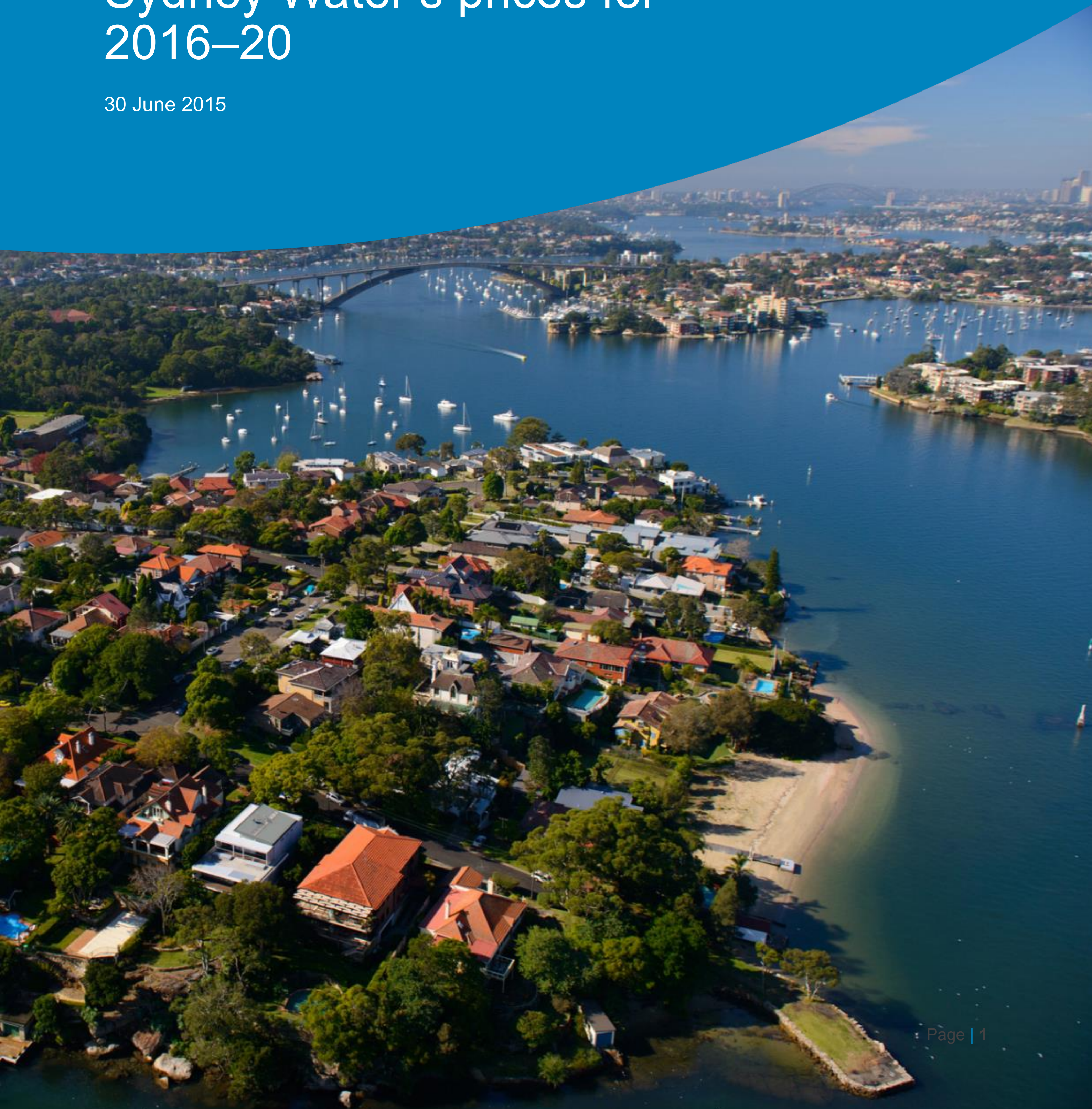
Sydney WATER

Our plan for the future: Sydney Water's prices for 2016–20

30 June 2015



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Executive summary

Sydney Water is transforming into a customer-centred, world-leading utility that provides high quality services to customers, cost-effectively, and at the right prices. Over the last four years, we have improved customer satisfaction, created efficiencies, and ensured bills remain as low as possible. We are committed to driving even better performance and value for customers over the proposed four-year regulatory period from 2016–20.

In this submission, we propose to:

- **reduce customer bills**, while still delivering high quality services
- **enhance customer engagement**, so we can better align our services to meet customer expectations
- **modernise regulation**, so we can deliver better outcomes for customers.

Most households will save about $100 each year, for the next four years.

Our ability to lower customer bills in 2016–20 is a result of significant efficiency gains realised over the current regulatory period. We have become more efficient without compromising the quality of service we offer our customers. We will also be passing through very large cost savings from external factors, such as expected lower interest rates.

Sydney Water faces a range of current, emerging and future challenges in the NSW urban water market. We believe that by improving the way we manage our business, we can better respond to these challenges. We have identified two key initiatives to help us be more resilient – enhanced customer engagement and a proposal to modernise regulation.

Enhanced customer engagement will improve our understanding of customers, so we can better allocate resources to where they are most valued by our customers. Our proposed regulatory improvements will ensure that the right incentives exist to drive long-term benefits for customers. As a regulated monopoly supplier of services, our ability to promote improved customer outcomes not only depends on how we perform, but also how The Independent Pricing and Regulatory Tribunal (IPART) regulates our business. The pay-off for improving both of these contributing factors is highlighted by Moody's recent decision to upgrade our credit rating on the back of improved performance and a more transparent regulatory environment.

Sydney Water at a glance

Sydney Water is Australia's largest water utility and among the top ten largest water utilities in the world. In 2013–14 we provided high quality water and wastewater services to 1.8 million properties and 4.8 million people, covering an area of 12,700 square kilometres across Sydney, the Illawarra and the Blue Mountains. We also supply stormwater services to 570,000 properties, across 30 different council areas in Sydney.

By providing sustained access to clean drinking water and sanitation since 1888, we have contributed to the overall liveability of the region. We have enhanced the health and well-being of the population and ensured that the community can continue to enjoy clean beaches and waterways for recreational activities. Our stormwater infrastructure provides a wider benefit beyond the properties directly serviced, as it improves the quality of waterways for everyone and protects the community by reducing flood risks.

We do not own or operate raw water infrastructure. Instead, our water supply is sourced from WaterNSW. About 80% of our customer's water supply comes from Lake Burragorang, behind Warragamba Dam. The rest comes from dams on the Cataract, Cordeaux, Avon, Nepean and Woronora rivers, or direct from the Hawkesbury-Nepean River. In addition to this, Sydney's desalination plant can supply up to 250 million litres of drinking water a day.

Sydney Water has substantial infrastructure to deliver our water, wastewater and stormwater services to customers, and this currently has a regulatory asset value of about $15 billion. Our combined water and wastewater network pipe infrastructure laid end-to-end, would reach all the way around the world. That is just over one-tenth the distance to the moon.

Our network includes:

- over 21,000 kilometres of pipes, 251 reservoirs and 164 pumping stations for our water network
- over 24,000 kilometres of pipes and 680 pumping stations for our wastewater network
- over 440 kilometres of stormwater channels and pipes, along with flood-prone areas and trunk drainage in the Rouse Hill area
- nine water treatment plants
- 28 wastewater treatment and water recycling plants.

Of the nine water treatment plants, we own five, while four are under build own operate (BOO) contracts. The Prospect Water Filtration Plant is one of the world's largest facilities and is managed under a BOO contract. It can provide reliable and safe drinking water for about 80% of Sydney's population.

Of the wastewater treatment plants, 10 discharge into the ocean, and 15 into the Hawkesbury Nepean River. The three largest coastal plants Malabar, North Head and Bondi, treat about 75% of the Sydney's total wastewater, releasing primary treated wastewater to the ocean.

Performance over 2012–16

Over the current regulatory period 2012–16, we have:

- improved customer satisfaction
- continued to deliver high quality services
- maintained performance against our Operating Licence and Environment Protection Licences (EPLs)
- exceeded efficiency targets set in the 2012 pricing determination

- realised an upgrade in our credit rating by Moody's from Baa2 to Baa1.

We expect our customer base to increase by just under 90,000 properties over the period. Based on the improvements we have made to our business, we forecast operating expenditure (opex) and capital expenditure (capex) to be more than $450 million below IPART's allowances.

Price proposal 2016 – customer bills, prices, revenues and costs

For this next regulatory period, we propose a four-year price path. Compared with 2012–16, we are proposing (in real terms):

- a significant drop in household customer bills, as most will save about $100 on their bill each year
- large decreases in our prices for water, wastewater and most stormwater services
- large decreases in our annual revenue requirement whilst maintaining our financial position and credit rating
- further reductions in opex
- an ongoing trend of reducing average opex for each property.

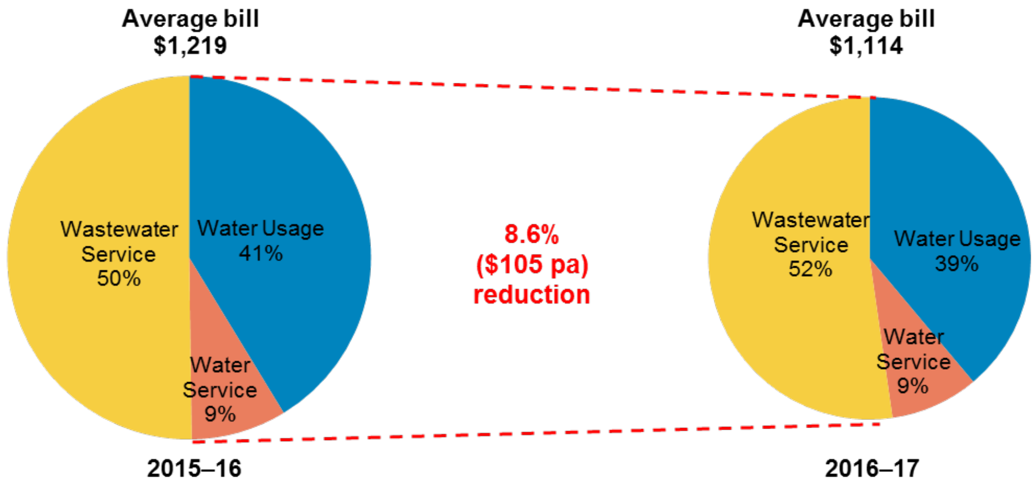
The significant efficiency gains forecast over 2012–16, and a combination of external factors, are the main reasons for the lower bills, prices and revenues. Of the average savings, which we are passing on to our customers, just over 30% are opex and capex efficiencies and just less than 70% are from external factors beyond our control. The drop in the weighted average cost of capital from the current reduction in interest rates is the single most important factor, driving 52% of the overall reduction. More importantly, lower bills will not affect our performance. We will maintain our existing high customer service standards, our well-regarded customer assistance programs, and continue to meet our licence conditions in servicing rising levels of forecast demand and growth.

Bills and pricing

For residential customers, we propose a stable water and wastewater bill (in $2015–16) over 2016–20 of:

- $1,114 a year for residential single home customers with average use of 220 kL a year (See Figure 1)
- $996 a year for residential flats (with average use of 160 kL a year).

Figure 1 – Reduction in average water and wastewater single residential bill

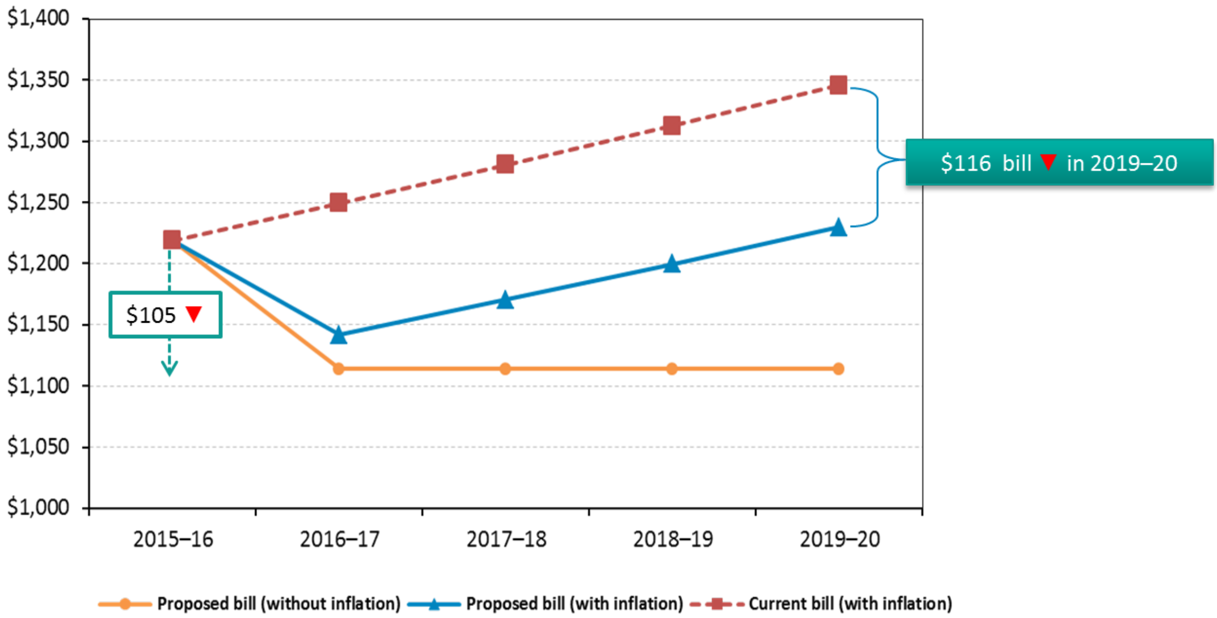


We propose a significant one-off bill reduction for residential customers in 2016–17, with bills to then remain flat in real terms over the price path. Compared with the 2015–16 average bill residential customers in:

- single homes will save $105 or 8.6%
- flats will save $86 or 7.9%.

Figure 2 shows in nominal terms, residential single homes customers in 2016–17 receive a $77 bill decrease compared with 2015–16 bills, after which time bills increase at the rate of inflation. It also highlights that in 2019–20 customers are $116 better-off from this proposal compared with our 2015–16 charges increased by inflation.

Figure 2 – Real and nominal changes in Sydney Water's bill 2015–20



The water and wastewater bills are based on the following real residential prices ($2015–16) over the four years:

- water – a fixed annual service charge of $98.52 a year and a usage price of $1.97 per kL
- wastewater – a fixed annual service charge of $582.34 a year.

For Sydney Water's single residential home stormwater customers, prices are:

- an average fixed annual service charge over four years of $80 a year in our declared stormwater areas
- a fixed stormwater drainage charge for Rouse Hill of $140.33 a year.

This implies the following real price changes:

- A one-off 13.9% decrease in the water usage charge in 2016–17, resulting from an increase in forecast demand by 156 GL over the four years (average 39 GL a year).
- A one-off 4.9% decrease in the water and wastewater service charge in 2016–17.
- An overall 11% decrease over the four years for stormwater services in declared areas.
- No change in Rouse Hill stormwater drainage charges.

The key prices and prices changes for residential customers are summarised in Table 1.

Table 1 – Summary of key residential prices and price changes ($2015–16)

Services	Proposed price in 2019–20	Compared to 2015–16
Water		
Service charge ($/year)	98.52	-4.9%
Usage charge ($/kL) ^	1.97	-13.9%
Wastewater		
Service charge ($/year)	582.34	-4.9%
Stormwater		
Service charge ($/year)		
Single house	76.92	-11.0%
Multi unit	28.21	-11.0%
Rouse Hill ^		
Stormwater service charge ($/year) Land charge for new properties ($/year)	No price changes in stormwater and land charges. Consumer price index (CPI) to apply to the current prices.	
Recycled Water ^		
Usage charge ($/kL)	1.77	-2.9%
Other ^		
Ancillary and miscellaneous services	No major change in majority of the charges; CPI to apply to the current prices. A few new services proposed.	

Note ^ Charges in these categories also applicable for non-residential customers

Because of the broad range of non-residential customers, it is harder to show the average bill saving under our pricing proposal. However, in general these customers will also save significant amounts on their bills.

For non-residential customers, who contribute about 17% of our overall revenue, we propose changes for large meter-sized service charges. This change contributes to large savings for non-residential customers, with a proportionately higher savings for customers with bigger meters. Estimated savings vary from a low of $59 a year (ie 6.6%) for low water-using industrial strata users, to over $20,000 for high water-using public hospitals. Overall, of our non-residential customers:

- 43% will receive up to a 10% real bill saving
- about 50% will receive a 15–17% real bill saving
- about 7% will see a 35–39% real bill saving

The key prices and prices changes for non-residential customers are summarised in Table 2.

Table 2 – Summary of key non-residential prices and price movements ($2015–16)

Services	Proposed price in 2019–20	Compared to 2015–16
Water		
Service charges ($/year)		
20mm - single	98.52	-4.9%
25mm #	153.93	-24.9%
Usage charges < ($/kL)		
Unfiltered water	1.67	-15.1%
Wastewater		
Service charges ($/year)		
20mm - single	582.34	-4.9%
25mm #	909.91	-44.4%
Usage charge ($/kL)	1.10	0.0%
Stormwater		
Service charge ($/year)		
Small or multi	28.21	-11.0%
Medium	76.92	-11.0%
Other <		
Trade waste services	No change in majority of the charges; CPI to apply to current prices.	

Meter sized charges are proposed to be rebased (from 25 mm equivalent in current charges) to a deemed 20 mm meter equivalent, ie Meter sized service charge = $(\text{meter size})^2$ x 20mm charge / 400

< Some charges in Table 1 – Summary of key residential prices and price changes ($2015–16) apply to non-residential customers.

Apart from paying meter-sized based service charges, non-residential customers also pay wastewater usage charges. We propose to keep wastewater usage charges for non-residential customers at the same levels as 2015–16. We will engage more with non-residential customers over 2016–20 to better understand their preferences. We will use these insights, along with our cost drivers and environmental licensing impacts, to review wastewater usage charges in the future.

Sydney Water is also proposing to introduce a late payment fee and a fee for credit card payments. Both are cost-based, and our benchmarking indicates well below the level of similar fees applied by other utilities.

Revenues and costs

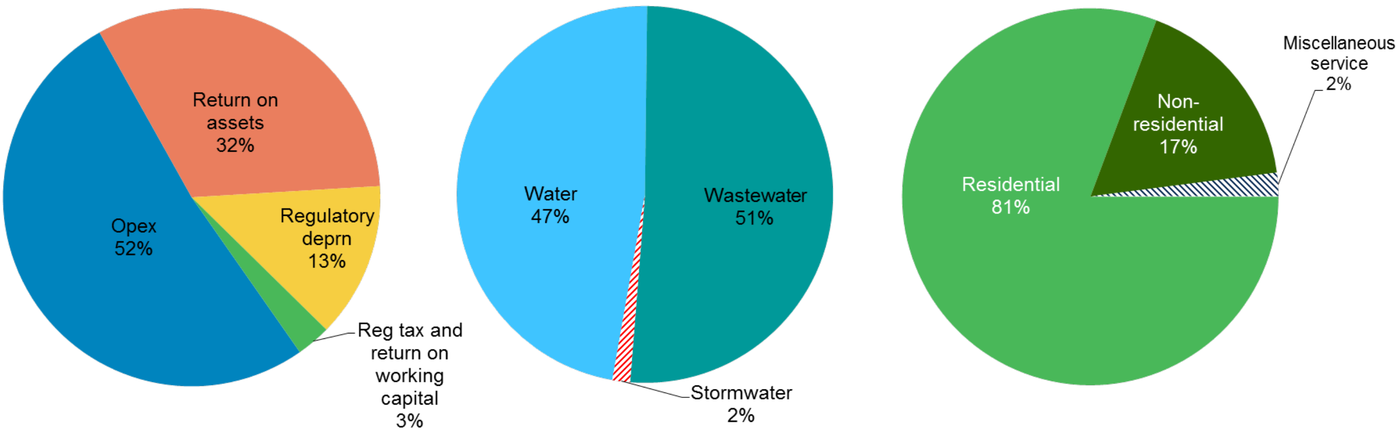
Sydney Water estimates that we require $9.7 billion (in $2015–16) in revenue over 2016–20. Our estimate is based on a forecast efficient opex-capex split over four years of 65% opex (just over $5 billion) and 35% capex (about $2.8 billion).

Overall, we propose revenue based on covering the following costs:

- Just over $5 billion of opex, with $1.9 billion for bulk water costs made up of WaterNSW, Sydney Desalination Plant, and water filtration treatment costs.
- $4.4 billion of capital costs, arising from our capex, and the return on and of capital from our $15 billion regulatory asset base (RAB) with:
  - $3.1 billion return on capital, based on an estimate of the post-tax real weighted average cost of capital (WACC) of 4.6% at 1 July 2016
  - $1.3 billion return of capital (ie depreciation).
- Just under $300 million from a combination of regulatory tax and the return on working capital.

The revenues broken down by expenditure, product and customer type are shown in Figure 3.

Figure 3 – Revenue by expenditure, products and customer segments



The proposed revenues are $600 million ($2015–16) lower than the $10.3 billion IPART allowed in 2012. Given the proposed prices and revenues Sydney Water expects to maintain our current Baa1 credit rating.

Drivers of bill, price and revenue changes

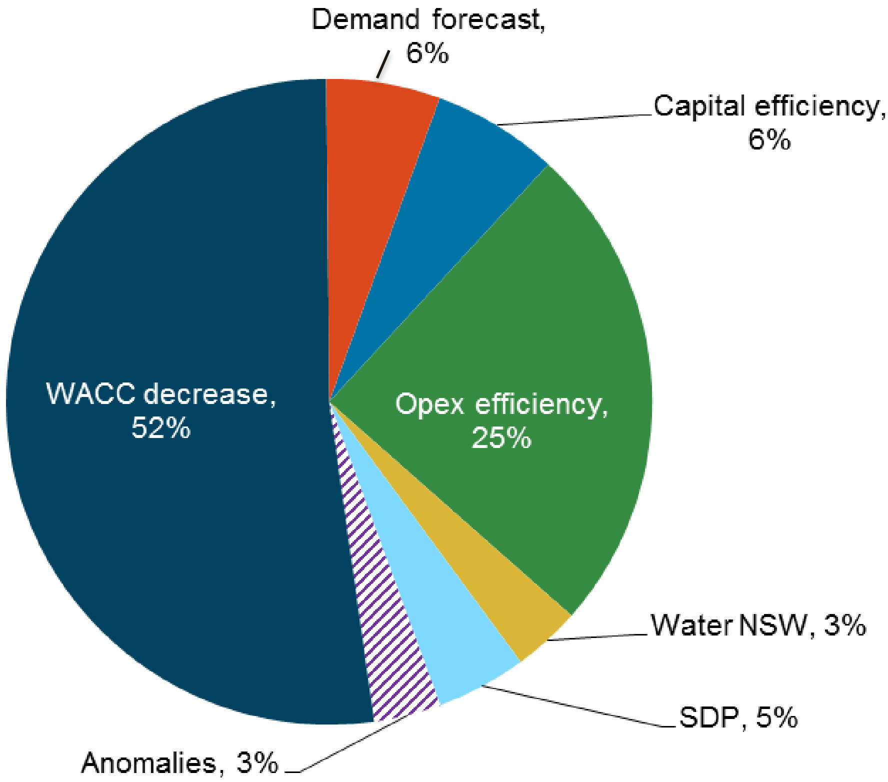
The proposed drop in customer bills in the next price path and the lower annual revenue requirement is due to:

- the expected low interest rate environment, resulting in our forecast real WACC decreasing from 5.6% to 4.6%
- about $450 million of opex and capex efficiencies realised and forecast by Sydney Water over the current period
- a drop in forecast in WaterNSW costs, due to the lower WACC, and lower forecast Sydney Desalination Plant (SDP) costs
- rising forecast customer water demand from an average of 435 GL to 474 GL a year

- proposed changes to regulation.

