

This approach provides flexibility to price services on the basis of the total cost to serve, or to discount charges to reflect competitive pressures associated with the provision of access, principally from the transport of freight via the road network as compared to the rail network.

For telecommunications fixed line services, the ACCC has historically applied a TSLRIC methodology for determining access prices (see Box 2 for more details). However, it now applies a building block methodology to estimate the revenue requirement for each of 22 asset classes used to provide fixed line services, the components of which are:

≠ operating expenditure;

≠ return on and of the regulated asset base; and

≠ an allowance for tax payments.

Cost allocation factors are used to apportion the total revenue requirement between declared and non-declared services. This determines what contribution of the cost of these assets should be recovered from users of the declared fixed line services. For each service, the access price is determined so as to recover the allocated declared service costs for each asset class and dividing this cost by forecast demand for the service.

An alternative cost of service approach is the TSLRIC, which has been historically used in the telecommunications sector – see Box 2.

Box 2: Total service long run incremental cost in telecommunications

Part XIC of the *Competition and Consumer Act 2010* governs the arrangements for access to 'listed carriage services' and services that facilitate the supply of listed carriage services, ie, a service for carrying communications (including voice and data) by means of electromagnetic energy between certain points.

Under the regime, parties can negotiate access with the Australian Competition and Consumer Commission (ACCC) acting as an arbiter where no agreement can be reached. The ACCC has developed pricing principles for fixed line services, which currently apply a building block methodology, having previously used a total service long run incremental cost (TSLRIC) and retail-minus-retail cost methodology, as the basis for access pricing.

The previous TSLRIC methodology applied by the ACCC determined access prices so as to recover:

≠ capital costs including a return of capital, ie, the allocation over time of previously incurred capital expenditure, and a return on capital, ie, the weighted average cost of capital multiplied by the remaining value of assets; and

≠ operations and maintenance costs.

The distinction between this approach and the building block methodology was the approach to valuing the asset base. Specifically, the TSLRIC considers the least cost technology that could be used to provide the services, and so applies that value. This was considered relevant where innovation led to the historic costs no longer being the appropriate benchmark.

A TSLRIC methodology estimates the price of the wholesale service using benchmark efficient forward looking costs for the provision of the service, rather than the actual firm specific costs, based on the prevailing infrastructure. This approach will therefore differ if the regulated asset base value for the infrastructure differs from the depreciated optimised replacement cost (DORC), which is the typical methodology used to estimate the new entrant value of the infrastructure.

The use of TSLRIC in telecommunications reflects the multiproduct nature of telecommunication services where the firm provides both regulated and non-regulated services using shared assets. A key advantage of the TSLRIC methodology in this circumstance is that it avoids the need to allocate a share of the actual asset value between regulated and unregulated services, and promotes efficient entry in circumstances where innovation reduces the cost of alternative technology to supply the service.

3.2.2 Retail minus pricing methodology

The alternative approach to a cost of service pricing methodology is to apply a retail minus pricing methodology. This involves setting the wholesale access charge equal to the price that would have been charged for the service but for the provision of access, less an allowance for the costs avoided by not having to service the demand now met by the wholesale access seeker.

It is typically used in circumstances where:

≠ the charge for the service represents a bundled service (eg, the wastewater charge recovers the cost of transport, treatment and disposal of wastewater), and so there are difficulties in allocating costs between the bundled elements of the service;

≠ the access provider is vertically integrated into the downstream market; and

≠ the final retail prices are regulated, and so are assumed to recover the efficient cost for providing the service.

The main consideration in applying a retail minus pricing methodology is the avoided cost concept that is deducted from retail prices:

≠ those costs expected to be saved by the incumbent as a result of losing that unit of sale to a third party (the incumbent's avoided costs of not meeting demand); or

≠ the costs that a hypothetical efficient new entrant would incur in the provision of the services that are being competed for (or the costs that would be avoided if a hypothetically efficient new entrant were not to meet demand).

The distinction between the two avoided cost concepts is whether the incumbent should be compensated based on the costs it *actually avoids* by providing access to the new entrant, or by the costs that *could be avoided* by preventing the new entrant from meeting additional demand. This distinction becomes important where there are strong economies of scale in the supply of the service that is potentially open to competition,

or where an incumbent has excess capacity that will not be used if a potential entrant is permitted to supply a proportion of current or future demand. Both these circumstances give rise to the phenomenon where the incremental cost (to a third party) of supplying additional capacity is greater than the avoidable cost (to the incumbent) of not meeting some current demand.