Figure 4 shows how each individual component contributes to the overall decrease in bills. Of the average savings, which we propose to pass to customers, just over 30% is from opex and capex efficiencies over the current period and projected opex efficiencies in the future, while 70% is from external factors beyond our control.

Figure 4 – Drivers of bill reduction

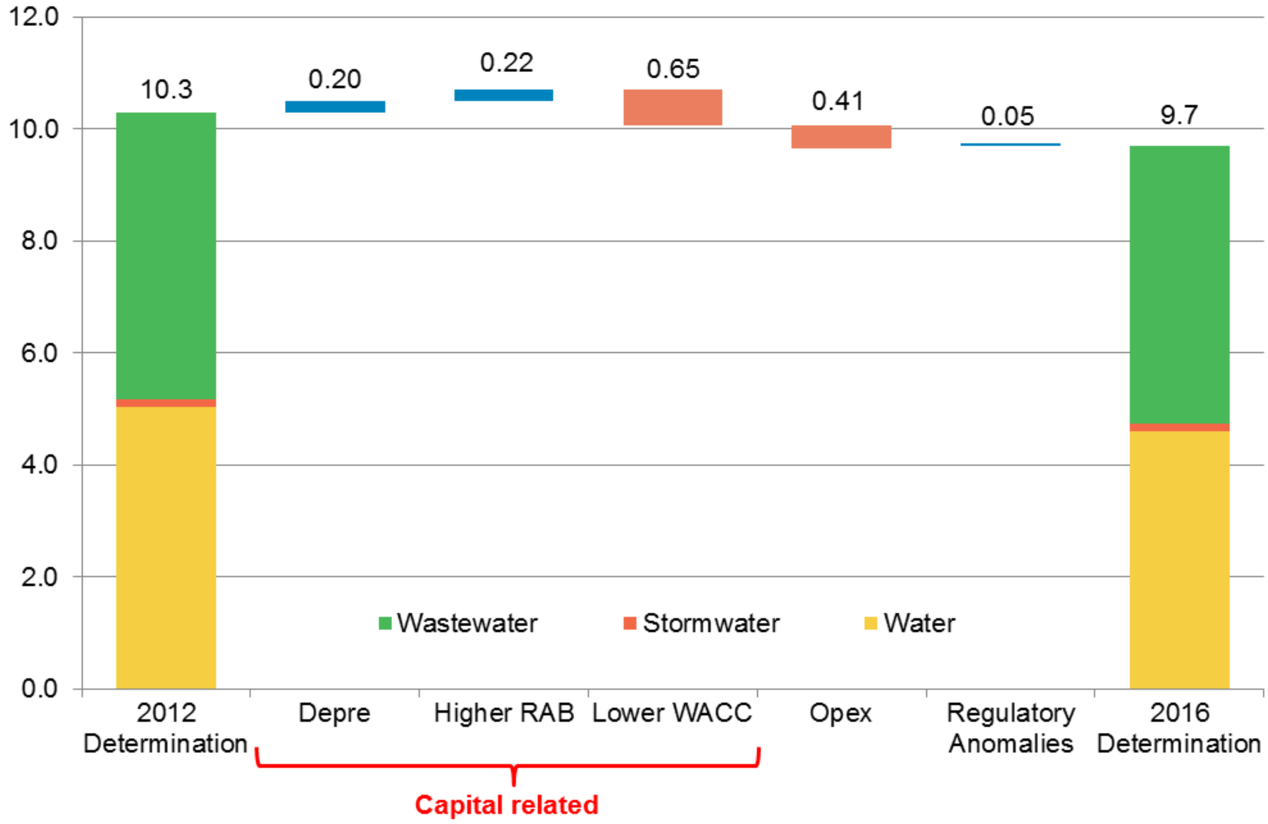


The $600 million drop in proposed revenues compared with 2012 (in $2015–16) is due to:

- a $1.06 billion drop in revenue, from the reduced opex and WACC
- a $420 million increase, driven by higher depreciation and a higher regulatory asset base (RAB)
- the proposed changes to regulatory treatment of land, tax and finance leases (ie regulatory anomalies).

The results are shown in Figure 5.

Figure 5 – Changes in annual revenue requirement ($2015–16 billion)



Challenges – current, emerging and future

Improving our business depends on our ability to respond to various challenges. We successfully dealt with the challenges caused by the millennium drought – a one-in-a-hundred year event. This experience helped us improve internal practices, processes and resilience in delivering services. We are now better equipped to manage and mitigate risks to our customers, shareholders and business. As an organisation, we remain committed to improving, by taking opportunities to enhance our customer and community experience, and driving ongoing cost efficiencies over the longer term.

A large proportion of the proposed savings over 2016–20 are due to factors outside of our control, and we expect to face challenges beyond 2020 in maintaining high levels of service and affordability. For example, while the low interest rates forecast currently drive customer bills down, there are risks that the interest rate will rise in the future.

We have had to estimate the WACC just over a year in advance of when IPART will estimate this for the pricing determination. While our estimate is based on the best available information at that time, the forecast has a degree of uncertainty, so price changes may be higher or lower than we propose.

If the current rates in June 2015 are sustained for just over a year, it is likely that our WACC forecast of 4.6% will be slightly higher than that determined by IPART. The bills and prices determined by IPART then, all other things being equal, would be lower than what we have proposed. Conversely, an increase in the rate since we forecast the WACC, would result in bills, prices and a revenue requirement above what we have proposed.

Sydney Water faces a number of current, emerging and future challenges, which will place pressures on cost and affect our ability to continue to deliver high levels of customer satisfaction at affordable prices. The challenges can arise from such things as:

- population growth in Sydney
- potential policy, legislative and regulatory changes
- demands on state finances
- customer concerns about the cost of living
- greater customer expectations on engagement
- climate change.

To meet these challenges and continue to promote the long-term interests of customers, we will need to:

- sustain improvements already made and seek new efficiency opportunities
- contribute to whole of government solutions, where there are multiple agencies involved and there are potentially major cost implications for Sydney Water
- ensure we have transparent discussions with other agencies and improve our understanding of the benefits and costs of future urban development, development on the fringe and rising environmental standards
- enhance customer engagement to more efficiently allocate resources and services to our customers
- propose to modernise regulation, to ensure regulation better aligns outcomes for both Sydney Water and customers.

Growth

Sydney Water supports the NSW Government's planned initiatives for urban development by facilitating growth. The growing population in Sydney, and the higher costs of servicing the North West and South West growth centres, could impact the environment and place upward pressure on customer bills over the long-term.

While infill growth can currently be serviced using existing infrastructure, servicing greenfield areas requires major network expansions and upgrades to existing plants. Currently, the cost of servicing greenfield lots is on average 5–6 times higher than for servicing infill lots.

Any tightening of environmental standards, such as the discharge levels into the Hawkesbury-Nepean River, would increase the costs of supplying wastewater services, widening the cost gap between greenfield and infill developments. It would also mean wastewater becomes an even higher proportion of the overall customer bill. In 2016–20, the proportion of the bill for an average customer will be 52% wastewater, 48% water.

The Metropolitan Development Plan (MDP) was last updated in 2010–11. This details the forward program for development and timing of land releases. In the absence of updates, we have developed our own forecasts using the best available information from the Department of Planning. To also reduce the uncertainty associated with land releases with little forward notice, which places pressure on servicing, we have adapted our processes to being plan-ready. In the last year of the upcoming price path, we have forecast an extremely low level of growth capex and effectively taken on the risk of servicing growth.

Longer term, we believe the pressure growth places on the environment, and our costs, are issues that should be addressed through a whole-of-government solution. There is a need for a broader solution that reconciles the government's concern for housing affordability and supply, with the need to ensure this is provided at lowest total cost, including infrastructure costs.

If Sydney Water is trusted by our customers and stakeholders, we are more likely to be able to take the initiative to facilitate and co-ordinate these discussions, while maintaining our role as a servicer, rather than planner of growth. If these types of issues are not properly considered in the longer term, Sydney Water's customers may end up bearing a significant level of the financial risk of growth.

Policy, legislative and regulatory framework

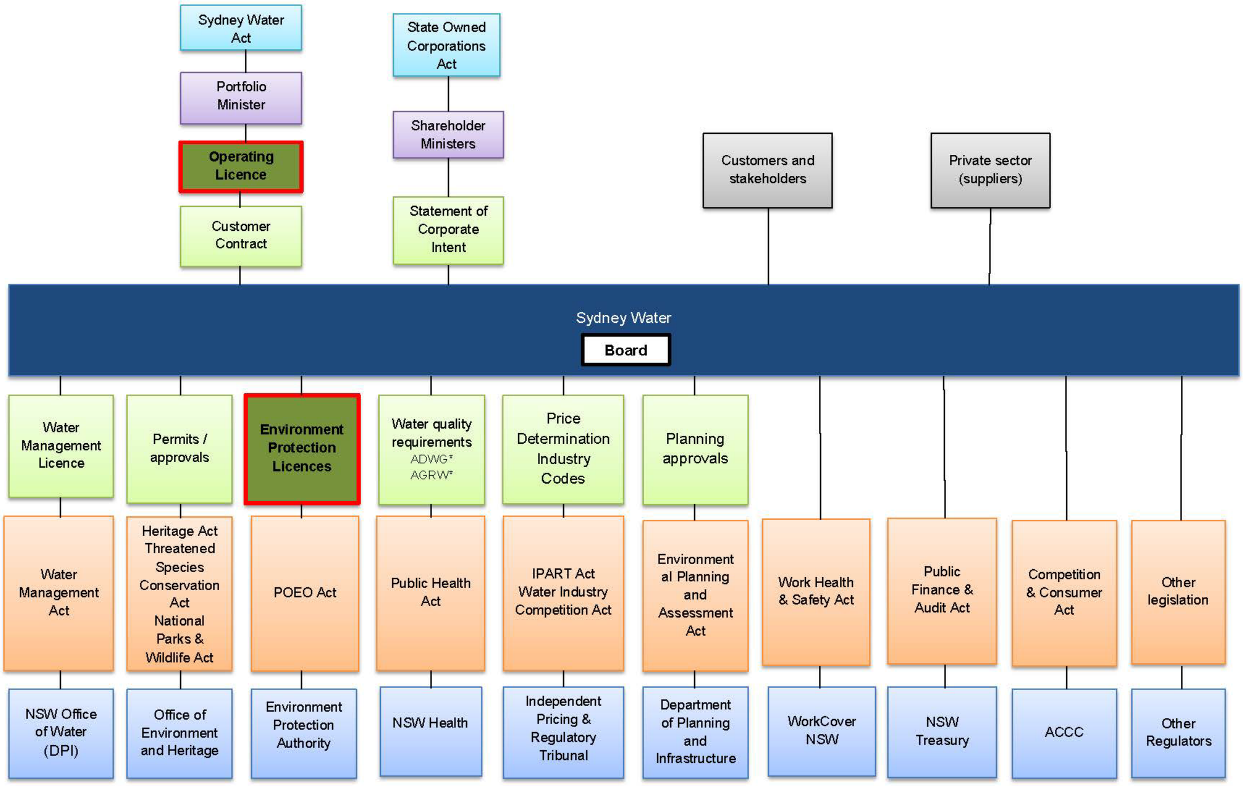
Sydney Water operates in a complex and evolving policy, legislative and regulatory environment. We have a number of regulators and government agencies overseeing different aspects of our activities, especially in the environmental and public health areas. The range of regulatory or government agencies and the related instruments of Sydney Water's current legislative and regulatory framework are depicted in Figure 6.

The policy, legislative and regulatory framework for Sydney Water has evolved since the 1990s. As we transitioned from a government department to a monopoly state-owned corporation, explicit legislative, regulatory arrangements and licensing regimes were introduced to protect customers, the community and the environment. Maintaining these safeguards is appropriate. However, we believe there is an increasing need to also consider how the overall framework can promote better value for customers.

The variety of regulators and agencies that deal with Sydney Water means that changes to policy, legislation and regulation that do not consider our overall regulatory framework, can create gaps that leave our customers and our business worse off. For example, when an agency imposes new standards mid-determination that cause a material increase in costs, we cannot fully recover these under the current regulatory regime.

We believe that to avoid adverse outcomes for our customers and business resulting from the policy, legislative and regulatory framework, a more holistic inter-agency approach is required to deal with the NSW urban water market. This would recognise and resolve tensions from competing policies, legislation and regulation. For example, is it feasible to promote competition in an environment where pricing is based on the universal service obligation of postage stamp pricing?

Figure 6 – Sydney Water's legislative and regulatory framework



* ADWG = Australian Drinking Water Guidelines / AGRW = Australian Guidelines for Recycled Water

IPART has looked to address some of these gaps. It has signalled to incumbent water utilities that it is considering regulating wholesale pricing, as part of this pricing review for Sydney Water and Hunter Water. This has arisen from perceived limits in how the wholesale access regime operates under the *Water Industry Competition (WIC) Act 2006*. Further, as the Environment Protection Agency (EPA) has no explicit legislative requirement to consider efficiency when introducing licence requirements, IPART has signalled it may consider the efficiency of new environment protection licence requirements. We believe there are a number of initiatives IPART could introduce to address this challenge:

- a more incentive-based regulation that aligns Sydney Water's and customers' interests
- cost recovery schemes to increase the certainty of recovering costs that are beyond our control, which are incurred mid-determination.

Sydney Water also believes enhanced customer engagement can help mitigate the risk to customers from proposed changes policy or regulation. For example:

- Knowing customer preferences regarding price versus environmental outcomes, can potentially inform environmental standards.
- If the community places a high value on clean waterways, in future determinations Sydney Water could develop new ways to fund or price stormwater, where the broader community contributes, rather than just those people serviced by the stormwater infrastructure.
- IPART could use customers' willingness to pay for service levels to design future service performance incentive schemes.

Demand on state finances

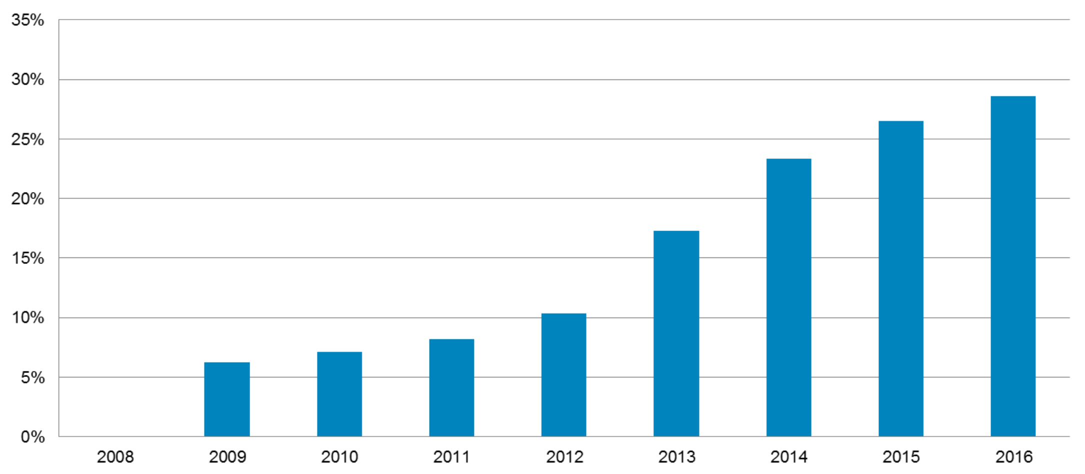
The Australian economy has experienced a slowdown in growth since 2010. The result is the likelihood of ongoing Federal budget deficits for years to come. This could place demands on state finances.

Despite pressures, the NSW Government has recently improved the state's economic performance. Sydney Water, as a state-owned corporation, has been managing our business efficiently and effectively to make a positive contribution. To ensure we do not place pressure on state finances, we have been looking for ways to improve capital management:

- **We have improved our overall processes for allocating capital across our business.** Introducing an Enterprise Portfolio Project Management (EPPM) methodology, over the past year, has improved our ability to prioritise and dynamically manage our capital budget. This ensures we more efficiently allocate capital across our business. In future, we will be able to develop solutions that better align with our changing operating environment and our customers' needs. We will support this by introducing an Enterprise Resource Planning (ERP) platform and improving our understanding of customers through enhanced customer engagement.
- **We have improved our planning and management of specific assets.** We have improved efficiency by better planning and managing specific assets with quantified risk models. A key example of this is the work on critical water mains and water reticulation assets. We expect the savings from this, over 2012–16, to be about $170 million. We drove a component of this efficiency by adopting innovations to improve how we assess asset condition. We have adapted principles used to identify faults on oil pipeline infrastructure, to enable us to better target our asset replacement program. We have also recently collaborated with National ICT Australia (NICTA) to further improve how we identify critical water mains in need of condition assessment.
- **We improved the way we manage our debt.** By providing revenues based on returns on an indexed RAB, regulators provide businesses with a back-loaded revenue profile. In contrast, debt is typically repaid in nominal terms resulting in front-loaded costs. The mismatch of revenue and cost profiles for capital-intensive regulated businesses creates the potential for a short-term cashflow problem, which exposes the business to a short-term financeability risk. To manage this risk we have looked to maintain similar absolute levels of debt, but have increased our proportionate

holding of inflation-indexed debt, as highlighted in Figure 7. This creates a cost profile that better matches the back-loaded regulated revenue stream. We are also negotiating with T-Corp to access more debt instruments, such as low coupon debt, so that we can better reduce risks from deviations of our debt costs from IPART's allowed returns within regulatory periods.

Figure 7 – Sydney Water's inflation-indexed debt as a percentage of total debt



Perceptions about the cost of living

The high cost of living in Sydney remains a significant concern for households. Utility bills (electricity, gas and water) have contributed to the current public perception of cost of living pressures. Although these make up a small proportion of household expenditure, utility prices have increased by 4.4 times the rate of CPI, based on Australian Bureau of Statistics figures from December 2003 to December 2013.

Despite the increase in prices, Sydney Water's annual bill has still remained a relatively small proportion of household expenditure. Figure 8 shows, in real terms, our bills have remained relatively flat over two decades, except for a one-off increase during the millennium drought, where Sydney Water invested over $2 billion in SDP and recycled water initiatives, to secure Sydney's future water supplies.

Figure 8 – Sydney Water's customer bill index

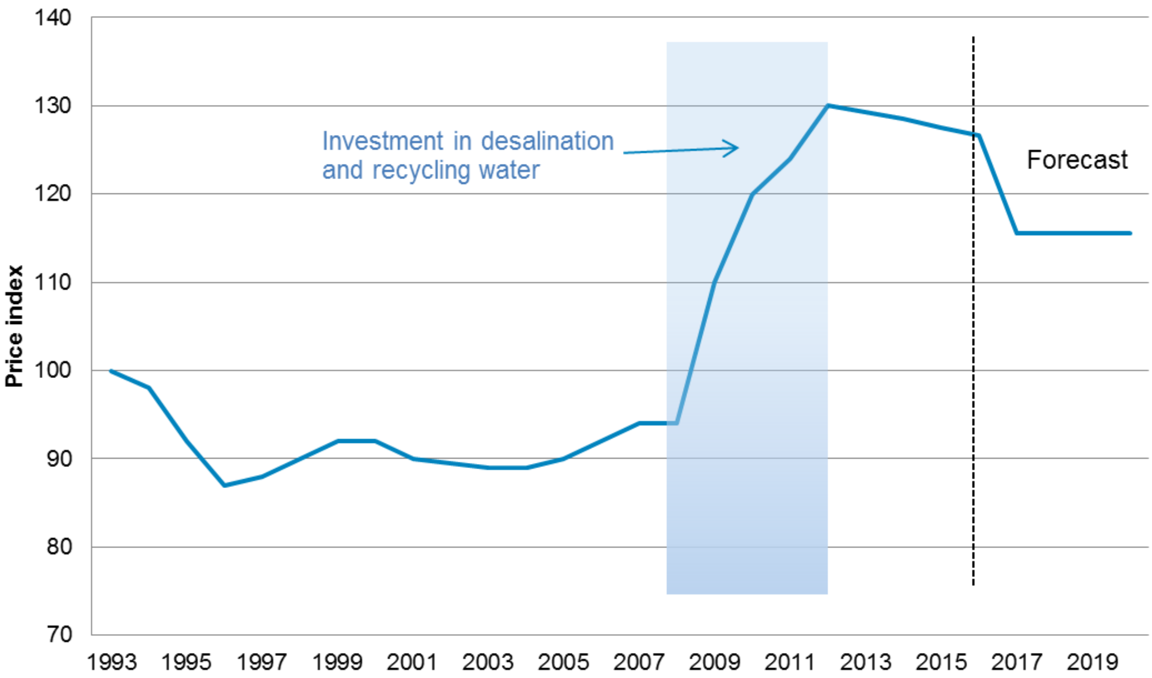


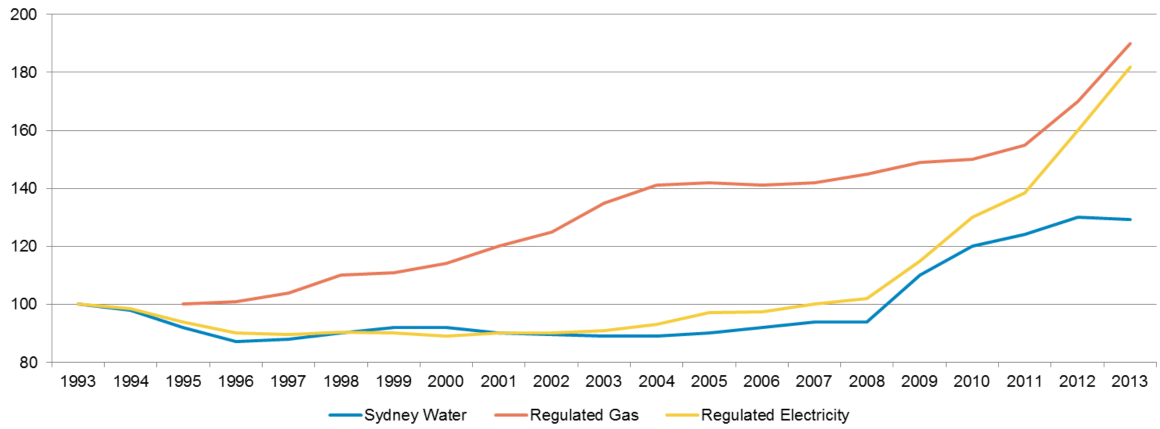
Figure 9 shows that when compared with electricity and gas bills, the increases in the average residential customer's water bills have been lower. The average residential customer electricity bill is almost double the amount of Sydney Water's average customer bill.

Sydney Water is committed to ensuring water and wastewater services remain affordable, shown by our proposed bill reduction over 2016–20. However, with about 70% of the current reduction arising from external factors, the challenge to keep water bills down remains significant. Prices for our services may go up beyond 2020 with even just a very small rise in interest rates.

In addition to lowering costs, we have also carefully examined how regulation can place upward pressure on costs (and prices) but provide little value. We are exploring the introduction of stronger incentives for cost-efficiency and better outcomes for customers. This has informed our approach to the Operating Licence review, our proposal to modernise regulation in this submission, and our assessment of existing environment protection licences. For example, later this year, we intend to propose to the EPA that they introduce new outcomes-based regulation of wastewater overflows in extreme wet weather events to drive better community and environmental value at a substantially lower cost.

We also believe that understanding our customers better will enable us to identify ways to lower costs and provide better value for money services to our customers. This will help influence perceptions about rising cost of living from utility bills.

Figure 9 – Residential Sydney Water versus electricity and gas bills



Source: *IPART 2012–13 Annual Report*

Customer expectations about engagement

The internet, and mobile and social digital technologies, has increasingly empowered our customer base. Customers can speak their mind and broadcast to a much larger audience through new social media platforms. In competitive markets, businesses use these platforms to enable customers to advocate for products and services, and use feedback to help shape service offerings valued by customers. There is the potential for the business to gain competitive advantage through better engagement, and not surprisingly, this is considered critical for business success. This means customers now expect more from service providers than they ever have at any time in the past.

Even though Sydney Water does not have the same competitive advantage driver for customer engagement, we are proactive in this space. This helps us in better manage our business and its risks. We will have greater capability to allocate resources where they are most valued by our customers. Customer feedback can help us better assess service priorities, test expenditure proposals, and determine customer-preferred tariff structures. If IPART allows pricing flexibility, enhanced customer engagement will help us adjust tariffs in the most efficient way to meet customer preferences over time.

Climate change

Changes over the longer term in the frequency, distribution, intensity and duration of future weather-related events will pose significant challenges for maintaining and operating infrastructure.

Partly due to the impact of the millennium drought, Sydney Water has developed a good understanding of how hazards from climate variations and extreme events affect our network and our efficient costs of supplying services over time.

Hazards include:

- physical damage to our infrastructure from severe storms and fires
- pipe cracking due to wetting and drying of soils

- damage to electrical components, stormwater asset condition, and overflows and pollution incidents from flooding
- changes to biological and chemical processes from variation in temperature
- pipe corrosion from rises in sea level and additional salt water ingress.

While we have improved our resilience and developed better adaptive risk management to deal with extreme climate-related events, average weather conditions still form the basis of our efficient cost estimates. More extreme events and larger variations in weather will place upward pressure on costs.

To ensure we can effectively deal with the challenge posed by climate change, Sydney Water partnered with the Water Services Association of Australia (WSAA) and its members, and Climate Risk – with co-funding from the Australian Government – to develop AdaptWater. This is an online tool that quantifies risks associated with climate change and extreme events. It performs cost-benefit analyses of proposed options to inform planning and investment decisions when faced with climate change. Sydney Water expects to use it as a basis for asset decision-making beyond 2020.

Sydney Water's strategy – enhancing customer engagement

In an effectively competitive market, for businesses to be successful and efficient, they must understand what their customers want and value, and then supply service levels and prices that match these preferences. While we are a monopoly provider of services, we have identified that enhanced customer engagement and an improved level of understanding of our customers can help us to better manage our business, in the face of the current, new, emerging and future challenges, by:

- helping us shape policy, legislation and regulation, by highlighting the cost and the value to customers from changes
- providing us with a greater ability to coordinate, facilitate and participate in discussions to resolve whole of government issues
- helping us prioritise investments and allocate capital where customers and community indicate that it will be most valued
- better managing perceptions about the cost of living through using our better understanding of customers to reduce costs and provide better value
- dealing with increased customer expectations and using them to shape key decisions on such things as tariff structures, service priorities and future expenditure.

Corporate strategy

To ensure as a business that we continue to improve the way we manage our business, we are implementing a new corporate strategy. We want to deliver better value for customers, so that customers:

- find us easy to deal with
- experience our organisation as transparent
- have an increased level of trust in our business now and in future.

We aim to achieve this by being a world-leading utility, delivering valued services to customers, with a workforce that has a high performance culture.

To enable us to realise the benefits from better understanding our customers, Sydney Water will start implementing a standard ERP system over 2016–20. We will consolidate all Sydney Water's IT systems into this ERP system over ten years. This will help us transform our business into one that is better equipped to deliver customer value. It will improve the quality of information we have and allow us to be more agile, offering similar customer service as banks, telecommunications providers and energy suppliers do. Empowered customers will be heavily influenced by experiences from other sectors. If we fail to meet their expectations, around minimum acceptable service levels, it is more likely that some standard will be imposed on us in the future. By ensuring we deliver services valued by customers, we remove the risk of intervention.

Current customer and community engagement and performance

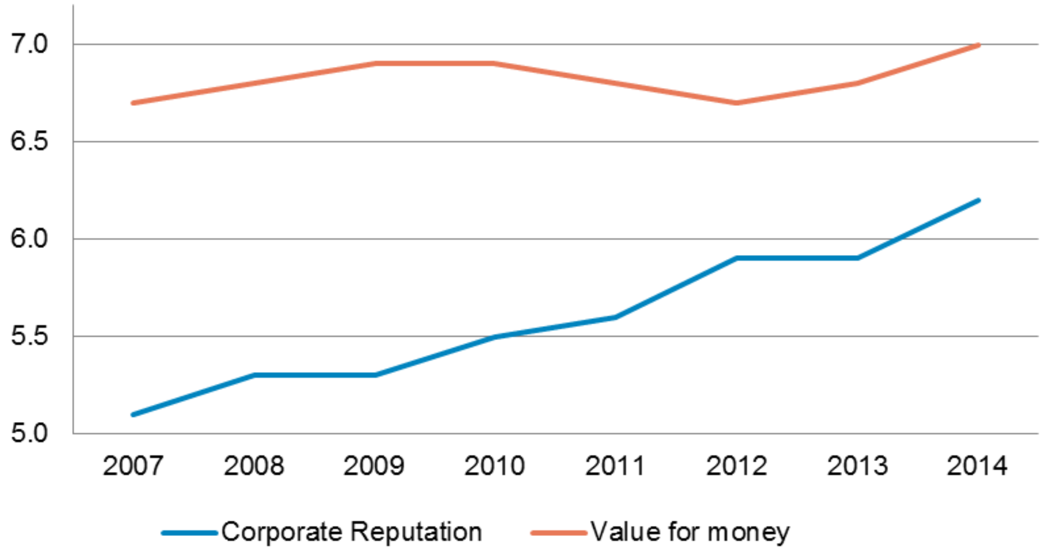
Sydney Water has many touch points with our customers and the community. We are constantly looking for opportunities to inform, and seek feedback from, customers through both formal and informal channels. While we seek to enhance customer engagement, we have already made marked improvement in relationships with our customers and community.

We carry out continuous and periodic surveys, which show we are viewed very favourably by our customers as shown in Figure 10. Using a scale of 0-10:

- value for money has steadily increased from 6.7 in 2011–12 to 7.0 in 2013–14. It is now above where it was before we built SDP where there was a steady fall
- customer satisfaction has improved with:
    - overall quality of service, increasing from 6.9 in 2006–07 to 7.7 in 2013–14
    - drinking water quality, increasing from 8.0 in 2009–10 to 8.4 in 2013–14
    - satisfaction associated with interacting with our staff rising to 8.8 in 2013–14
    - falls in total customer complaints from 2012–13 to 2013–14
    - customer complaints resolved within 10 business days increasing from 86.3% in 2009-10 to 91.3% in 2013–14

- our corporate reputation:
    - has increased from 4.5 in 2005 to 6.3 in 2013–14
    - is higher than that of energy suppliers and transport providers and just below Australia Post and the retail banking sector
    - in the first quarter of 2015, reached its highest ever level of 6.4.

Figure 10 – Sydney Water’s corporate reputation and value for money scores



We have continued to meet the performance service standards in the current Operating Licence and environmental standards in our EPLs.

Customer assistance programs

Sydney Water supports customers in need by providing flexible payment arrangements and tailored assistance for those customers. We implemented the 2010–15 Payment Assistance Strategy, which we developed in consultation with Sydney Water’s Customer Council. This ensures our program applies industry best practice and meets the needs of customers experiencing hardship, now and in the future.

Under our BillAssist™ program, our team of qualified professional case coordinators work with residential customers experiencing financial hardship. We provide personalised support, advice and payment assistance, and refer customers to other specialist services. BillAssist™ was selected as a finalist in the Australian Teleservices Association National Awards 2013 in the innovation category.

Enhancing customer engagement – water tariff proposal 2016–20

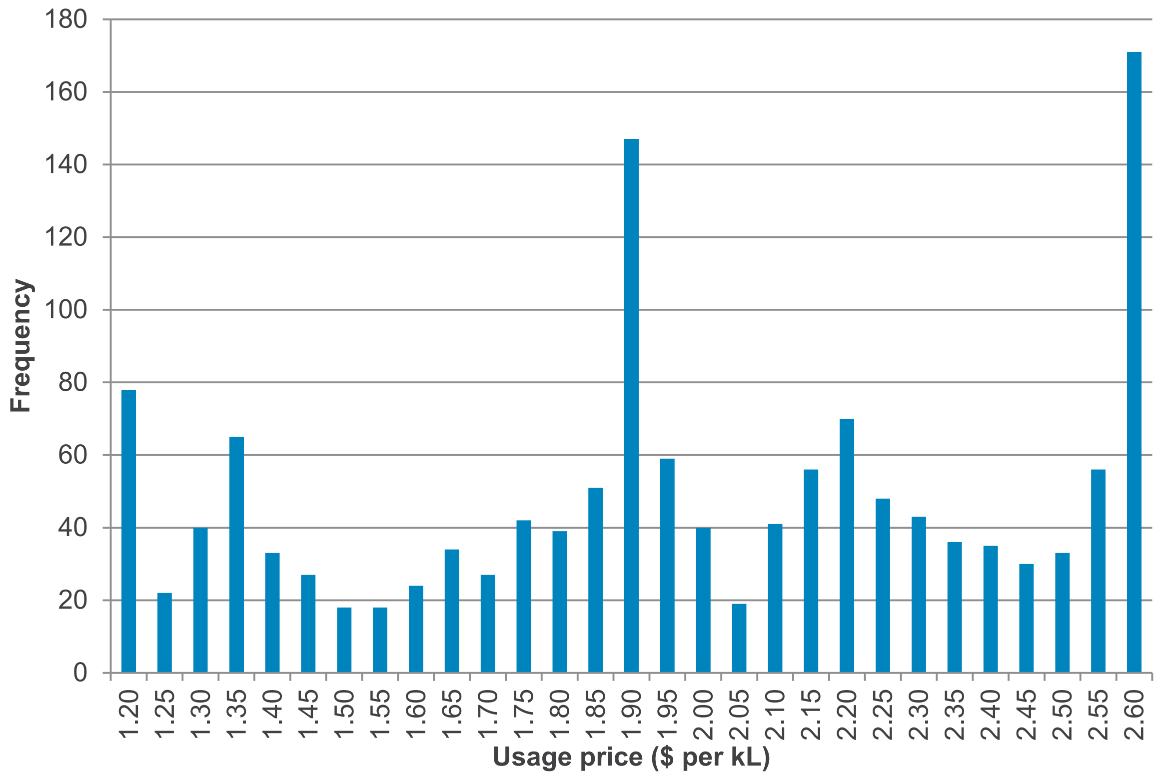
We have integrated customer insights into our approach to this pricing proposal, using customer engagement to help develop our proposed tariff structures for water.

Working with the Australian Centre of Excellence for Local Government at the University of Technology Sydney, we completed customer engagement, surveying just under 1,700 customers online to assess customer and community preference for bill certainty (that is, a higher fixed service charge) compared to bill control (that is, a higher usage price). We also provided customers with a bill analyser tool to assess the impact of their water use on their bill.

The results were:

- before using the bill analyser tool, 73% preferred higher usage prices
- after using the bill analyser, this dropped to 61%, although one-third of the surveyed participants switched categories
- customers preferred three distinct usage prices – $1.20, $1.90 and $2.60 per kL – with a substantial proportion preferring usage prices in the range from $1.90–$2.30 per kL (see Figure 11).

Figure 11 – Customer preferred usage price for water



We used these customer insights with traditional cost estimation techniques, and the expected change in the wastewater service charge based on our costs, to propose the following tariff structure for water:

- A $1.97 per kL usage price.
- A fixed annual service charge of $98.52 a year.

Also, the feedback from customers and engagement with our Customer Council has formed the basis of our proposal to recover the costs of switching on the SDP through increasing the usage price and service charge, rather than a higher fixed service charge (as in the past). We believe this approach to setting the proposed tariffs is a major innovation in the way water utilities set usage and service charges. By understanding our customers' preferred pricing structures, we believe we can avoid any large changes to the tariff structure from simply following economic theory that is unsupported by customers.

Modernising regulation

Economic regulation of monopoly utilities is well-established and has continued to evolve over the past 30 years. In particular, prescriptive forms of regulation are now less favoured, where the regulator protects customers and constrains the business by standing in its shoes to make detailed decisions on prices and services.

Regulators have moved towards providing stronger incentives and greater flexibility for businesses to pursue efficiencies by delivering outcomes desirable from a customer perspective. The benefit of incentive-based schemes for customers is that this flexibility can lead to more cost-effective solutions, with better outcomes than if outputs were prescribed externally to the business. The advantage for regulators is that it allows them to 'step back' from the detailed operational matters of the business. This reduces the overall burden of regulation in terms of the resources and time needed by regulators, or other external bodies. Such incentive-based schemes have been adopted in the water and energy sectors in the UK and in the Australian and New Zealand energy sector.

Despite economic regulation evolving over time, there has been limited change in economic regulation of the urban water market in Australia. This is reflected in two recent reports – the Frontier Economics report in 2014 for WSAA titled *Improving economic regulation of urban water* and the *Competition Policy Review* (Harper Review) in 2015. Both highlight that economic regulation of urban water markets across all states appears to have remained largely static, is much less evolved than the economic regulation in the energy sector, and not aligned with best practice.

The Frontier report states in the executive summary on page v that:

> The current arrangements for economic regulation of the urban water industry in Australia have some significant shortcomings when compared to best practice.

The Harper Review in recommendation 20 on page 53 maintains that:

> Government should focus on strengthening economic regulation in the urban water market.

Sydney Water believes that to deal successfully with existing, emerging and future challenges, requires both improved management of our business and modernised regulation of the NSW urban water market. Economic theory and real world outcomes from the UK water and energy sectors suggest the best performing regulated businesses will be those that are also subject to best practice regulation.

IPART's current economic regulatory framework

Sydney Water acknowledges that IPART has a more mature economic regulatory framework for water than exists in most other states of Australia. We have previously supported the current approach to regulation. It has benefitted customers, through falling prices in real terms over nearly two decades (except for during the millennium drought and the investment in the SDP and recycled water initiatives).

IPART has also recently looked to enhance key elements of its existing regulatory framework. In December 2013, IPART became the first regulator in Australia to introduce a financeability test for water pricing determinations. It also introduced a more robust WACC methodology, which is less likely to be subject to short-term financial market volatility and refined the approach to forecasting inflation and estimating the cost of debt.

We supported these methodologies and believe IPART's reviews have increased transparency of the regulatory process and provided more certainty for regulated businesses. The importance of the improved WACC methodology was highlighted by Moody's in its recent decision to increase Sydney Water's baseline credit assessment from Baa2 to Baa1. Moody's stated that (press release on 4 March 2015) the upgrade reflected an 'expectation of improved transparency in the regulatory framework'.

Most recently, IPART recognised the tensions created by competitive entry to providing monopoly services, within a policy framework that maintains the principle of postage stamp pricing. It has identified that there are potential gaps in how the existing wholesale access regime works under the WIC Act. On that basis, IPART has suggested it may consider regulating charges for wholesale services provided by primary water utilities (like Sydney Water) to secondary water utilities who seek to access infrastructure to on-sell water and wastewater services to end-user customers. Sydney Water believes this could be a constructive way to deal with an emerging issue, particularly if gaps do exist with the current regulatory framework.

While IPART has adopted new approaches, its regulation of pricing and incentives for Sydney Water has been relatively unchanged over the past two decades since regulation was first introduced in 1993. IPART's approach is still based around mandating prices to protect customers, and provides no pricing or service flexibility and limited incentives for businesses to promote better outcomes. For example, IPART prescribes both the structure and level of all prices charged by Sydney Water for water, wastewater and stormwater services to both residential and non-residential customers. This is different to the approach IPART uses to regulate electricity prices, where it enabled price flexibility through a weighted average price cap.

Also, under current regulations the business surrenders the benefits from efficiency savings at the end of each review period. This decreases the incentive to make savings towards the end of each regulatory period and increases the incentive for the business to defer efficiencies. IPART's 2012 price determination of the SDP acknowledged this shortcoming and introduced an efficiency benefit sharing scheme on opex to strengthen SDP's incentive to pursue efficiency gains.

Proposal to modernise regulation – strengthening incentives

We consider that any best practice regulatory economic framework should provide firms with strong incentives to do the right thing and pursue allocative, productive, and dynamic efficiencies. It should encourage firms to innovate, and drive more cost-effective solutions than if outputs were prescribed externally to the business.

Strong incentives also allow the regulator to 'step back' from detailed operational matters of the business, potentially reducing the overall burden of regulation on both the regulator and the firm. This avoids the risk that information asymmetry leads to regulators making decisions about the business that are not in customers' interests. IPART's current traditional price cap regulation is at odds with UK regulation of the water and energy sectors and the regulation of the gas and electricity sectors in Australia and New Zealand. These regulators enhanced the traditional form of price-cap regulation, in response to the different challenges they faced in the 2000s and 2010s. The schemes have been aimed at continuing to constrain the market power of monopoly suppliers, while providing regulated businesses with the necessary flexibility to promote outcomes in the long-term interests of customers. Over time, these schemes have delivered significant benefits to customers and rewarded businesses that provided better customer outcomes.

Sydney Water believes IPART now has an opportunity to move further along the spectrum of best practice regulation, by strengthening the incentives of the current regime, and modernising water regulation for the urban water market in Australia. We propose to introduce new schemes in 2016–20 that allow:

- price flexibility within clearly set boundaries, by using a weighted average price cap (WAPC)
- stronger incentives for cost efficiency through a new efficiency benefit sharing scheme and cost recovery schemes.

We believe these schemes will help create a more robust long-lasting regulatory framework – one which aligns Sydney Water's interests with those of our customers. It will encourage us to continue to drive further allocative, productive and dynamic efficiencies, because this is also the right thing for our customers. To reduce the likelihood of adverse customer outcomes, which could undermine confidence in the schemes, we have based them heavily on incentives tried, tested and fine-tuned in other sectors in Australia and in the UK since the early 2000s. Also, we propose they are introduced in a very measured way, with a roadmap for further strengthening in future regulatory periods.

As part of our submission to modernise regulation, we have also identified existing regulations that we believe are causing unintended consequences and promoting sub-optimal outcomes. We propose changing the regulatory treatment of tax and land sales.

Price flexibility within a price cap

Water and energy firms in the UK and Australia are allowed flexibility to set their own prices within the constraint of a price cap set by the regulator. A WAPC approach means that with the regulator's approval the firm sets all tariffs within a basket of regulated services each year, subject to a cap on the overall weighted average of charges and any additional side constraints that the regulator applies. Each year, the firm can adjust prices for each service as long as they meet the overall cap. Firms can apportion costs between services and set prices to reflect costs. This year-on-year adjustment (rebalancing) maximises efficiency.

The benefit of introducing price flexibility is that it will encourage Sydney Water to ensure its prices meet two key aims:

- Prices will reflect the costs of providing the service.
- Services can be targeted to particular customer groups to reflect their preferences ('adding value').

This drives more efficient allocation of resources to customers (allocative efficiency) during the regulatory period.

Price flexibility would also allow Sydney Water to use prices to respond quickly to changing supply and demand conditions in the future. The energy sector has widely employed price as a demand management tool. This has occurred to a lesser extent in the water sector.

During the millennium drought, demand restrictions were the preferred way to deal with pressures on water supply and were heavily supported by both the public and interest groups. But, restrictions can drive potentially inefficient outcomes.

For example, consider a customer who values being able to water their garden. This customer would be prepared to pay a lot to water their garden during restrictions, or would reduce their indoor water use to offset greater use outside. But under restrictions they would be unable to do so. It would have been useful, as a complement to demand restrictions, for Sydney Water to have the option of using prices as an additional tool to manage demand and signal the scarcity of water to customers. Price signals could have reduced the weight placed on restrictions and the level of inefficiency.

Cost incentives

Productive efficiency of monopoly suppliers is a central objective of economic regulation. Economic efficiency is promoted by delivering services at the lowest efficient cost, where those costs are within the firm's control. Given cost-efficiency has a direct impact on prices, customers are likely to place high importance on its achievement.

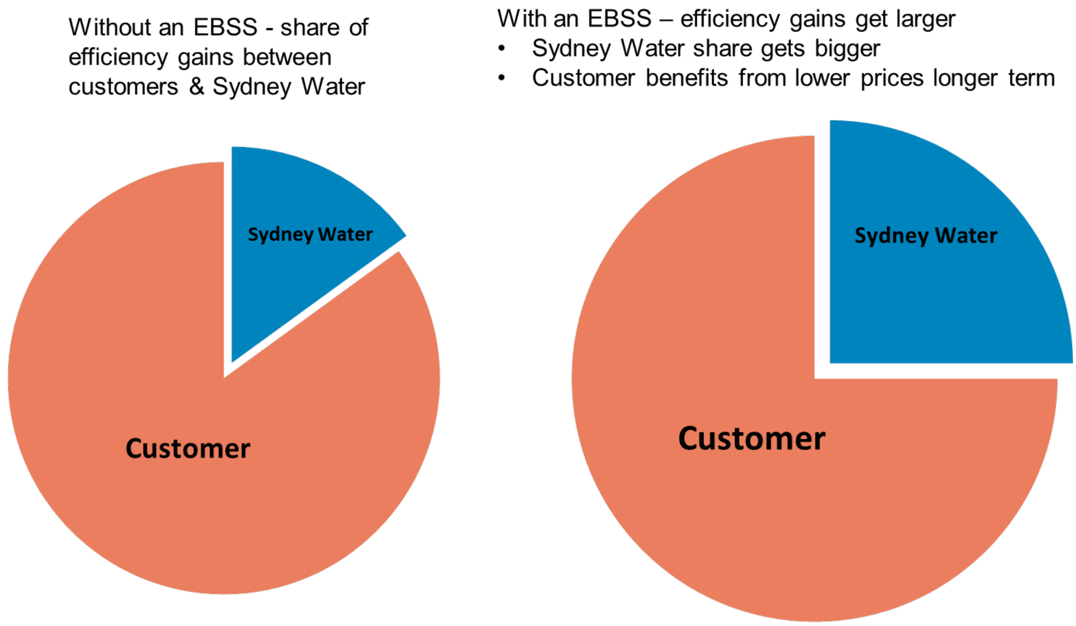
We are proposing that IPART adopt the following cost incentive schemes:

- **Efficiency Benefit Sharing Scheme (EBSS).**
  This allows firms to keep gains for a defined period of time, regardless of the year of the regulatory period in which they achieve the cost-efficiency. Being able to carry over the efficiency benefit means there is a continuous and equal incentive for cost-efficiency in

each year of the regulatory period. This corrects the current incentive to drive greater efficiencies earlier in the regulatory period and promotes delivery of services to customers at the lowest efficient cost. It provides businesses with greater reward for lowering the costs it can control, and penalises businesses for any overruns in the same costs. Customers will be better off over the long-term by the extent to which the business lowers costs, as they pass the savings in full to customers through lower prices. The benefits of having an EBSS are illustrated in Figure 12.