If the actual avoided costs is the relevant cost concept, then there is a need to further consider whether the actual avoided costs are:

- the operating and maintenance costs that the entity would actually avoid as a consequence of no longer supplying the end-use customer with the water or wastewater service, ie, a short-run concept, sometimes just called the **'avoided costs'**; or
- the capital costs that the entity might avoid in the future, including all network upgrades that might be delayed as a consequence of no longer supplying the end-use customer with the water or wastewater service, ie, a long-run concept, sometimes just called '**avoidable costs'.**

In my opinion the appropriate actual avoided cost concept is all future costs, including operating, maintenance and future capital costs that would be avoided as a consequence of no longer serving the end-use customer (ie, the avoidable cost concept set out above). This ensures that appropriate recognition is made for the opportunity for wholesale access to cost efficiencies when replacing existing infrastructure, or expanding infrastructure capacity across the network.

That said, the lumpy nature of water and wastewater infrastructure capacity means that consideration needs to be given to the effect that a particular wholesale access seeker might have on forward looking infrastructure costs. In practice, we would anticipate that small changes in water and wastewater demand by end-users will likely have little or no practical effect on future capital expenditure needs for the entity. It follows that while the avoidable cost concept is appropriate and should be applied, in practice this will likely reduce to the avoided cost concept in its typical practical application.

3.3 Evaluation of the alternative access pricing methodologies

In theory a cost of service methodology and a retail minus pricing methodology will result in similar wholesale access pricing outcomes in circumstances where:

- the regulated asset base value is near to an estimate of the depreciated optimised replace cost, ie, the RAB is close in value to the theoretical new entrant value for the provision of the service; and
- there is no inherent distortions between current tariffs and the cost to serve in a particular geographic location, ie, where there is no postage stamp pricing leading to cross-subsidies between the cost to serve particular locations.

The main benefit of a cost of service approach to wholesale access pricing is that it provides a clear link between the price paid and the efficient cost of delivering the service that is being provided to the wholesale access seeker.

That said, it creates significant regulatory and administrative costs as it requires forecasting of the efficient costs of providing the wholesale service, and requires periodic review and updating as circumstances change. Given that water and wastewater services are currently bundled services, ie are not separated into natural monopoly and potentially competitive services, this approach will also likely suffer from challenges associated with allocating costs between the natural monopoly and potentially competitive elements.

The most controversial element of a cost of service approach is the initial asset value. This would likely be particularly challenging for Sydney Water given that the current RAB is likely to differ from a DORC estimate. It therefore creates relatively arbitrary allocation of the RAB between the various components of the infrastructure used to provide the service.

While a TSLRIC methodology does not suffer from the firm specific problems of a building block methodology, it would require consideration of the efficient cost benchmarks upon which to assess the cost

base. As efficient cost benchmarks change over time, a TSLRIC approach creates uncertainty about future wholesale prices, which has the potential to create disincentives for efficient wholesale access.

The inherent logic of a retail minus pricing methodology is compelling as it provides appropriate signals for wholesale access by more efficient providers of downstream water and wastewater service providers. Its main criticism is in sectors where there is uncertainty as to whether prevailing prices reflect efficient costs. However, given IPART's focus on the cost efficiency of Sydney Water through the periodic price determination process, I do not believe that this criticism is of concern for Sydney Water.

The retail minus pricing methodology also benefits from being administratively simple, takes into account any implicit write-downs inherent in the current value of Sydney Water's regulated asset base. In short, I expect that the administrative costs of implementing a retail minus pricing methodology would be lower than a cost of service methodology, which is relevant to assessing the benefits and costs associated with wholesale access.

The choice between the alternative pricing methodologies hinges on the obligation for Sydney Water to apply postage stamp pricing – Box 3.

Box 3: Postage stamp pricing and wholesale access pricing methodology

Postage stamp pricing is where all customers within a single class (eg, residential customers) are charged the same tariff, irrespective of the actual costs to serve a particular customer. This leads to some customers cross subsidising others, with customers paying more or less than the direct costs caused by their use of the service.

Under a cost of service wholesale access pricing methodology, there is scope for a WICA provider to identify locations where the postage stamp price exceeds the actual cost to supply. The resultant wholesale cost of service price would then be less than the Sydney Water price, thereby creating an opportunity for the WICA provider to profit from the difference between these two prices.

Importantly, this arbitrage opportunity does not deliver any benefits to Sydney Water and by implication customers, as the 'profit' does not result from any associated efficiency in the WICA provider entering the market. Rather it reflects the artificial price difference caused by the postage stamp pricing policy.

In contrast, a retail minus pricing methodology eliminates the opportunity for a WICA provider to identify locations where a pricing arbitrate opportunity exists. That said, there is a theoretical opportunity under a retail minus pricing methodology that the avoided costs might exceed the retail price. This would occur in those locations where the postage stamp price is significantly less than the actual cost to serve, and where those costs to serve are potentially avoidable. In this circumstance the access price could, theoretically, be negative thereby implying that Sydney Water would pay a third party to provide wholesale prices.