- **Cost Recovery Schemes (CRS).**
  These make sure businesses are not punished for material increases in costs for events beyond their control. The CRS complements the EBSS, and operates by the firm agreeing at the price determination to the scope and scale of costs that might happen and what might trigger activation of the mechanism. If the event transpires, then costs are automatically passed through to customers. Customers only bear the costs approved by the regulator, if these events happen. They do not pay upfront for costs that do not materialise.

Figure 12 – Sharing of efficiency gains under an EBSS



1 User guide

Sydney Water is a business that is changing. We are transforming into a customer-centred, world-leading utility that provides high quality services to customers, cost-effectively and at the right prices. Over the last four years, we have driven ongoing improvements in customer satisfaction, created efficiencies and ensured bills remain as low as possible. We are committed to driving even better performance and value for customers over 2016–20.

In this submission, we propose to:

- reduce customer bills, while still delivering high quality services
- enhance customer engagement, so we can better align our services to meet customer expectations
- modernise regulation, so we can deliver better outcomes for customers.

Under our pricing proposal, most households will save around $100 a year on their water and wastewater bills ($2015–16) and non-residential customers will see large bill savings. Sydney Water proposes revenues of $9.7 billion ($2015–16) to recover our estimated efficient costs over the four year period.

To support our proposal the document is structured so that Chapters 2–4 provide key narrative for our proposal, and Chapters 5–12 highlight the key features and outcomes of the building block approach to regulation. The individual chapters address the following:

- Chapter 2: Our past, present and future – provides an overview of Sydney Water's past and present performance, key outcomes of our 2016–20 pricing proposal, and highlights current, emerging and future challenges faced by the NSW urban water market, along with our proposed responses.
- Chapter 3: Focusing on customers – outlines our improved customer performance over time, and our proposal to enhance customer engagement in future years.
- Chapter 4: Modernising regulation – explains why Sydney Water is proposing that IPART should modernise how it regulates the NSW urban water market and what changes could occur in 2016–20 and beyond.
- Chapter 5: ARR, bill impacts and pricing – highlights the Annual Revenue Requirement for Sydney Water over 2016–20.
- Chapter 6: Our financial position – addresses Sydney Water's past and projected financial performance and our financeability position, based on our 2016–20 proposal.
- Chapter 7: Operating expenditure – provides an overview of our operating expenditure (opex) performance over the current determination period, our business improvement initiatives and our forecast opex for 2016–20.
- Chapter 8: Capital expenditure – provides an overview of our capital expenditure (capex) over the current determination period, including a number of key efficiencies, capex by driver and product, and our forecast capex for 2016–20.

- Chapter 9: Weighted average cost of capital (WACC) – outlines how we have reached our estimate of 4.6% for the appropriate allowed return on capital.
- Chapter 10: Regulatory framework – examines the regulatory framework for pricing water and wastewater services, our preliminary view on the pricing of wholesale services, and our proposed introduction of incentive based regulation schemes to provide price flexibility and drive further cost efficiencies.
- Chapter 11: Regulatory application – explains our proposals for improving technical aspects of the way IPART regulates tax, the treatment of land sales and the treatment of finance leases and provides details of a number of regulatory issues from the current determination.
- Chapter 12: Demand for water and wasterwater services – highlights Sydney Water's best practice approach to modelling water demand use over 2016–20 and our water and chargeable wastewater forecasts.

Further detail and information supporting our proposal is provided in the Appendices.

Sydney Water notes that for the most part the figures contained in the chapters are expressed in real terms (ie without inflation, in $2015–16). The exception is Chapter 6, where the figures for our expected financial performance are all in nominal terms. The nominal figures for the information presented in Chapters 7 and 8 on opex and capex are provided in Appendix 9.

2 Sydney Water – Past, present, future

Key messages

- Sydney Water is one of the world's largest water utilities, providing water and wastewater services to about 4.8 million people across Sydney, the Illawarra and the Blue Mountains.
- Over the current price path, we have kept bills and performance steady while setting a new benchmark in customer satisfaction. We expect to realise over $450 million in opex and capex efficiencies by the end of the current regulatory period (2012–16).
- We propose a four year regulatory price path starting starting 2016–17. Our proposal would save the average household about $100 on their annual water and wasterwater bills. Non-residential customers will also benefit from large savings on their water and wastewater bills. We also propose to recover $9.7 billion of revenue over 2016–20, which is $600 million lower than our previous 2012–16 pricing determination.
- About 30% of the savings for 2016–20 are driven by the significant efficiency gains realised over the current regulatory period. The remaining 70% are driven by passing through cost savings arising from external factors, such as the expected low interest rates.
- Current, emerging and future challenges in the NSW urban water market, may impact our ability to continue to deliver high quality affordable services to customers beyond 2020. The challenges relate to:
    - population growth
    - policy, legislative and regulatory changes
    - demand on state finances
    - perceptions about the cost of living
    - customer expectations about engagement
    - climate change.
- We have identified two key initiatives over 2016–20 to help us become more resilient so that we can meet these challenges – enhanced customer engagement and our proposal to modernise regulation.

Our pricing proposal demonstrates that Sydney Water is an organisation that has an ongoing commitment to improving how we do business and ensuring we continue to deliver great outcomes for customers. By proposing a drop in customer bills and prices, we are passing on the efficiency gains realised over the current regulatory period, and the cost savings from the anticipated low interest rate environment. Nevertheless, the NSW urban water market faces a range of current, emerging and future challenges, from such things as growth, the cost of living in Sydney, and climate change. To be a more resilient organisation that better allocates resources and delivers services that are valued by our customers over the next price path and beyond, Sydney Water is looking to enhance our customer engagement (see Chapter 3). We are also proposing that IPART modernise regulation to create a regulatory framework that better aligns good business decisions with good customer outcomes (see Chapter 4).

This chapter provides an overview of:

- Sydney Water (Section 2.1)
- our past and present performance (Section 2.2)
- our 2016 proposal for prices, bills, and revenue (Section 2.3)
- the current, emerging and future challenges that Sydney Water faces (Section 2.4)
- the two key initiatives to face these challenges – enhance customer engagement and our proposal to modernise regulation (Section 2.5).

2.1 Sydney Water at a glance

Sydney Water is Australia's largest water utility and is among the world's largest water utilities. Our geographic area is 1.5 times bigger than Thames Water and 10 times bigger than New York City Water Board. Our population served is less than a third of Thames Water and less than half of New York City Water Board.

We provide high quality water and wastewater services to over 4.8 million people, covering an area of 12,700 square kilometres across Sydney, the Illawarra and the Blue Mountains. We also supply stormwater services to 530,000 properties, across 30 different council areas in Sydney.

To deliver these services to customers, we have substantial infrastructure with a regulatory asset base (RAB) value of $15 billion. Our network includes:

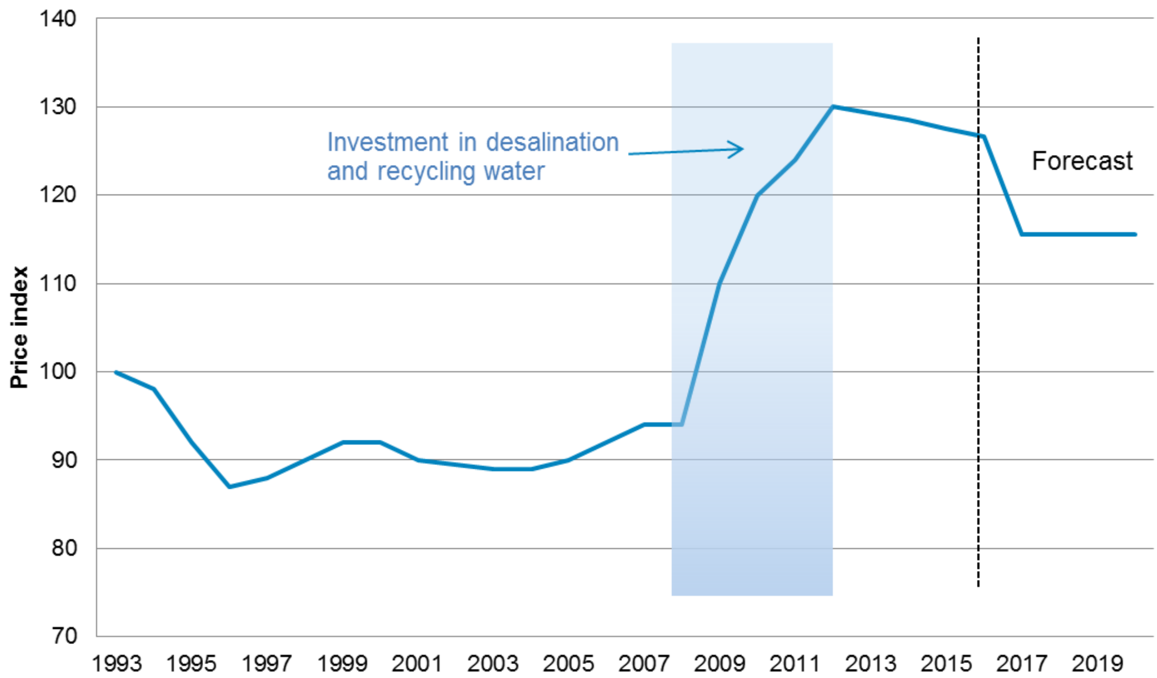
- over 21,000 kilometres of pipes for our water network
- over 24,000 kilometres of pipes for our wastewater network
- 440 kilometres of stormwater channels and pipes
- 164 water and 680 wastewater pumping stations, and 251 water reservoirs
- nine water treatment plants
- 28 wastewater treatment and water recycling plants.

2.2 Our performance – past to present

2.2.1 Customer bills and prices

Sydney Water's residential customers have enjoyed relatively stable average residential bills for water and wastewater services over the last 20 years. The only significant increase in prices and bills happened during the 2008–12 price path. This was driven largely by costs to secure Sydney's water supply through constructing the desalination and water recycling plants, and improving our wastewater networks by building the Northern Storage Tunnel. This expenditure led to a step change in customers' water and wastewater bills as shown in Figure 2-1. They will continue to pay-off the higher level of investment for years to come. Nonetheless, by the start of the 2012 these projects had been completed. This brought the capital expenditure budget back down, contributing to declining bills in real terms. For the current price path, real prices have and will continue to fall. Over the next price path (2016–20) we are proposing in real terms a large saving in the first year, with prices remaining flat until 2020.

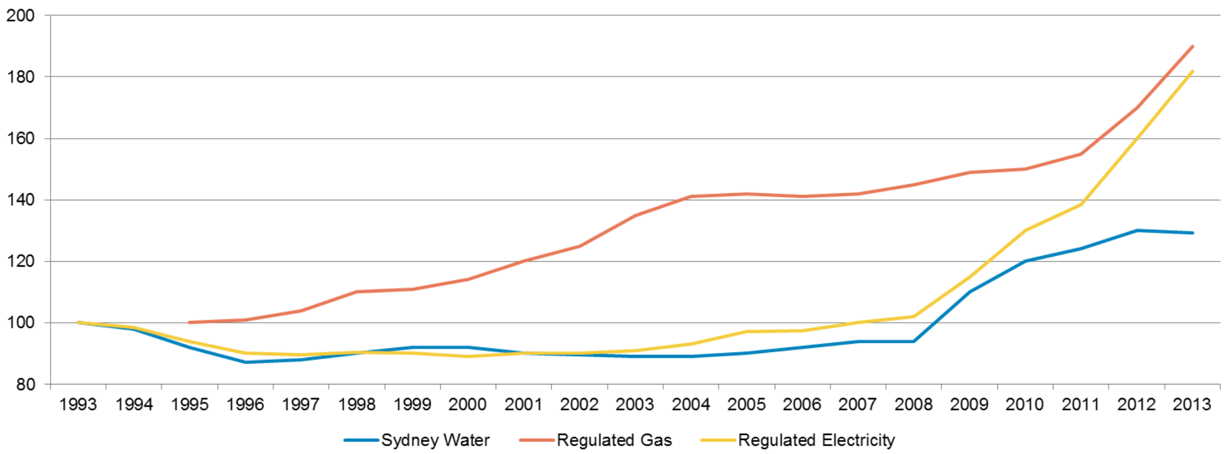
Figure 2-1 – Change in Sydney Water's average residential bill (real) from 1993 to 2020



Source: IPART 2012–13 Annual Report

Despite the large capital projects that have been undertaken, in comparison with other utilities, such as electricity and gas, our average bills have increased at a slower rate over the last 20 years. Figure 2-2 shows the comparison between the change in average residential bills for gas, electricity and our services.

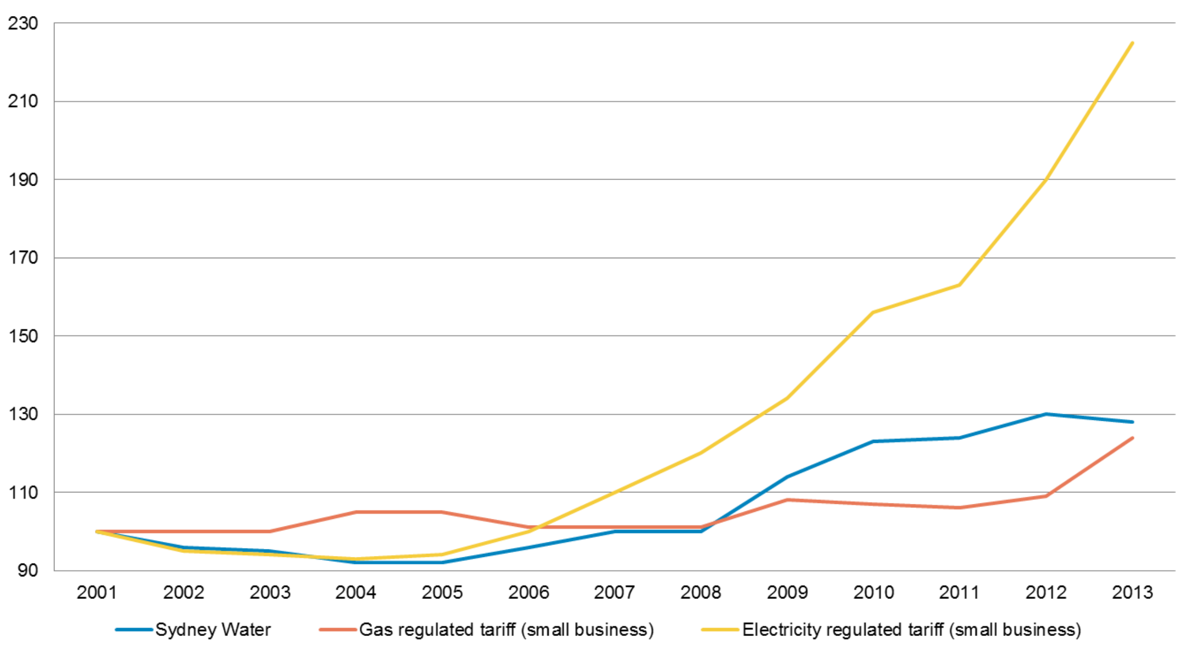
Figure 2-2 – Average bill change for residential Sydney Water, gas and electricity



Source: IPART 2012–13 Annual Report

Figure 2-3 also shows that the average non-residential bills for Sydney Water have increased at a slower rate compared with non-residential electricity bills, although non-residential gas customers had the lowest increase in bills from 2008 to 2012. From 2012 and 2013 our bills have decreased slightly in real terms, while both electricity and gas have increased.

Figure 2-3 – Average bill change for non-residential Sydney Water, gas and electricity



Source: IPART 2012–13 Annual Report

The *National Performance Report: urban water utilities 2012–13*[1] showed Sydney Water was the only major water utility to have a drop in real bills in 2012–13, and also had the smallest bill increase from 2008–09 to 2012–13. This indicates that while all state water utilities were having to

[1] National Water Commission, *National Performance Report: urban water utilities 2012–13*, 2 April 2014

invest in desalination plants and other water security measures, Sydney Water was one of the few that was able to deliver our significant investment on time and under budget.

Table 2-1 shows that from 2008–09 to 2012–13, Sydney Water had the second lowest bills in the major urban areas throughout Australia. Customer bills were lowest in Melbourne, where water utilities benefit from a much flatter terrain that drives less need for pumping throughout the network and significantly lower transportation costs.

Table 2-1 – Typical residential bill 2008–09 to 2012–13 ($2012–13)[2]

Major urban area	2008–09	2009–10	2010–11	2011–12	2012–13	% change from 2011–12	% change from 2008–09
Sydney	966	1063	1089	1115	1112	-0.3%	15.1%
Melbourne	595	675	765	872	885	1.5%	48.7%
South-east Queensland					1218		
Perth	1006	1051	1104	1153	1205	4.5%	19.8%
Adelaide	854	935	983	1174	1362	16.0%	59.5%
Canberra	996	1038	1008	1097	1174	7.0%	17.9%
Darwin	926	1054	1169	1451	1777	22.5%	91.9%

Since the last report our bills have reduced, and will continue to drop until the end of the current price period.

2.2.2 Our costs

In 2011 the Water Services Association of Australia (WSAA) benchmarked Sydney Water for ‘cost to serve[3]’ with 13 other Australian water utilities[4]. Sydney Water had the best performance of the utilities included, as shown in

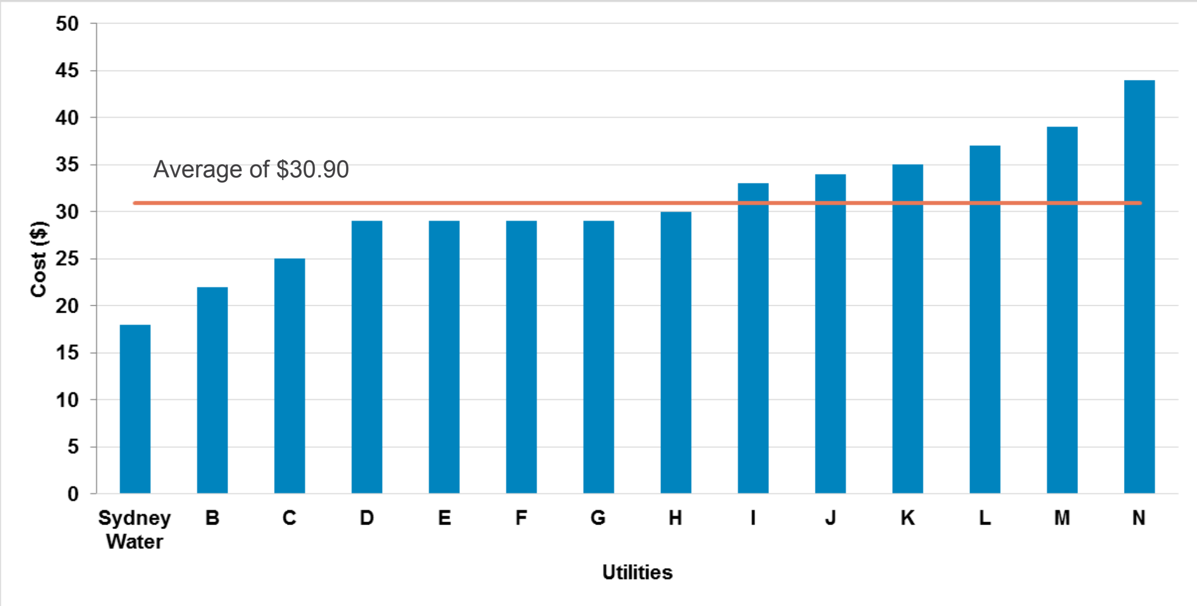
Figure 2-4. Although WSAA have discontinued this type of benchmarking, it provides a snapshot of 2011, and since that time, we have continued to further reduce costs.

[2] Data sourced from National Water Commission, *National Performance Report: urban water utilities 2012–13*, 2 April 2014.

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

[4] WSAA, *Industry Report: 2011 Customer Service Performance Improvement Project*, 2011.

Figure 2-4 – Comparison of Sydney Water's cost to serve with 13 other utilities in 2011 ($2010–11).



Source: WSAA Customer Service Performance Improvement Project

In the current regulatory period we expect to realise over $450 million of capital (capex) and operating (opex) expenditure efficiencies. We have driven these improvements mainly through better use of contestability and competitive tender processes in procurement and outsourcing.

Gary Sturgess recently assessed contestability in the public services[5] and identified Sydney Water as an example of an organisation engaging in best practice use of contestability. This initially involved benchmarking specific areas of our business with the market. Where Sydney Water could not meet or beat the market, we outsourced the services by employing a competitive tender process. Further details are outlined in Boxout 2-1.

[5] G.L. Sturgess, *Contestability in Public Services: An Alternative to Outsourcing*, ANZSOG Research Monograph, Melbourne, April 2015, available at https://www.anzsog.edu.au/media/upload/publication/150_Sturgess-Contestability-in-Public-Services.pdf

Boxout 2-1 – Contestability

Garry Sturgess, in his paper titled "Contestability in Public Services: An Alternative to Outsourcing", identifies Sydney Water as being an example of a government organisation leading best practice techniques. As a result of its 'Meet or Beat the Market' project, Sydney Water identified that the Mechanical and Electrical Division (MED) and Civil Maintenance businesses could do better compared with the market.

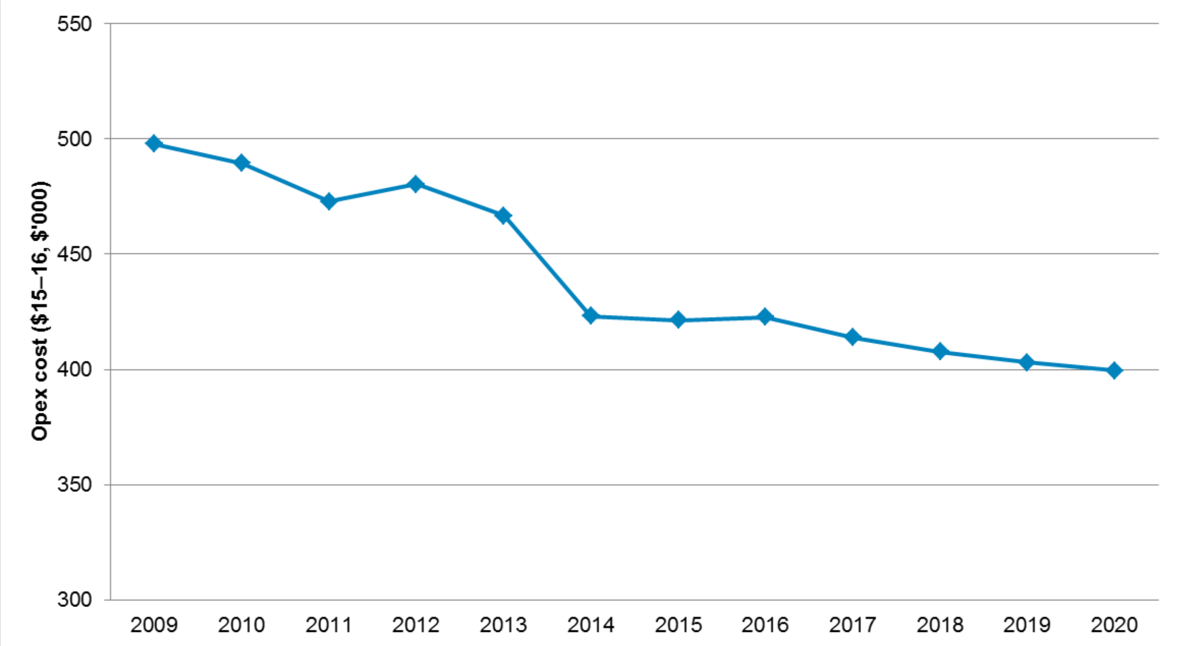
MED was already partly outsourced. The remaining 60% of the workforce still employed by Sydney Water were about 35-40% behind the market. Efforts to improve productivity had been made in the past to little effect. We decided to outsource the whole function to the private sector in 2012, and since then have saved 12% in costs and labour productivity has gone up by 20%. The outsourced contract established a number of key performance indicators which we measure our contractor Thiess against. Efficiency gains are being measured against set budgets and improvement targets. Over the first two years of the contract, Thiess has performed within the agreed KPIs of the contract. An overall review will occur at the end of the third year of the contract.

Civil Maintenance was benchmarked at about 15–20% behind the market. After extensive engagement between management, the workforce and unions, we set an agreed improvement target of 17% over the following three years from July 2012. Results are promising, with a 12% improvement in productivity in the first two years. We expect to do better than the target by the end of the three years.

Our capex is now at a similar level, in real terms, to what it was before we built the desalination plant. We have underspent in capex because of efficient deferrals in both growth and water main renewals due to updated planning and revised risk assessments of assets. Chapter 8 provides further details of how the capex efficiencies are being realised over the current period and provides detail about the proposed capex for the over the current and next regulatory periods.

Our opex has consistently fallen over time, and Figure 2-5 shows that since 2009, we have continued to drive down opex for each connected property. In addition to contestability these efficiencies have been driven by Sydney Water finding better ways of doing things and looking for the lowest cost solutions. The efficiencies realised over the current price path have contributed to the lower costs and prices we are proposing for the next pricing period from 2016–17. Chapter 7 provides more detail about these efficiencies, and the opex for the next regulatory period.

Figure 2-5 – Sydney Water's underlying opex per property ($2015–16 '000)



2.2.3 Customer satisfaction

We have improved our performance in serving customers. Customer survey results show an improvement in overall quality of service and quality of drinking water, and a drop in complaints (see Table 2-2). Customer satisfaction with our overall level of service is now at an all-time high.

Table 2-2 – Customer satisfaction performance indicators

Customer satisfaction indicator	2009–10	2010–11	2011–12	2012–13	2013–14
Overall quality of service[6]	7.3	7.5	7.5	7.7	7.7
Overall quality of drinking water[2]	8	8.1	8.4	8.2	8.4
Total number of customer complaints	8,986	7,398	7,527	8,252	6,935
Customer complaints resolved within 10 days (%)	86.3	85.6	86.3	90.2	91.3

Note: in 2012–13 there was a spike in customer complaints largely due to an increase in billing and account complaints, caused by technology failure and poor performance by the meter reading contractor.

Over the next regulatory period we will improve how we engage with customers to deliver the services and standards they want. Chapter 3 provides an overview of our key performance measures of customer satisfaction, and highlights the enhanced customer engagement work we have begun. This includes assessing customer expectations about water tariff structures, which has informed our proposed water prices for 2016–20.

[6] Measured through customer surveys (on a scale of 0 to 10).

2.2.4 Service standards requirements

During the current price path we have become a more efficient business that has improved customer satisfaction performance, while still maintaining the required service standards in our Operating Licence and Environment Protection Licences (EPLs).

Operating Licence

Sydney Water's primary regulatory instrument is the Operating Licence. The current licence expires on 30 June 2015 and sets the performance standards for:

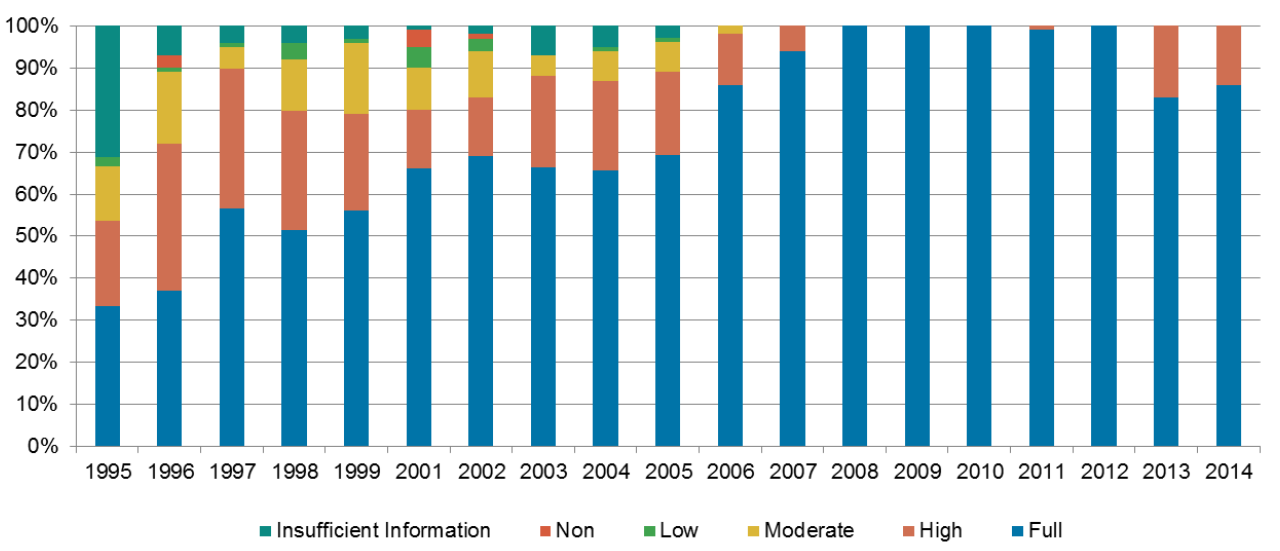
- drinking water quality
- water pressure and water continuity
- response times to leaks and breaks in water mains
- water use and water leakage levels
- wastewater overflows
- customers' rights and obligations.

The new licence will start on 1 July 2015 and contains similar standards to our 2010–2015 licence. System performance standards and limits for water pressure, water continuity and wastewater overflows remain the same. Response times to stop leaks and breaks are no longer a licence standard, but we will still continue to report against these as a performance indicator. Sydney Water will be required to maintain water use at no more than 329 litres per person a day and we have a new water leakage level of 121 ML a day (which is equivalent to the upper bound of the current level, but with the uncertainty band removed). These will remain as licence requirements until Sydney Water develops a new 'Economic Level of Water Conservation', which must be approved by IPART by 31 December 2006. There have been no major changes to customers' rights or obligations.

For the past eight years, independent audits found that Sydney Water has achieved either high or full compliance against our Operating Licence. Audit results have steadily improved since 1995, as can be seen in Figure 2-6. The increase in 'high' compliance and relative decrease in 'full' compliance in years 2013 and 2014 were due to some minor shortcomings in recycled water quality, and customer and consumer rights. These findings had no impact on Sydney Water's ability to complete defined objectives or assure controlled processes, products or outcomes.

Appendix 3 contains further detail of our year-to-year performance against each of the standards.

Figure 2-6 – Operating Licence audit performance



We will continue to maintain our very high level of compliance when the new licence starts on 1 July 2015. Further detail about Sydney Water's performance on service levels against the *Operating Licence 2010–15* is provided in Appendix 3.

Environment protection licences

The Environment Protection Authority (EPA) regulates Sydney Water's environmental performance by issuing Environment Protection Licences (EPLs), which it reviews every five years. Unlike the Operating Licence or pricing submission reviews by IPART, the EPA is able to easily vary the EPLs outside the review period and variations occur regularly. Sydney Water's costs may increase substantially from such variations, which may be unfunded depending on the time of the variation and the price submission. Sydney Water has 27 EPLs:

- 23 for wastewater treatment systems
- two for water filtration plants
- one for an advanced recycled water filtration plant
- one to transport waste.

We are required to report EPL non-compliances each year. While our overall performance against EPLs has improved over time, we are actively engaging with the EPA to improve environmental and community outcomes. The Wet Weather Overflow Abatement (WWOA) Program is an example of this, and is outlined in Section 2.4.2.

The level of Sydney Water non-compliance against all EPLs is shown Figure 2-7. The main reasons for improvement in performance have been:

- operational investment driving proper and efficient operations and maintenance
- capital investment in asset renewals, upgrades and rehabilitation

- changes in definitions for compliance with conditions (in 2005–06).

Figure 2-7 – Sydney Water's non-compliance in EPLs since 2001

Currently, dry weather overflows are the main cause of non-compliance with the EPLs. Other non-compliance comes from overflows from pumping stations or those that reach waterways, increased odours and non-compliance with treatment processes set out in the EPLs.

A high level of non-compliance is due to response and reporting issues, as well as poor definitions and different interpretations of the conditions. These are technical non-compliances that occur even when there is no environmental impact. Sydney Water and the EPA are currently examing the definition of a non-compliance, and we both recognise that the interpretation must be improved to better reflect environmental impacts. Such a change will reduce the level of non-compliance. In any event, we will continue to look to deliver better environmental and community outcomes using the most cost-effective solutions.

2.2.5 Sydney Water's financial position

Financial performance

Over the current determination period, 2012–16, we have improved our financial performance compared with the 2008–12 price path. We have driven these improvements by:

- increasing revenues from water sales and receipt of assets free of charge (AFOC)
- lowering operating expenditure from an overall lower cost structure, ongoing efficiency savings and procurement initiatives
- achieving lower than anticipated capital expenditure from program efficiencies and deferrals, and savings made in capital procurement
- incurring lower finance charges, by reduced new borrowings due to less capex and accessing cheaper debt.

This has resulted in a modest increase in regulated income over the 2012–2016 regulatory period, which is expected to be only $139 million or 1.4% above IPART's target. Table 2-3 shows the variance in actual/forecast and determined revenue over the current period.

Table 2-3 – Regulated income ($ nominal, million)

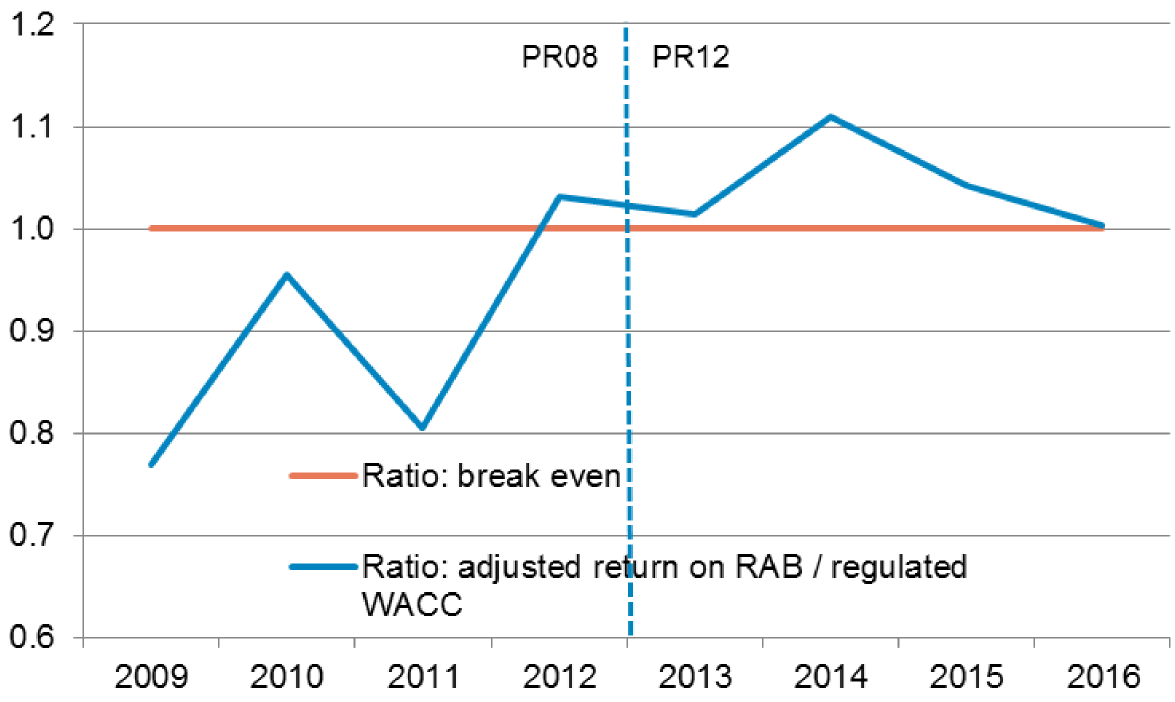
	2012–13 Actual	2013–14 Actual	2014–15 Forecast	2015–16 Forecast	Total
Actual/Forecast	2,362	2,439	2,517	2,587	9,905
IPART	2,334	2,388	2,481	2,543	9,746
Variance	**28**	**51**	**36**	**44**	**159**
	1.2%	2.1%	1.5%	1.7%	1.6%

Note: The CPIs in the table above are March-to-March. Chapter 5 revenue will be different due to CPIs being based on June-to-June figures

Our improved financial performance has resulted in returns above the post-tax regulated weighted average cost of capital (WACC) of 5.6% estimated by IPART in 2012 for Sydney Water. This performance contrasts with our performance in 2008–2012, where returns were well below IPART's target.

Figure 2-8 shows the ratio of adjusted earnings on the regulated asset base (RAB) value compared with the regulated WACC from 2008 to 2016. In this diagram, a return achieved by Sydney Water that is equal to the regulated WACC yields a value of 1 – ie the break-even level.

Figure 2-8 – Adjusted return on the RAB compared with the regulated WACC



Financeability

Our financial ratios have in recent years remained steady, staying within Moody's Investors Service (Moody's) Baa1 to Baa2 bounds. Our current stand-alone or baseline credit assessment (BCA) from Moody's is Baa1, which was upgraded from Baa2 in March 2015.[7] This represented Sydney Water's first ever credit rating upgrade in over twenty years of being rated.

Moody's noted in upgrading our credit rating, that it was due in part to improved transparency in IPART's regulatory framework. In particular, Moody's expects that IPART will continue to exhibit consistency in its decisions, translating into increased stability in revenue outcomes for Sydney Water. The 2016 price determination will be the first opportunity for the Moody's to assess the consistent application of IPART's regulatory regime.

Based on our current pricing proposal, the credit rating metrics established will ensure that, in the worst case, we will maintain our current credit rating.

Chapter 6 provides further details about our current and expected future financial performance, the potential risks to our credit rating, and the current and expected levels of our key financial ratios.

2.3 Pricing proposal 2016

Sydney Water is proposing a four-year price path from 1 July 2016, with lower prices on water and wastewater services, substantially lower residential and non-residential customer bills, and a lower revenue requirement. The breakdown of proposed prices, bills and revenues is presented below.

See Chapter 5 for more details on our approach to prices and bills. A detailed list of prices can be found in Appendices 1 and 2.

2.3.1 Savings to customers

Residential customers

Compared with 2012–16, for 2016–20 we propose in real terms:

- a significant drop in household customer bills, as most will save about $100 on their bill each year
- large decreases in our prices for water, wastewater and for most stormwater services
- large decreases in our annual revenue requirement.

The decreases in bills, prices and revenues are driven by a combination of the significant efficiency gains forecast over 2012–16 and external factors. Of the average savings, about 30% are from opex and capex efficiencies and just about 70% are from external factors beyond our control. The decrease in the weighted average cost of capital (WACC) from the current reduction in interest rates is the most important factor, driving 52% of the overall decrease. More importantly, the decrease in bills will not affect our performance. We intend to maintain our existing high customer

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[7] Moody's Investors Service, "Moody's upgrades Sydney Water's rating to Aa3; outlook stable", Press Release 4 March 2015, available at https://www.moodys.com/research/Moodys-upgrades-Sydney-Waters-rating-to-Aa3-outlook-stable--PR_319421

standards, our well-regarded customer assistance programs, and continue to meet our licence conditions in servicing rising levels of forecast demand and growth.

Bills and pricing

For residential customers, Sydney Water is proposing a stable water and wastewater bill (in $2015–16) over 2016–20 of:

- $1,114 a year for single home customers (with average use of 220 kL a year) (see Figure 2-9)
- $996 a year for flats (with average use of 160 kL a year).

We are proposing a significant one-off bill reduction for residential customers in 2016–17, with bills then remaining flat in real terms over the price path. Compared to the 2015–16 average bill, residential customers in:

- single homes will save $105 or 8.6% (see Figure 2-10)
- flats will save $86 or 7.9%.

Figure 2-9 – Reduction in average water and wastewater single residential bill

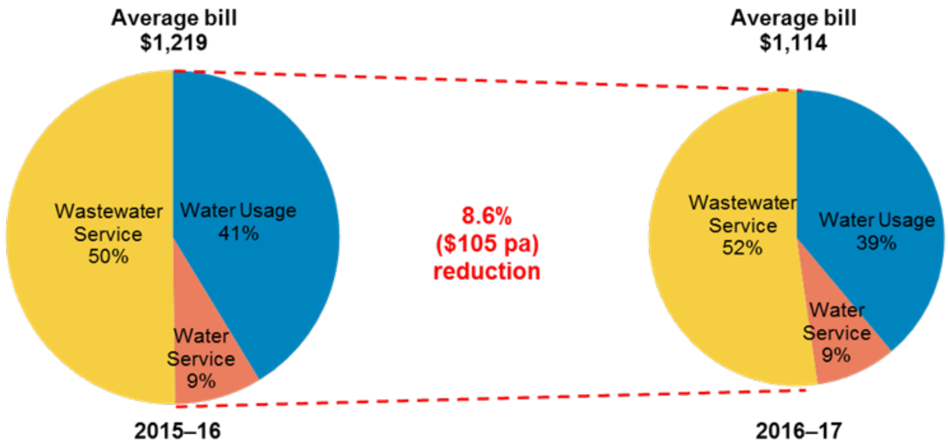
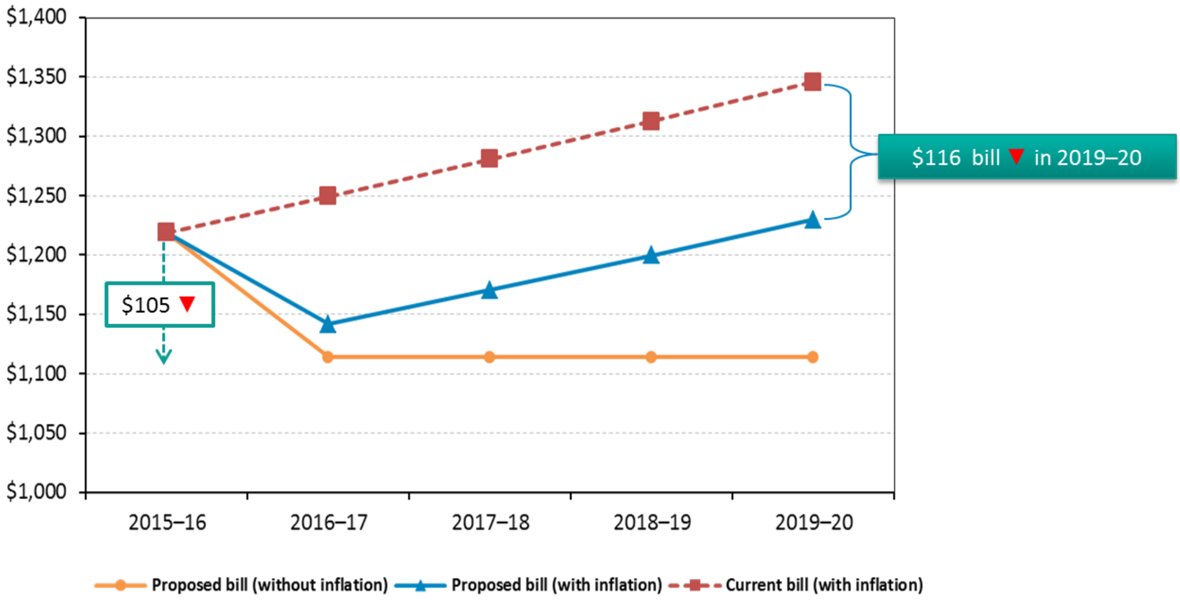


Figure 2-10 shows the proposed savings to customers with and without inflation. In nominal terms, (ie with inflation), it shows a saving of $77 in the first year of the price path, with prices increasing by the rate of inflation over the remainder of the period. It also highlights, that if the average bill in 2015–16 were to increase by inflation, the savings in 2019–20 would be $116.

Figure 2-10 – Average single residential customer bill with and without inflation



The water and wastewater bills are based on the following real residential prices ($2015–16) over the four years.

- Water – a fixed annual service charge of $98.52 a year and a usage price of $1.97 per kL.
- Wastewater – a fixed annual service charge of $582.34 a year.

For Sydney Water's single house stormwater customers, prices are:

- an average fixed annual service charge over four years of $80 a year in our declared stormwater areas
- a fixed stormwater drainage charge for Rouse Hill of $140.33 a year.

This implies the following real price changes:

- A one-off 13.9% decrease in the water usage charge in 2016–17, resulting from an increase in forecast demand by 156 GL over the four years (average 39 GL a year).
- A one-off 4.9% decrease in the water and wastewater service charge in 2016–17.
- An overall 11% decrease over the four years for stormwater services in declared areas.
- No change in Rouse Hill stormwater drainage charges.

Sydney Water is also proposing to introduce a late payment fee and a fee for credit card payments. Both are cost-based, and our benchmarking indicates, well below the level of similar fees applied by other utilities. More detail about these charges can be found in Appendix 2.

The key prices and prices changes for residential customers are summarised in Table 2-4. A more extensive list of prices is provided in Appendices 1 and 2.