Importantly, this outcome is consistent with efficient third party wholesale provision because it reflects that loss that would be avoided by Sydney Water should a third party provide those services to end-users. However, in practice this circumstance is unlikely to arise as it would require the avoided costs to be significant and the implicit price subsidy in some areas to also be significant.

In summary, a retail cost of service approach provides a clear link between the price paid and the efficient cost of delivering the service, but can lead to perverse incentives by promoting inefficient wholesale access to water and wastewater infrastructure where current retail prices are set on a postage stamp pricing basis. In contrast a retail minus approach avoids this problem, and so will promote efficient wholesale access to water and wastewater infrastructure, where it will benefit all water and wastewater service users.

3.4 Use of the non-residential charge as the wholesale price

Finally, IPART has identified a third option for setting the wholesale price for access to Sydney Water's water and wastewater infrastructure, being the non-residential customer charge.[5] This charge is based on the non-residential connection size. In practice, applying such a charge would result in Sydney Water recovering less revenue than it would if it serviced the end-use customers' directly.

In my opinion setting the wholesale price as the non-residential charge not appropriate because:

- ≠ the non-residential water and wastewater tariffs are set on a postage stamp basis and so are unlikely to reflect the actual cost to provide wholesale services in a particular location; and/or
- ≠ the difference between the non-residential charge and the sum of the residential charges that would otherwise be charged creates an arbitrage opportunity for a WICA provider that is unlikely to reflect the value to Sydney Water's customers from the WICA provider entering the market.

Such a charging approach would therefore result in the remainder of Sydney Water's customers paying more than they would otherwise need to pay, if Sydney Water supplied the WICA provider's customers directly. It follows that applying a non-residential charge suffers the same problems as with the cost of service pricing methodology, and so would likely promote inefficient wholesale access, leading to higher overall costs for providing water and wastewater services in Sydney.

3.5 Other considerations

Irrespective of the specific wholesale pricing methodology adopted, consideration needs to be given to what costs should be appropriately recovered from the wholesale charges set for a WICA provider.

As a matter of economics, so as to promote efficient wholesale access, a wholesale access seeker should pay all those costs that are *caused by* the provision of water and wastewater services to the wholesale access seeker. This principle is consistent with both the cost-to-serve and retail minus wholesale access pricing methodology described earlier.

In the context of Sydney Water's water and wastewater wholesale services, in addition to the direct operating and maintenance costs associated with water and wastewater treatment, pumping and the provision of the physical transport infrastructure, there are likely to be costs associated with:

- ≠ providing security of water supply to all customers within Sydney Water's area of operations, and so this would include the costs associated in particular with the provision of backup desalinated water; and
- ≠ Sydney Water potentially acting as a retailer of last resort, to maintain security of supply in circumstances where a third party provider is no longer able to continue to supply its customers.

Finally, while Sydney Water might not need to expand capacity to accommodate current wholesale access, a relevant consideration for Sydney Water will be the need to provide sufficient capacity to accommodate flows from current wholesale providers as a back-up service, and in the event that Sydney Water is designated as a provider of last resort. Both of these circumstances might result in Sydney Water not avoiding any capacity upgrade costs even with growing wholesale access.

[5] Independent Pricing and Regulatory Tribunal, (2015), *Review of Prices for Sydney Water Corporation, from 1 July 2016,* Water – Issues Paper, September, p.181.

4. Conclusions

In my opinion the pricing methodology to set wholesale access prices for Sydney Water's water and wastewater infrastructure should be the prevailing retail price minus those current and future costs that would be avoided as a consequence of the wholesale access. I have reached this conclusion because a retail minus pricing methodology:

- promotes efficient wholesale access where retail prices are set on a postage stamp pricing basis; and
- avoids cross subsidies between customers served by a WICA provider and those served directly by Sydney Water.

In contrast, a cost of service pricing methodology creates the opportunity for a WICA provider to arbitrage the postage stamp price in locations where the cost to serve is less than the postage stamp price. This opportunity for arbitrage will lead to inefficient provision of services to end-use customers, and results in the remainder of Sydney Water's customers cross subsidising the services of the WICA provider. In my opinion, there are no circumstances where such an outcome would be in the best interests of Sydney Water's customers.

In considering the avoided costs, the economic principle is for all actual and future costs that can be avoided to be included in the estimate of the avoided cost. This requires Sydney Water to consider how small incremental changes in wastewater flows or water provision affects the current and future costs associated with providing those services. I anticipate that in many instances, the actual costs avoided (ie, the short-run costs) will likely be the best estimate of these costs given the potentially minimal impact of wholesale access on future capital costs.

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