Table 2-4 – Summary of key residential prices and price changes

Services	Proposed price in 2019–20	Compared to 2015–16
Water		
Service charge ($/year)	98.52	-4.9%
Usage charge ($/kL) ^	1.97	-13.9%
Wastewater		
Service charge ($/year)	582.34	-4.9%
Stormwater		
Service charge ($/year)		
Single house	76.92	-11.0%
Multi unit	28.21	-11.0%
Rouse Hill ^		
Stormwater service charge ($/year)	No price changes in stormwater and land charges. Consumer price index (CPI) to apply to the current prices.	
Land charge for new properties ($/year)		
Recycled Water ^		
Usage charge ($/kL)	1.77	-2.9%
Other ^		
Ancillary and miscellaneous services	No major change in majority of the charges; CPI to apply to the current prices. A few new services proposed.	

Note ^ Charges in these categories are also applicatble for non-residential customers

Non-residential customers

Non-residential customers are expected to contribute around 17% of our overall revenue for 2016–20. For non-residential customers, we are proposing changes for large meter-sized service charges. This change contributes to sizeable savings for non-residential customers, with generally proportionately higher savings for customers with bigger meters. Estimated savings vary from a low of $59 a year (6.6%) for low water-consuming industrial strata users, to over $20,000 for high water-consuming public hospitals. Overall, of our non-residential customers:

- 43% will receive a 10% saving
- about 50% will receive a 15–17% saving
- about 7% will see a 35–39% saving.

The key prices and prices changes for non-residential customers are summarised in Table 2-5. A more extensive list of non-residential prices, including trade waste charges, is provided in Appendices 1 and 2.

Table 2-5 – Summary of key non-residential prices and price movements

Services	Proposed price in 2019–20	Compared to 2015–16
Water		
Service charges ($/year)		
20mm - single	98.52	-4.9%
25mm [#]	153.93	-24.9%
Usage charges[<] ($/kL)		
Unfiltered water	1.67	-15.1%
Wastewater		
Service charges ($/year)		
20mm - single	582.34	-4.9%
25mm [#]	909.91	-44.4%
Usage charge ($/kL)	1.10	0.0%
Stormwater		
Service charge ($/year)		
Small or multi	28.21	-11.0%
Medium	76.92	-11.0%
Other [<]		
Trade waste services	No change in majority of the charges; CPI to apply to current prices.	

[#] Meter sized charges are proposed to be rebased (from 25mm equivalent in current charges) to a deemed 20mm meter equivalent, ie Meter sized service charge = $(\text{meter size})^2$ x 20mm charge / 400
[<] Some charges in Table 2-4 are applicable to non-residential customers.

Apart from paying service charges based on meter size, some non-residential customers also pay wastewater usage charges. Sydney Water proposes for the time being to keep wastewater usage charges for non-residential customers at the same levels as 2015–16. Sydney Water will do more customer engagement over 2016–20 to better understand non-residential customer preferences. We will use these insights along with our cost drivers and environmental licensing impacts, to inform our future review of wastewater usage charges.

2.3.2 Revenue and costs for 2016–20

Sydney Water proposes to recover $9.7 billion (in $2015–16) in revenue over 2016–20. Our estimate is based on a forecast efficient opex-capex split over four years of 65% opex (just over $5 billion) and 35% capex (around $2.8 billion).

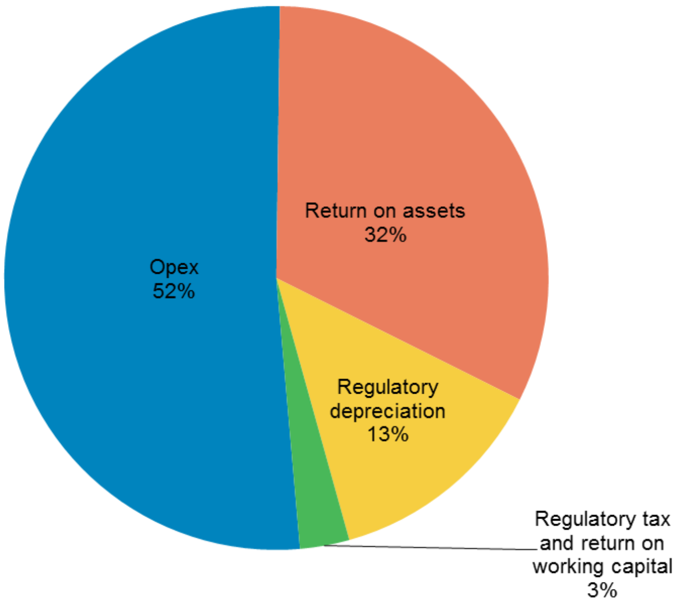
The results are summarised in Figure 2-11.

Overall, our proposed revenue is based on covering the following costs:

- just over $5 billion of opex, with $1.9 billion for bulk water costs made up of WaterNSW, Sydney Desalination Plant, and water filtration treatment costs

- $4.4 billion of capital costs, arising from our capex, and the return on and of capital from our $15 billion regulatory asset base (RAB) with a:
  - $3.1 billion return on capital based on an estimate of the post-tax real weighted average cost of capital (WACC) of 4.6% at 1 July 2016
  - $1.3 billion return of capital (ie depreciation)
- just under $300 million from a combination of regulatory tax and the return on working capital.

Figure 2-11 – Revenue by cost



The proposed revenues are $600 million ($2015–16) lower than the $10.3 billion IPART allowed in 2012. Table 2-6 highlights the revenue split by product and the difference in revenue between periods.

Table 2-6 – Revenue reduction by product type ($2015–16 billion)

Service product	2012 Determination	2016 Proposal
Water	5.03	4.60
Wastewater	5.12	4.95
Stormwater	0.14	0.15
Total	**10.29**	**9.69**

By customer type, we forecast:

- $7.8 billion in revenue from residential customers
- $1.7 billion in revenue from non-residential customers
- $0.2 billion in revenue from miscellaneous service customers.

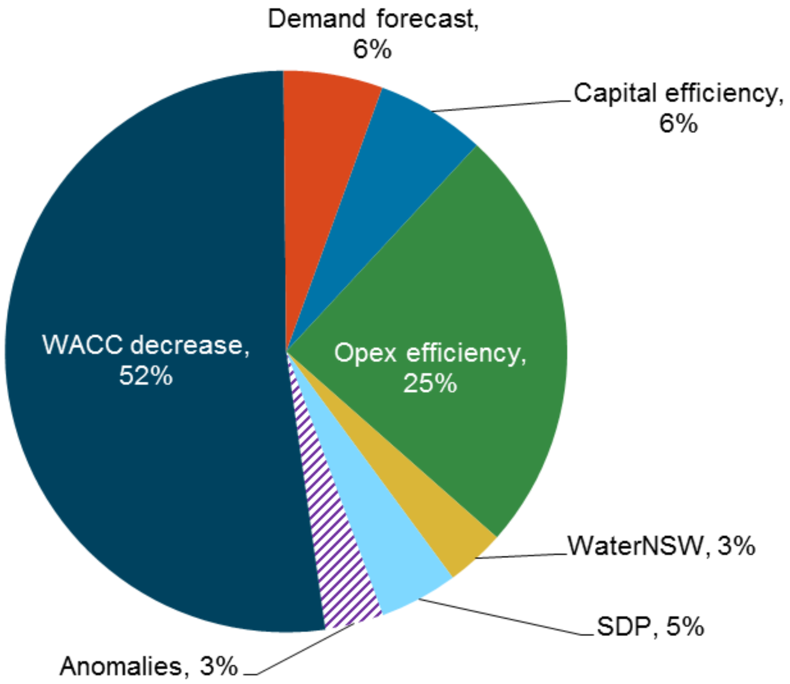
2.3.3 Drivers of bill, price and revenue changes

The drop in customer bills in the next price path and the reduced annual revenue requirement is due to:

- the expected low interest rate environment, causing our forecast drop in the real WACC from 5.6% to 4.6%
- over $450 million of opex and capex efficiencies realised and forecast by Sydney Water over the current period, which we will pass on to customers
- a decrease in forecast in WaterNSW costs, due to the lower WACC, and a decrease in forecast Sydney Desalination Plant (SDP) costs
- rising forecast customer water demand
- proposed changes to our regulatory framework.

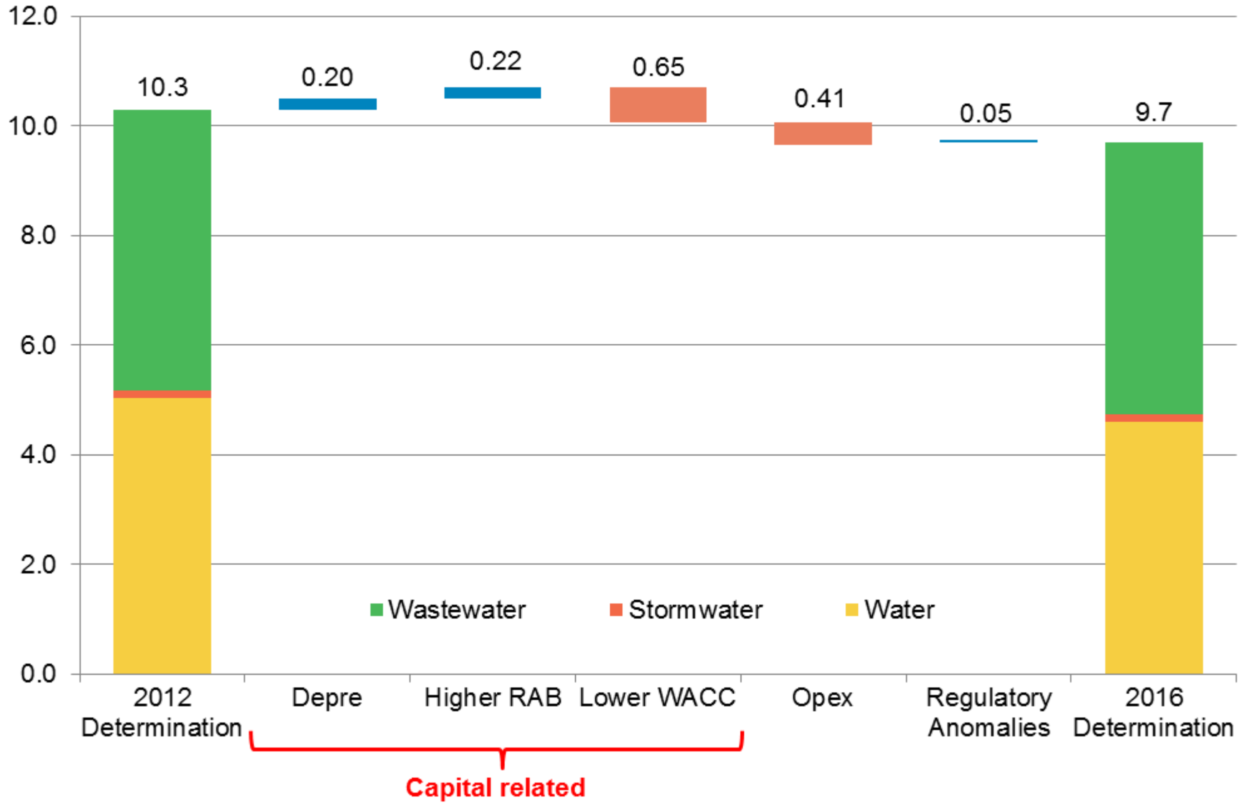
Of the average savings, about 30% are from opex and capex efficiencies over the current period and projected opex efficiencies in the future, while about 70% are due to external factors beyond our control. Figure 2-12 shows all the components responsible for decreasing bills.

Figure 2-12 – Drivers of bill reduction



The $600 million reduction in revenues is due to a $1.06 billion drop in revenue from the reduced opex and WACC, partially offset by a $0.46 billion increase driven by higher depreciation and a higher regulatory asset base (RAB), and the proposed changes to regulatory treatment of land, tax and leases (regulatory anomalies). The results are shown in Figure 2-13.

Figure 2-13 – Changes in annual revenue requirement ($2015–16 billion)



2.4 Challenges: current, emerging and future

Sydney experienced persistent drought between 2002 and 2009. In 2007, Sydney's dams fell to their lowest recorded level of 33.8%. This caused significant uncertainty for both Sydney Water and our customers, putting pressure on our revenue, costs, prices and customer trust levels.

The government responded to the drought with water restrictions, which Sydney Water enforced. We also promoted a range of activities such as water efficiency programs, education campaigns, and improved responses to leaks and breaks.

While the drought has now passed, we face a number of current, emerging and future challenges. These will place pressures on cost and could affect our ability to continue to deliver high levels of customer satisfaction at affordable prices beyond 2016–20. We expect these challenges will be from such things as:

- population growth in Sydney
- potential policy, legislative and regulatory changes
- demand on state finances
- customer perceptions about the cost of living
- greater customer expectations on engagement
- climate change.

2.4.1 Growth

Sydney Water supports the NSW government initiatives for urban growth by facilitating and coordinating growth, to the extent that we consider best outcomes for existing Sydney Water customers. The growing population in Sydney, and the higher costs of servicing the North West and South West growth centres, has the potential to place pressure on the environment and upward pressure over the long term on customer bills.

While we can currently service infill growth using existing infrastructure, to service greenfield areas we must expand our network and upgrade existing treatment plants. Currently, servicing greenfield lots is on average 5–6 times higher than servicing infill lots. Any tightening of environmental standards, such as the discharge levels into the Hawkesbury-Nepean River, would increase costs of supplying wastewater services, widening this gap. It would also mean wastewater becomes an even higher proportion of the overall customer bill. In 2016–20, the proportion of the bill for any average customers was 52% wastewater, 48% water (see Figure 2-9).

The Metropolitan Development Plan (MDP), which provides detail on the forward program for development and timing of land release, was last updated in 2011. In the absence of updates, we have developed our own forecasts using the best available information from the Department of Planning. To also reduce the uncertainty associated with release of land with little forward notice, which places pressure on servicing, we have adapted our processes to being plan ready. In the outer year of the upcoming regulatory period, we have forecast an extremely low level of growth capex and effectively taken on the risk associated with servicing growth in the last year of our price path. Longer term, we believe growth, the pressures it places on the environment and our costs, are issues that should be addressed via a whole of government solution. We must consider a broader solution that reconciles the government's concern for housing affordability and supply of housing, with the need to ensure housing is provided at lowest total cost, including infrastructure costs. If Sydney Water is both trusted by our customers and stakeholders we are more likely to be able to take the initiative to facilitate, co-ordinate and participate in these discussions, while maintaining our role to service, rather than plan growth. If these types of issues are not properly considered in the longer term. Sydney Water's customers may end up bearing a significant level of the financial risk of growth.

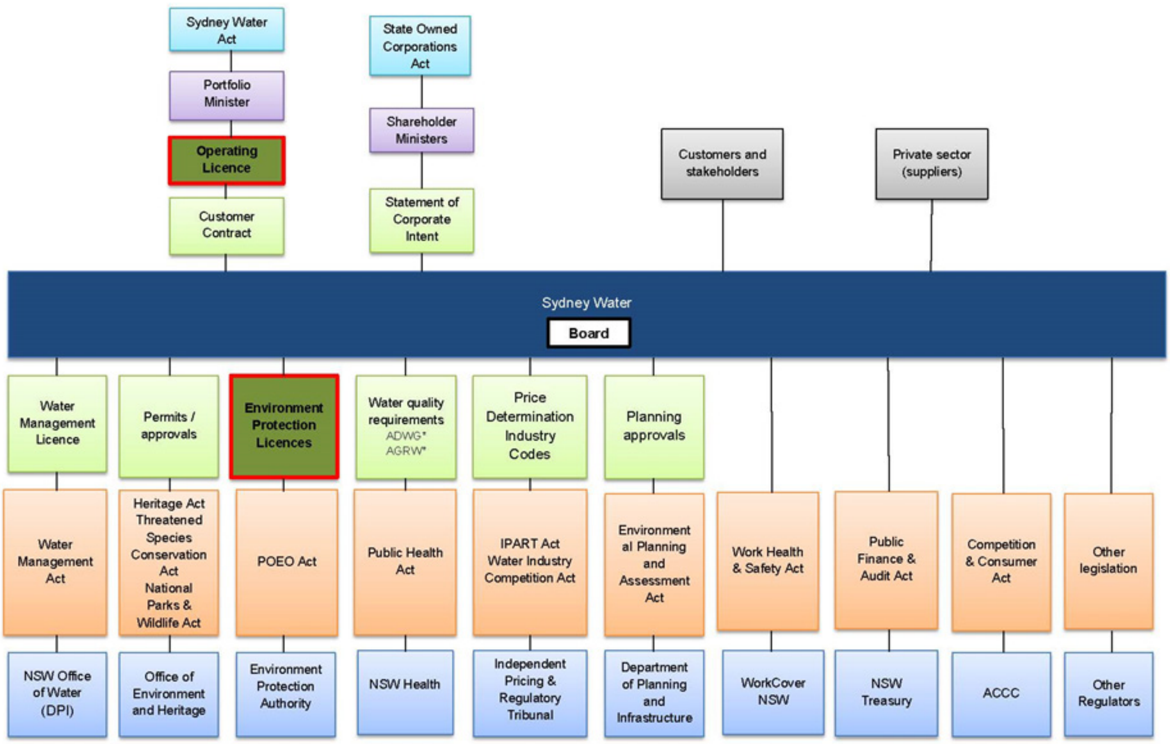
2.4.2 Policy, legislative and regulatory changes

Sydney Water operates in a complex and evolving policy, legislative and regulatory environment. We have multiple regulators and government agencies overseeing different aspects of our activities, especially in the environmental and public health areas. The framework has developed over time with significant refinement and maturity in the decades following the introduction of the *State Owned Corporation (SOC) Act 1989* and the *Sydney Water Act 1994*. The range of regulatory or government agencies and the related instruments of Sydney Water's current legislative and regulatory framework is shown in Figure 2-14. Further, detail about Sydney Water's legislative and regulatory framework is also outlined in Appendix 3.

Many of the policy, legislative and regulatory frameworks developed for Sydney Water evolved in the 1990s. With the transition of Sydney Water from a self-regulated government department to a state-owned corporation, there was heavy emphasis on ensuring the Environment Protection Authority (EPA) provided customers, the community and the environment with the necessary protections. This was done by introducing explicit legislative and regulatory arrangements and licensing regimes, while economic regulation to constrain the exercise of our market power has been through the Independent Pricing and Regulatory Tribunal's (IPART) price determination process. Maintaining these safeguards continues to be appropriate. However, Sydney Water believes there is an increasing need to consider how the overall framework can promote better outcomes for customers.

Given the various regulators and agencies involved with Sydney Water, it means policies, legislation and regulation developed reactively or incrementally can fail to account appropriately for this complex interaction. This can create gaps, uncertainty, confusion, inconsistency, over-regulation and other unintended consequences. As a result, Sydney Water and our customers could be worse off. A risk Sydney Water consistently faces is that another agency imposes new standards on Sydney Water that causes substantial increases in our costs mid-determination. Such costs cannot be fully recovered under the current regulatory regime.

Figure 2-14 – Sydney Water's legislative framework



* ADWG = Australian Drinking Water Guidelines / AGRW = Australian Guidelines for Recycled Water

We believe that to avoid adverse outcomes for our customers and business resulting from the policy, legislative and regulatory framework, a more holistic inter-agency approach is required when dealing with the NSW urban water market. This would provide for better recognition and resolution of tensions that arise from competing policies, legislation and regulation. For example, is it feasible to promote competition in an environment where pricing is based on the universal service obligation of postage stamp pricing?

IPART has looked to address some of these gaps. It has signalled to incumbent water utilities that it is considering regulating wholesale pricing as part of this pricing review for Sydney Water and Hunter Water. This has arisen from perceived limits in the way the wholesale access regime operates under the *Water Industry Competition (WIC) Act 2006* (see Boxout 2-2). Further, as the EPA has no explicit requirement under its legislation to consider efficiency when introducing licence requirements, IPART has said it may in future consider the efficiency of new environment protection licence requirements.[8] Both the WIC Act and environmental regulations are described further below.

Sydney Water believes there a number of initiatives IPART could introduce to address the challenge from the changes in policy, legislation and regulation. In particular:

- to ensure customers' interests are promoted, we encourage introducing more incentive-based regulation that aligns Sydney Water's and customers' interests
- cost recovery schemes to provide greater certainty around recovery of material costs beyond our control mid-determination.

Sydney Water also believes enhanced customer engagement can help mitigate the risk to customers from proposed changes in policy or regulation. For example:

- knowing customer preferences regarding price versus environmental outcomes can potentially inform how environmental standards should be set
- if the community is shown to place high value on clean waterways, Sydney Water could in future determinations attempt to develop new methods for funding or pricing stormwater services, where there is a greater contribution from the broader community beyond just those people being serviced by our stormwater infrastructure
- future service performance incentive schemes could be designed by IPART using data on customer willingness to pay for service levels .

Water Industry Competition Act 2006

The competition framework for the NSW water industry, which was established through the WIC Act continues to evolve. Though entry is limited at this stage, around a dozen private licensed schemes are now operating and providing water services to customers in Sydney, the Hunter region and in other parts of NSW.

The introduction of a legislative framework has meant that Sydney Water is no longer the sole provider of water and wastewater services in Sydney, the Illawarra and the Blue Mountains. Sydney Water partners with several private water utilities in our area of operations that run a handful of private schemes. We have invested significant resources into developing contractual tools to engage with new water utilities entering the urban water market. Further detail on the wholesale pricing issue under the WIC Act is provided in Boxout 2-2.

The WIC Act itself is changing. An amendment bill was passed in 2014 that provided for a range of incremental changes to the licensing regime, including:

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[8] IPART, *IPART submission on Environment Protection Authority Review of Sydney Water Corporation's Environment Protection Licences for Sewage Treatment*, 1 May 2015.

- enabling councils to obtain licences
- increasing provisions for a Retailer and Operator of Last Resort framework
- introducing deeming provisions for private water utilities
- replacing the requirement to bring a new source of water, with a requirement for investing in infrastructure.

Boxout 2-2 – Wholesale pricing – current issues

Since the inception of the WIC Act, we have had to establish and clarify a number of links between the Act and the rest of our legislative framework. There are differing approaches to regulation under the various acts, intersections between the acts, and also areas of alignment and misalignment among them.

For example, there are differences in the approach that IPART is required to take for the pricing and licensing of public water utilities under the *IPART Act 1992* compared with the requirements of the WIC Act. The pricing principles in Section 41 of the WIC Act that IPART must consider when deciding whether or not to approve an access undertaking for an infrastructure service are different from the method for fixing prices set out in Section 14A of the IPART Act.

There are other areas of difference which reviews of the WIC Act have dentified. These include some conveyancing matters, issues of property entry and asset maintenance, and deeming arrangements for customer supply contracts.

The urban water market in Sydney is in its infancy. As more private schemes emerge, the complicated interaction between the WIC Act and Sydney Water's regulatory framework will be more noticeable. There remain some areas of interaction between Sydney Water's legislation and the WIC legislation that are either untested or may cause complexity as new entrants seek to enter the market.

In order to provide certainty in the emerging market, IPART has expressed a need to address the issue of pricing our services to WIC Act licensees. This issue is discussed further in Chapter 10.

Environmental regulations

Sydney Water has looked at opportunities for improving environmental regulations so that they promote the best outcomes for the environment and the community, in the most effective way. To do this properly requires the appropriate cost-benefit analysis, based on robust scientific evidence around the impact Sydney Water is having on the environment, and a level of customer and community engagement.

We see challenges around the current level of environmental regulation:

- there is potential for misalignment in the timing between when a requirement from the EPA is issued and our price determination. This potentially leads to unfunded opex, or the loss of financing costs associated with capex that needs to be undertaken to meet any new requirements.

- IPART could deem the EPA requirement to be inefficient, which would leave Sydney Water without funding to cover the costs of meeting the requirement.

Our work with the EPA on the licensing of wet weather overflows is an example of how we are looking to promote the best outcomes for the environment and community, in the most effective way. This is described in greater detail in Boxout 2-3.

Boxout 2-3 – Case study – Wet Weather Overflow Abatement (WWOA) Program

Sydney Water has been working since 2012 to develop a potential revised licence requirements for WWOA in Sydney Water's EPLs. The aim is to develop targets to replace the current 'frequency targets' that generally require large containment solutions, which may not provide the best environmental and community outcomes.

A 2012 estimate indicated that containment and system upgrades to meet frequency targets may cost about $5.5 billion ($2011–12). This would increase wastewater bills by about 20% over the long-term.

Sydney Water has committed to submitting a proposal to the EPA by December 2015 with alternative licence requirements. 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 waterwater ecosystem and public health, and aesthetics
- maximises environmental and community benefits
- drives more cost-effective solutions.

The timing of this program is not aligned with this pricing submission. However, the forecast costs included in this submission are Sydney Water's current estimate of the cost of work required over the next price path, assuming the EPA accepts our proposal.

2.4.3 Demand on state finances

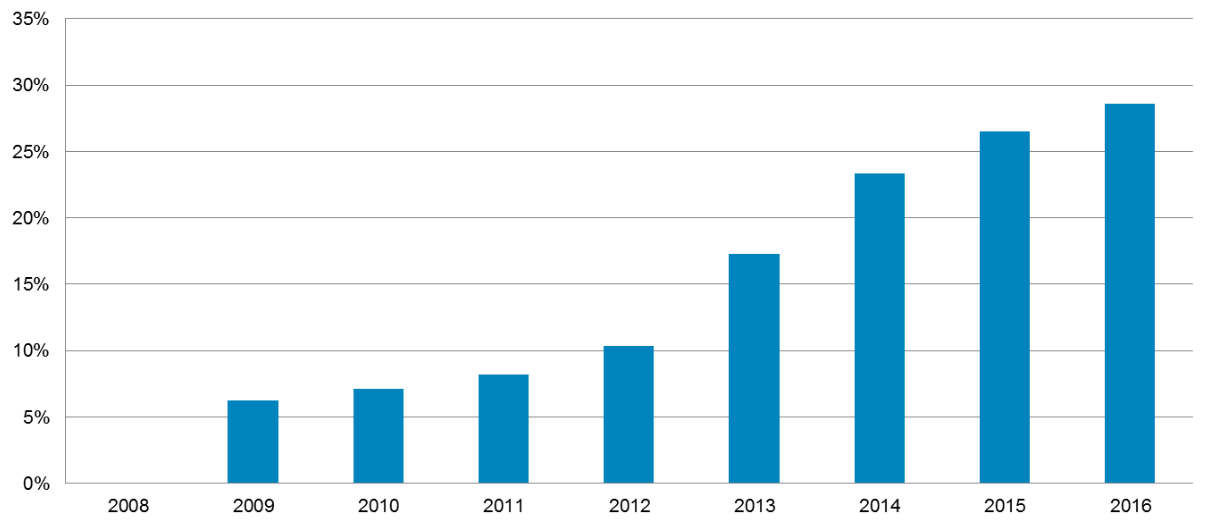
The Australian economy has experienced a slow-down in growth since 2010. The result is the likelihood of ongoing Federal budget deficits for years to come. This could place demands on state finances.

Despite this pressure, the NSW Government has recently improved performance of the state economy. Sydney Water, as a state-owned corporation, has been managing its business efficiently and effectively, making a positive contribution to this.

To ensure we do not place pressure on state finances, we have been looking for ways to improve capital management:

- **We have improved our overall processes for allocating capital across our business**
  Introducing Enterprise Portfolio Project Management (EPPM) over the past year has improved our ability to prioritise and dynamically manage our capital budget. This will ensure we more efficiently allocate capital across our business. In the future, supported by the introduction of an Enterprise Resource Planning (ERP) platform and a better understanding of customers through our enhanced customer engagement, we will be able to develop solutions that better align to our changing operating environment and our customer needs.
- **We have improved our planning and management of specific assets**
  We have improved efficiency by better planning and managing specific assets using quantified risk models. A key example of this is the work on critical water mains and water reticulation assets. We expect the savings from this over 2012–16 to be $170 million. A component of this efficiency was also driven by adopting innovations to improve asset condition assessment. We have adapted principles used for fault identification on oil pipeline infrastructure to enable us to better target our asset replacement program. We have also recently collaborated with National ICT Australia (NICTA) to further improve how we identify critical water mains in need of condition assessment.
- **We improved the way we manage our debt**
  By providing revenues based on returns on an indexed RAB, regulators provide businesses with a back-loaded revenue profile. In contrast, debt is typically repaid in nominal terms resulting in front-loaded costs. The mismatch of revenue and cost profiles for capital-intensive regulated businesses creates the potential for a short-term cashflow problem, exposing the business to a short-term financeability risk. To manage this risk we have looked to maintain similar absolute levels of debt, but have increased our proportionate holding of inflation-indexed debt debt, as highlighted in Figure 2-15. This creates a cost profile that better matches the back-loaded regulated revenue stream. We are also discussing with T-Corp access to more debt instruments, such as low coupon debt. This will allow us to more effectively mitigate risks around deviations of our debt costs from IPART's allowed returns within regulatory periods.

Figure 2-15 – Sydney Water's inflation-indexed debt as a percentage of total debt



2.4.4 Perceptions about cost of living

The cost of living examines the expense households incur to buy the goods and services needed to maintain a constant standard of living. Research indicates that cost of living pressures in Australia have been contained, so the standard of living in New South Wales has actually increased from1988 to 2013 by $15,309 a year[9]. Nonetheless, sentiment monitors indicate that the cost of living remains a significant concern and is front-of-mind for householders[10].

Utility bills (electricity, gas and water) have contributed to the current public perception of cost of living pressures. Although they are a small proportion of household bills compared with food, housing and transport[11], they have been the focus of significant media attention. The lumpy nature of expenditure on utilities means they tend to be associated with 'bill shock' and Australian Bureau of Statistics figures show that from December 2003 to December 2013, utility prices increased by 4.4 times the rate of CPI.

Despite the increase in prices, Sydney Water's annual bill has still remained a relatively small proportion of household expenditure. As shown in Figure 2-1, our bills, in real terms, have also remained relatively flat over two decades, except for the 2008–12 period.

Sydney Water is committed to ensuring continuing affordability for our customers and we do not contribute to any perceived cost of living pressures. This is demonstrated by us passing on the efficiencies from the current regulatory period in our prices over 2016–20. Despite the decrease in

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[9] A. Hayden, *Rising cost of living: myth or reality?*, NSW Parliamentary Research Service, e-brief 16/2014, November 2014, available at http://www.parliament.nsw.gov.au/prod/parlment/publications.nsf/key/Risingcostofliving:mythorreality/$File/101114+-+Rising+cost+of+living.pdf

[10] IPSOS, *The Top Issues Facing NSW January to March 2015*, available at http://ipsos.com.au/wp-content/uploads/2015/05/Ipsos-Issues-Monitor-January-to-March-2015-New-South-Wales.pdf

[11] Council of Social Service of NSW (NCOSS), *Cost of Living; Who's really hurting?*, March 2014, available at http://ncoss.org.au/costofliving/cost-of-living-0101.pdf

customer bills, we are aware that some customers could still have difficulty paying their bill. Therefore, we will continue to maintain our highly-regarded bill assistance and hardship programs for those customers in need. However, with about 70% of the current reduction in bills from factors beyond our control, the challenge to keep water bills down remains significant. Some increase in prices for our services beyond 2020 may be inevitable and unavoidable. For example, even if Sydney Water could sustain the estimated $450 million of opex and capex efficiencies it will achieve over 2012–16, any benefit in 2020 will be negated by just a 30–40 basis point increase in interest rates.

In addition to finding ways to decrease costs, we have also carefully examined the regulatory framework that place upward pressure on our costs yet provide little value, and explored the introduction of stronger incentives for cost efficiency and better outcomes for customers. This has informed our submission on the Operating Licence review, our proposal to modernise regulation in 2016–20 and is the basis of us assessing a number of existing environment protection licensing arrangements.

For example, as already outlined in Boxout 2-3, later this year we intend to propose to the EPA new outcomes-based regulation of wastewater overflows to drive better community and environmental value at a substantially lower cost. In addition, we believe a better understanding of our customers will allow us to identify ways to lower costs and provide services that deliver better value for money to our customers. This will assist in influencing perceptions about rising cost of living from utility bills.

2.4.5 Customer expectations about engagement

The internet, with mobile and social digital technologies, has increasingly empowered our customer base. Customers can speak their mind and broadcast to a much larger audience through social media platforms. In competitive markets, businesses are now using these platforms to have wider-scale customer advocacy for products and services, and using feedback to help shape service offerings valued by customers. There is the potential for a business to gain competitive advantage through better engagement, and good customer engagement is now critical for business success. Customers now expect more from service providers than they ever have in the past.

Even though Sydney Water does not have the same competitive advantage driver for customer engagement, we are proactive in this space. This will help us better manage our business and its risks. We will have greater capability to allocate resources where they are most valued by our customers. Customer feedback can help us better assess service priorities, test expenditure proposals, and develop customer-preferred tariff structures. If IPART also allows pricing flexibility, enhanced engagement will help us adjust tariffs to meet customer preferences more efficiently over time.

2.4.6 Climate change

The millennium drought in Australia required significant investment by water utilities in desalination plant infrastructure and demand management in the first decade of the 2000s, as state governments tried to secure water supply. Changes over the longer term in the frequency, distribution, intensity and duration of future weather-related events will pose significant challenges for maintaining and operating infrastructure.

Sydney Water has a good understanding of how the hazards of climate variations and extreme events affect our network and our costs of supplying services efficiently. For example, Sydney Water experiences:

- physical damage to assets from severe storms and fires
- pipes cracking due to wetting and drying of soils
- damage to electrical components
- impacts on stormwater asset condition
- overflows and pollution incidents from flooding
- changes to biological and chemical processes from varying temperatures
- pipe corrosion from rises in sea level and additional salt water ingress.

While over time we have improved and developed better adaptive risk management techniques to deal with weather and extreme climate-related events, the current average weather conditions still form the basis of our efficient cost estimates. Any increased incidence of extreme events and larger variations in weather requires more sophisticated techniques to assess appropriate levels of investment, and will place upward pressure on cost estimates.

To ensure the industry can effectively deal with the challenge posed by climate change, WSAA and members, in partnership with Sydney Water and Climate Risk, with co-funding from the Australian Government have developed AdaptWater. This is an online tool that quantifies risks associated with climate change and extreme events. It also performs cost-benefit analyses of proposed options to inform planning and investment decisions when faced with climate change. Sydney Water expects to use it as a basis for asset decision making beyond 2020.

The tool allows users to:

- quantify the impact of climate changes hazards on water and wastewater assets
- quantify and project the probability of damage and failure of assets from existing hazards and those made worse by climate change
- calculate the risk to the utility in financial and non-financial terms
- compare adaption measures to establish the costs and benefits of multiple options and allow prioritisation
- preserve outputs visually to ensure there is transparency in how climate change is affecting the risk of events and our costs.

2.5 Addressing the challenges

To address these challenges Sydney Water will need to:

- sustain improvements already made and seek new efficiency opportunities
- promote whole of government solutions, where there are multiple agencies involved and there are potentially major cost implications for Sydney Water
- ensure transparent discussions and the development of a greater understanding of the benefits and costs of future urban development, rising environmental standards and development on the urban fringe
- ensure we deliver better value to promote the long-term interest of customers.

We believe two key initiatives for 2016–20 to help us do this are:

- enhanced customer engagement, which will lead to an improved understanding of our customers
- our proposal to modernise regulation, through the introduction of stronger incentives that better align good outcomes for customers with good outcomes for Sydney Water.

Enhanced customer and community engagement and an improved level of understanding of our customers and key stakeholders, can help:

- to prioritise investments and allocate capital where it is most valued by customers and the community
- to shape policy, legislation and regulation by highlighting the cost, but also the value to customers from any changes
- us to coordinate, facilitate and participate in discussions on whole of government issues
- us to better manage perceptions about the cost of living through using a better understanding of customers to reduce costs and provide better value
- us to better meet customer expectations and use customer insights to shape key decisions on such things as tariff structures, service priorities and future expenditure.

Chapter 3 outlines how Sydney Water will improve our customer focus and engagement, and the current work we are doing to better understand what our customers value.

Stronger incentive regulation will ensure a regulatory framework where Sydney Water has greater flexibility to promote better customer outcomes in the face of uncertainties that could arise within the determination period. Chapter 4 highlights the proposed improvements to the regulatory framework. In particular, it shows how the proposal for introducing pricing flexibility and stronger cost-efficiency incentives, is aligned with best practice regimes in other sectors and overseas. Chapter 10 provides more detail on the proposed schemes.

3 Focusing on our customers

Key messages

- Successful businesses in competitive markets know their customers. These insights drive investment and delivery of services at a price and quality that aligns with customer expectations.
- Sydney Water has many existing touch points with our customers, the community and stakeholder groups. Since 2012, we have focused on becoming a more customer-centric organisation.
- We measure our performance through a number of surveys, and these highlight that our customers view us favourably and believe we have improved on existing high service standards.
- We will continue to provide a variety of industry-leading customer assistance programs to help customers experiencing financial hardship.
- To continue to improve how we manage our business, we have developed a new corporate strategy, which is about delivering great outcomes for our customers. A major initiative in our corporate strategy is to enhance our level of customer engagement.
- Enhanced customer engagement will improve our understanding of what customers value, which can:
    - highlight both the costs and the benefits of changes in policy, legislation and regulation
    - shape decisions on such things as tariff structures, our quality of service, and the prioritisation of future expenditure, ensuring resources are allocated where they are most valued by our customers.
- An initial example of our enhanced customer engagement is the work we have done to inform our proposed water tariff pricing structure in 2016–20.

In effectively competitive markets, successful businesses understand their customers, and are able to tailor their products, services and price offerings to what is valued by them at the lowest cost. With an empowered customer base, businesses in competitive markets are now seeking to gain a competitive advantage through enhanced customer engagement to realise a deeper understanding of their customers.

Sydney Water has many touch points with our customers and the community. We acknowledge that our business plays a vital custodianship role that spans generations – past, present and future. Our investment decisions have long-term implications for long-term water security, public health, ecosystem protection and the long-term prosperity of the area we service. So, we proactively engage with customers and the community. We are constantly looking for opportunities to inform and seek feedback from customers through both formal and informal channels. Other regulated monopolies who have failed to engage appropriately have experienced customer dissatisfaction and backlash. This has contributed to regulators mandating that businesses demonstrate how they have engaged with customers as part of their pricing proposals.

We are currently achieving high levels of customer satisfaction, and believe that, as in an efficient competitive market, there are significant benefits to enhancing our engagement. We believe that having a deeper understanding of our customers will enable us to more efficiently allocate resources, by driving down costs and delivering improved valued. This, in turn, will promote better long-term outcomes for both Sydney Water and our customers. As highlighted in Chapter 2, we also believe that enhanced customer, community and stakeholder engagement will help us manage the various risks from the current, emerging and future challenges facing the NSW urban water market.

In this chapter we outline our focus on improving customer outcomes, by providing an overview of:

- who we engage with, and how we engage with them
- customer perceptions of Sydney Water and our historical performance against key measures
- our ongoing commitment to the customer assistance programs
- how we are looking to enhance customer engagement through our new corporate strategy and better ways of engaging with customers
- how customer insights have been used to inform the design of our proposed water tariff structures, the work we are currently doing on stormwater pricing and on improving prioritisation of wet weather overflow abatement solutions.

3.1 Existing engagement with our customers

3.1.1 How do we currently engage?

Sydney Water engages with customers and the community and uses. This helps define the public's role in any public participation process and includes the following[12]:

- Information – we provide our customers and the community with balanced and objective information to keep them informed and help them better understand our business.
- Consultation – we consult with customers and the community through a range of tools and media to better understand their needs. This includes focus groups and community forums, customer and stakeholder research, for example sentiment monitoring and service fault tracking and through our Contact Centre.
- Involvement – we involve our customers and the community to ensure that concerns and aspirations are consistently understood and considered in the decision-making process.
- Collaboration – we partner with customers and the community and involve them in our decision-making. Together with the Customer Council we aim to work collaboratively on

[12] Taken from International Association for Public Participation Spectrum, March 2015.

solutions and incorporate their advice into our decisions, where possible, on a range of issues.

Over 2016–20 we are looking to increase our use of collaborative engagement as well as better utilise the responses we get from all forms of engagement.

3.1.2 Who do we engage with?

Sydney Water has an extensive customer and stakeholder research program. This, along with a variety of stakeholder and customer forums, ensures customer, stakeholder and community needs and values are incorporated into our planning and decision-making.

Our Customer Council meets quarterly and helps us engage with key groups that represent customers and allows us to seek feedback on such issues as the type of services our customers want and how we can improve our service.

In 2013, Sydney Water established an internal working group to focus specifically on our relationship with local government. The group has implemented a number of initiatives to improve the effectiveness of, and collaboration with, local councils in our area of operations. In 2014, we began hosting a series of workshops designed to facilitate greater collaboration and effective working relationships with local government.

The first workshop focused on:

- ways to streamline the property development process and accelerate the delivery of housing
- ways to better manage stormwater, so that Sydney's growing population can benefit from flood mitigation and clean, healthy waterways.

A second workshop was conducted in May 2015 focusing on:

- water sensitive urban design and stormwater
- road and asset management
- communication and media opportunities.

In 2014, we also implemented an engagement program for local Members of Parliament. This included over 50 face-to-face meetings, distributing fact sheets about Sydney Water and its products and services, and developing a more streamlined process to respond to constituent enquiries.

We also work with customers and the community during project planning, to negotiate infrastructure location and minimise the impacts of construction, operation and maintenance work. When we propose a new project or program that will affect the community we engage with all affected stakeholders. Boxout 3-1 provides a snapshot of our project related community engagement activities.

Boxout 3-1 – Project community and residential consultation 2013–14[13]

- Over 100 projects
- Over 1,000 sites
- Over 100,000 customers affected by major capital projects
- More than 3,400 customer and stakeholder meetings
- Over 157,000 notifications issued
- More than 3,300 enquiries received
- 214 complaints
- 3 Ombudsmen complaints
- 185 compliments
- 19 Ministerial enquiries

3.2 Customer perceptions of Sydney Water

3.2.1 Obtaining customer feedback

We are constantly seeking feedback from our customers and stakeholders. We do a number of continuous and periodic surveys and qualitative studies. We have conducted some of these surveys on an ongoing basis for many years, providing a long-term view of customer perceptions of our performance and their evolving expectations.

Our Sentiment Monitor is an online survey of customer attitudes toward our service and performance, which has been run continuously since October 2005. The Sentiment Monitor surveys 40 people each week, or about 2,000 over the course of the year. The data is aggregated on a quarterly and annual basis for reporting purposes.

The Sentiment Monitor assesses the impact of both indirect (rainfall, dam levels, pricing, media) and direct (targeted programs and communications) influences upon community sentiment, perceived value for money and Sydney Water's corporate reputation.

The Residential Customer Relationship Study is an annual telephone survey of 1,100 household customers. The Business Customer Relationship Study is an online survey of 300 of our larger business customers. We did this research with business customers for the first time in December 2011 and again in September 2014. These studies assess how customers view our performance across a range of services, touch-points, roles and responsibilities. The studies also determine which of these has the greatest impact on customer feelings towards Sydney Water and the value they believe we deliver.

We have used insights from these studies to prioritise improvement areas according to their importance to our customers, and to provide a benchmark against which we can evaluate service modifications and improvements.

The Service Faults Tracking study interviews 50 service fault customers each week (or 2,400 annually) to obtain customers' feedback about their experience of dealing with us, providing an opportunity for these customers to tell us how well we performed. The study is designed to identify

[13] Numbers apply only to community and stakeholder relations activities for the capital works program.

opportunities for process improvements and to monitor the impact of service level changes. We respond to around 100,000 reactive service jobs every year as a result of calls from customers.

During 2014–15 we conducted a Post-Contact Survey of our Customer Services area. Each quarter, we interviewed samples of 1,000 customers who had called our contact centre, within 48 hours of their call to Sydney Water, to ask about their service experience. The research is aimed at understanding the positive and negative aspects of our customers' experience and identifying opportunities for process improvements. We sought feedback for six different customer service interactions:

- account management
- metering
- billing
- payment and debt recovery
- general contacts and queries
- new connections.

The Urban Growth business unit manages about 3,500 development applications (*Sydney Water Act 1994*, Section 73) each year or about 300 applications every month. From October 2012, we have sent an online Developer Tracking Survey to applicants after their development application is finalised. As with other service interaction studies, the feedback is designed to identify improvement priorities and monitor the outcomes of any service level changes we have implemented.

In November 2014, the inaugural Online Stakeholder Survey was carried out. This survey measures the impact of organisation-wide, engagement and relationship-building activity. The study was completed by more than 150 stakeholders drawn from seven stakeholder groups. Sydney Water intends to conduct this survey annually to ensure we have an ongoing understanding of their needs and expectations.

In addition to these studies, we have completed smaller studies to gather customer input on specific issues, services or programs, including:

- before and after surveys of customers who are part of the Priority Sewerage Program to assess their intention to connect and to monitor satisfaction with the way the construction was managed
- a website exit study and group discussions allowed for customer input into Sydney Water's website re-design
- in-depth phone interviews with farmers who use our biosolids product
- in-depth phone interviews with customers who had taken part in a trial 'private sewer' service offering
- an online study to assess customer interest in a 'smart meter' commercial product offer
- discussion groups on behaviour and attitudes on disposal of wet-wipes
- online study to quantify the incidence of wet-wipes flushing and the profile of flushers

- satisfaction surveys of customers and stakeholders affected by capital works projects.

3.2.2 Key findings

Overall, Sydney Water is viewed favourably by our customers and we are improving on the already high standards we deliver to our customers and the community. Key findings from these surveys are detailed below for the following measures:

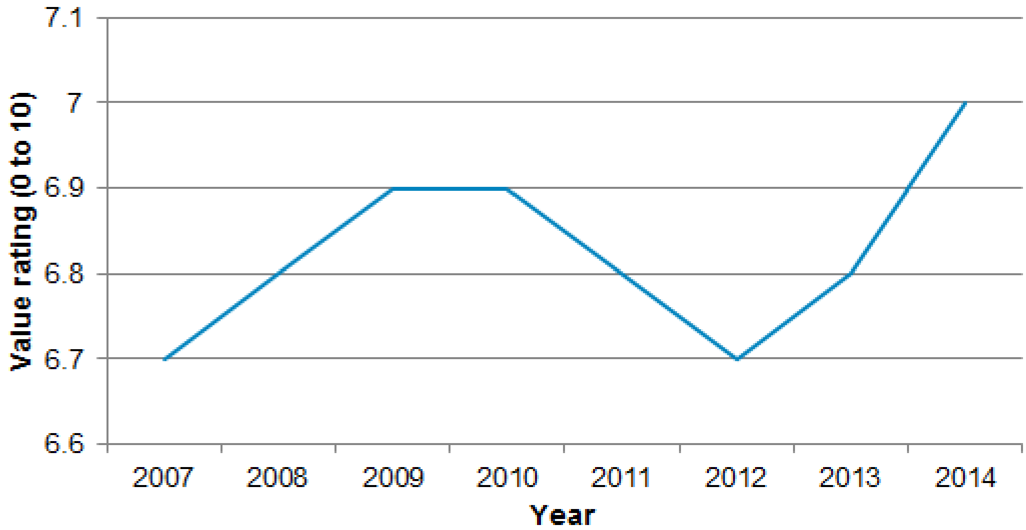
- value for money
- customer satisfaction
- corporate reputation
- customer complaints
- business customer relationships.

Value for money

We monitor value for money every week through the Sentiment Monitor, report it on a quarterly basis, and measure it on an annual basis through the Residential Customer Relationship Study. In the 2014 Customer Relationship Study, the average value for money score was 7.0, which is a significant increase on 6.8 from the previous year (Figure 3-1).

Value for money is driven by a number of factors, but three factors dominate -– price, service and reputation. Last year, price was the greatest driver of value, but improving all of these drivers is important.

Figure 3-1 – Value for money rating



Source: Sydney Water, Customer Relationship Study 2014

Customer satisfaction with the quality of service

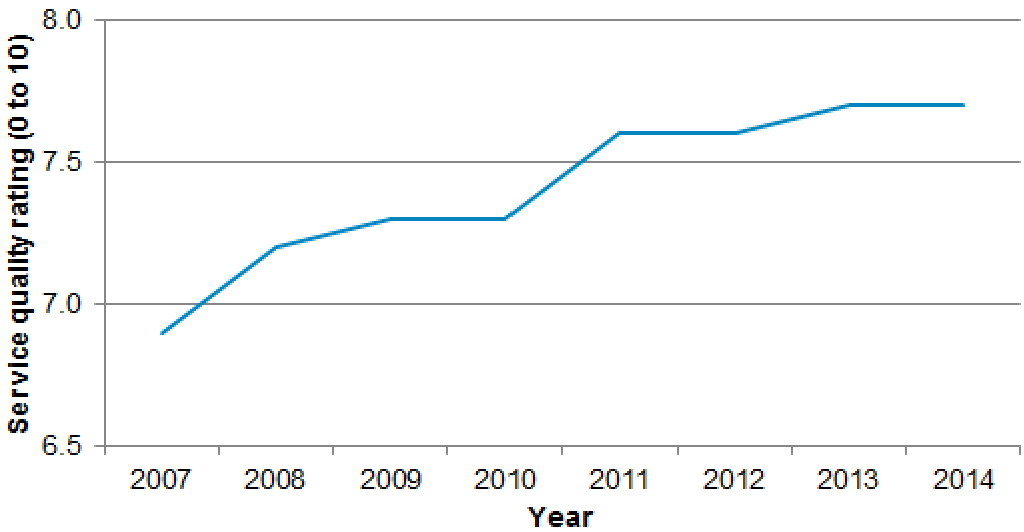
In 2014, we scored 7.7 out of 10 in customer satisfaction for our overall quality of service. We reached this peak score in 2013, and we have maintained it through determined efforts to be more customer-focused (Figure 3-2). Customer satisfaction ratings for our drinking water quality remain very high at 8.4 out of 10. We have also achieved significant improvements in individual service elements including:

- managing the water supply
- investing to meet future water needs
- providing recycled water
- billing and payments.

The way our staff members perform is always amongst the highest rated aspects of Sydney Water's performance:

- Customer satisfaction with our contact centre staff members who take calls about service faults is regularly rated a 9 out of 10.
- Our repair crews and contract plumbers who fix people's service faults are also highly rated, currently averaging a satisfaction rating of 8.9 out of 10.
- Our Business Customer Service representatives who deal with our larger business customers were rated an 8.5 out of 10 in 2014.
- A construction evaluation study in 2011 saw customers rate the on-site workers extremely well at 8.7 out of 10 for being friendly and courteous.

Figure 3-2 – Satisfaction with overall quality of service



Source: Sydney Water, Customer Relationship Study 2014

Corporate reputation

We regularly monitor our corporate reputation as part of the Sentiment Monitor. This measure determines the levels of respect and admiration customers have for Sydney Water (Figure 3-3).

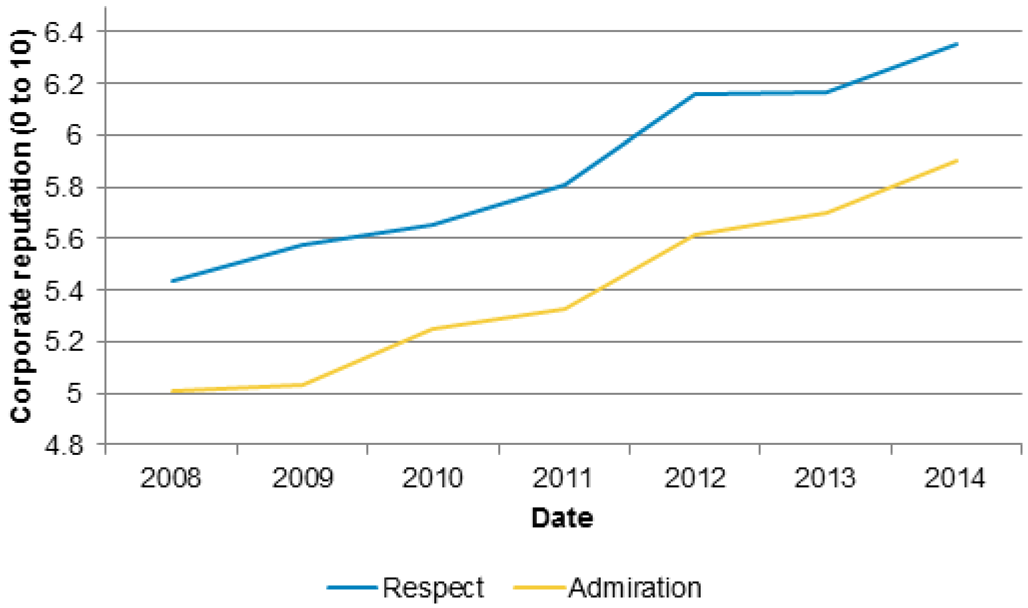
Corporate reputation for Sydney Water has been steadily increasing over time. Our corporate reputation rates also compared well with other industries including rail, telecommunications, banking and energy utilities (see Figure 3-4).

Reputation is also closely linked with value for money. For example those respondents who rated value for money between 8 and 10 gave an average reputation score of 7.7 while those respondents who rated value for money between 0 and 4 gave an average reputation score of 4.1 (Quarter 1, 2015).

There are four drivers of corporate reputation:

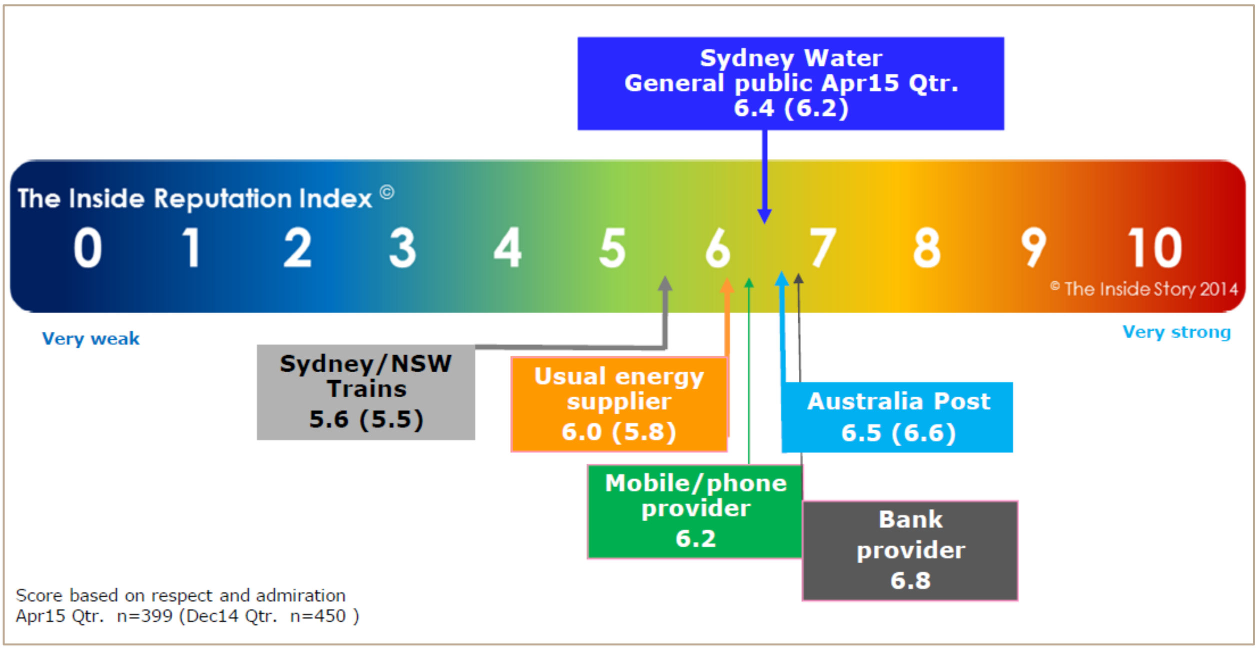
- Market profile – how aware people are of the organisation and what it does, for example is it a well-known name, does it have market presence.
- Corporate capability – the management of the organisation and its perceived success in delivering what it promises to do and planning for the future. This rating includes customer service attributes.
- Persona – relates to the distinctiveness of the personality an organisation projects and how well they are liked.
- Corporate social responsibility – looks at an organisation's level of responsibility to all stakeholders, or their perception as a good corporate citizen.

Figure 3-3 – Corporate reputation over time



Source: Sydney Water, Customer Sentiment Monitor, December 2014

Figure 3-4 – Corporate reputation relative to other industries



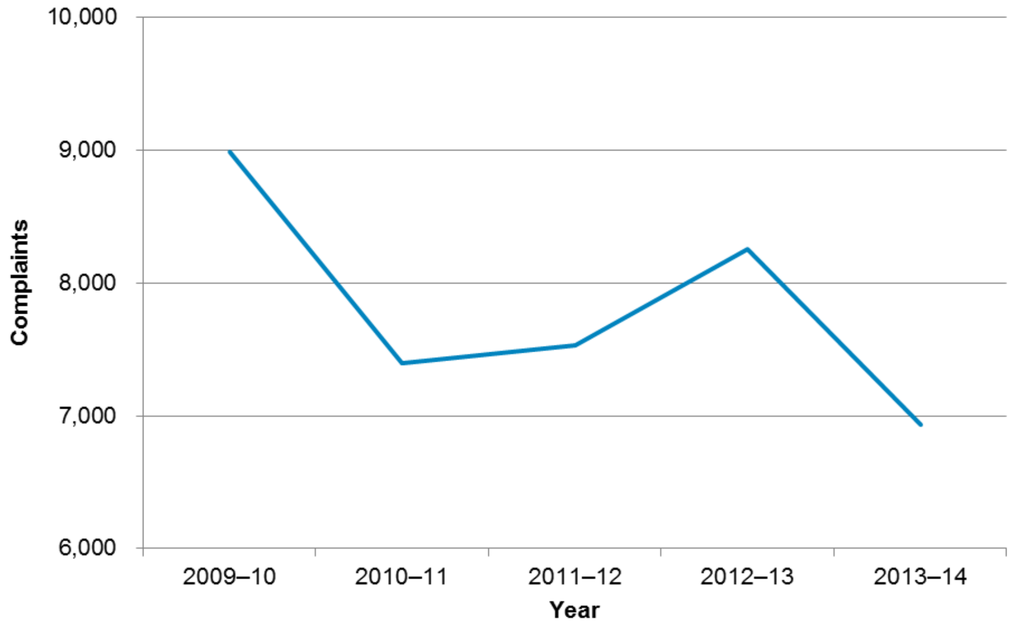
Source: Sydney Water, Customer Sentiment Monitor, May 2015

Customer complaints

We aim to resolve customer enquiries and complaints quickly, efficiently and to the customer's satisfaction. The number of complaints14 we received decreased significantly in 2013–14 with the biggest reduction in billing and account-related complaints (Figure 3-5). We have also improved the time taken to resolve complaints, with over 91% of complaints resolved within 10 days (see Figure 3-6). Australia's top customer service organisation, the Customer Service Institute of Australia, has accredited our complaints approach as a leading example of industry best practice.

[14] Under our *Operating Licence 2010–2015*, we define a complaint as 'an expression of dissatisfaction made to Sydney Water, related to its products or services, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected'. If a customer is dissatisfied with our proposed solution or the action we take to resolve a complaint, they may contact the Energy and Water Ombudsman of NSW (EWON) – www.ewon.com.au – and ask them to independently review the complaint.

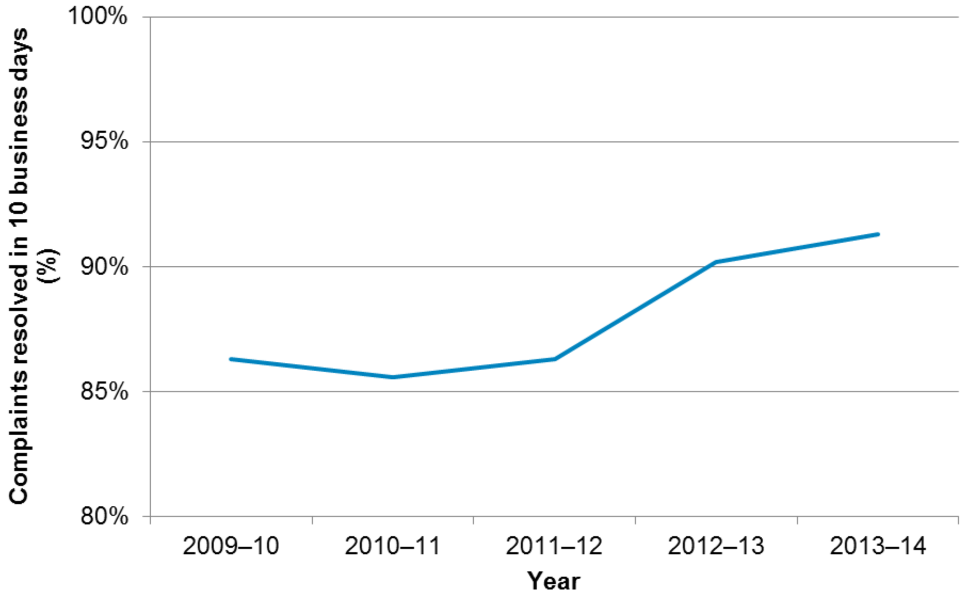
Figure 3-5 – Total number of customer complaints



Source: Sydney Water Annual Report, 2014

Note: Includes complaints made to the Energy and Water Ombudsman of NSW

Figure 3-6 – Percentage of complaints received that we resolve within 10 business days (%)



Source: Sydney Water Annual Report, 2014

Note: Not including complaints to Energy and Water Ombudsman of NSW

Business customer relationships

Feedback from the 2014 Business Customer Relationship Study was very positive with a significant improvement on how we were perceived in 2011 when we had a rating of 7.1. 90% of business customers now feel positive in some way about Sydney Water's service quality, giving us an average rating of 7.6 out of 10.

3.3 Customer assistance programs

Sydney Water supports customers in need by providing flexible payment arrangements and tailored assistance for customers experiencing financial hardship. We implemented the 2010–2015 Payment Assistance Strategy, which we developed in consultation with Sydney Water's Customer Council. This ensures our program applies industry best practice and meets the needs of customers experiencing hardship, now and in the future.

Under the BillAssist® program, our team of qualified professional case coordinators, work with residential customers experiencing financial hardship. We provide personalised support, advice and payment assistance, and refer customers to other specialist services. PlumbAssist® provides essential or emergency plumbing repairs to improve water efficiency and reduce water costs or where there is a risk to health or public safety.

To help Sydney Water deliver the PlumbAssist® service and other hardship programs for customers in financial hardship, we analyse billing and water use records. This helps us identify customers who are in debt and have high water use. We use this information to contact potential customers for the hardship program.

Our existing programs as shown in Boxout 3-2 are working effectively, with over half of the customers who have used our assistance programs successfully transitioning back to mainstream billing.

Boxout 3-2 – Customer assistance programs

Our customer assistance programs include the Pensioner Concession Scheme, BillAssist®, Payment Assistance Scheme (PAS), PlumbAssist®, Payment arrangements and Centrepay. Over 240 community welfare agency partners help us deliver these programs.

The BillAssist® program won an award from the Customer Services Institute of Australia (CSIA) in 2012 and was a finalist in the Australian Teleservices Association National Awards 2013. Table 3-1 shows how many customers have accessed our assistance programs and the associated cost.

Table 3-1 – Customers assisted and associated cost ($ nominal)

	2012–13		2013–14		2014 (Jun-Dec)	
Program	Customers*	Cost	Customers*	Cost	Customers*	Cost
Community service obligations						
Pension concession	238,387	$136,041,210	240,324	$138,325,704	232,966	$70,266,044
Payment assistance scheme	2,421	$789,844	2,355	$741,142	1,304	$376,666
Flexible payment options						
Payment extensions	78,275	N/A	78,568	N/A	44,862	N/A
Payment plans	29,784	N/A	26,439	N/A	15,859	N/A
Centrepay payments	3,022	$2,140,743	3,222	$2,460,163	2,865	$1,277,486
Social programs						
PlumbAssist®	376	$820,997	199	$384,583	94	$192,357
Disadvantaged sewer connection program	3	$4,100	0	$0.00	0	$0.00
Total		**$139,796,894**		**$141,911,592**		**$72,112,553**

*Where a customer equates to a property

3.3.1 Stakeholder feedback on hardship programs

Our stakeholders' feedback is positive and highlights that our programs are working well. As part of the review of our Operating Licence, IPART sought community views on whether the hardship provisions in the Operating Licence and Customer Contract are sufficient. No public submission proposed there was a need to strengthen or add to these provisions.

Rather, in their submissions to IPART in July 2014, both the Public Interest Advocacy Centre (PIAC) and the Office of the Energy and Water Ombudsman (EWON) noted that Sydney Water's hardship programs were effective and compared well with those in the energy sector.

As EWON noted in its submission:

> From EWON's experience, Sydney Water's hardship program appears to be operating effectively and demonstrates good industry practice through its tailored customer case

> management approach, payment assistance scheme and engagement with community welfare agencies[15]

In addition, PIAC noted that:

> In PIAC's view, Sydney Water currently has an institutional culture that seeks to ensure that all customers retain access to essential water service[16]

These views are consistent with the feedback we have received directly from PIAC and EWON during engagement with them during the Operating Licence review, and for other specific projects.

3.3.2 Pensioner rebates

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

Through this scheme eligible home owner-occupiers (ie pensioners) currently receive a rebate of 100% on water, 83% on wastewater and 50% on stormwater service charges. The rebate costs are recovered from NSW Treasury as a Community Service Obligation.

It is envisaged that the wastewater service rebate percentage for pensioners will change as a result of the price reductions that we have proposed. Subject to the final prices determined by IPART, Sydney Water will make the appropriate adjustments to the rebate percentage for pensioners that will be in line with the principle that ensures pensioner bills are kept in parity with non-pensioner bills, ie they increase/decrease by a similar percentage.

3.4 Enhanced customer engagement

To continue to improve how we manage our business, we have developed a new corporate strategy aimed at delivering great outcomes for our customers. To ensure we make customers a priority, customer trust and customer experience are two of the four key measures of performance.

A key part of our corporate strategy is enhanced customer engagement, which will improve our understanding of what our customers value. This can shape decisions on issues such as tariff structures, quality of service, and prioritisation of future expenditure. It ensures we allocate resources where they are most valued by our customers. It also allows us to highlight both the costs and the benefits when assessing proposed changes in policy, legislation and regulation.

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[15] Energy and Water Ombudsman NSW, *Submission to IPART's Review of the Operating Licence for Sydney Water Corporation*, August 2014, p 2.

[16] Public Interest Advocacy Centre, *Licensing the public good, Submission to IPART's Review of the Operating Licence for Sydney Water Corporation*, 20 August 2014, p 8. PIAC also noted that it was important for the Customer Contract to continue to outline minimum standards for hardship programs, as organisational cultures can change over time.

We are employing a range of tools and techniques to enable us to improve customers' experience:

- **Participatory decision making**
  A deliberative democracy helps customers or the community debate complex issues, in a structured and informed way. It is an engagement technique, which educates a representative sample of the community on the costs and benefits of alternative options. It allows them to make informed decisions considering all relevant trade-offs and to provide feedback on any alternative approaches or options. It reveals the preferred outcomes of the community and allows businesses to prioritise resources to where they are most valued by customers. Sydney Water is seeking to use this approach for stormwater pricing, which currently provides a wider benefit to the community than the customers who currently pay for the service (Section 3.5.2). We are exploring opportunities for participatory decision-making in other areas, including product and servicing standards and capital prioritisation.

  One example of a water utility's customers benefiting from participatory decision-making is from South West Water (UK)[17]. This water and wastewater utility collected feedback from their customers over a two year period using a number of engagement techniques including written, online, telephone and face-to-face communication channels. Customers were asked about the water and wastewater services being provided and their priorities for these in future years.

  This feedback has shaped future investment plans. The success of this investment will be tracked using relevant and easy to understand performance measures.

- **Customer journey mapping**
  This allows businesses to map their existing interactions and touch-points with customers. By reviewing these, businesses can assess whether they meet customer needs and take action where appropriate to improve overall value to customers efficiently and effectively. This process helps realise opportunities to refine and enhance processes and products, including introducing value-added services.

  Sydney Water intends to use customer journey mapping to identify and highlight the major customer pain points and opportunities that we can leverage for immediate action. It provides better data and a more holistic perspective for us to make more informed decisions, building on the insight gained through targeted customer surveys.

  In June 2015, we began the detailed design of the developer application process. The aim of this work is to transform our business and improve the overall customer experience. Other opportunities for value creation for our customers could include the areas of new connections, accounts, billing and the payment processes.

  A better understanding of customers through enhanced engagement, and our Enterprise Resource Planning (ERP) platform, will provide access to better customer data, which will allow Sydney Water to develop solutions that better align to our changing operating environment and customer needs.

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[17] See South West Water, *Water Future – your water and wastewater services to 2020*, 2014, available at http://waterfuture.southwestwater.co.uk/business-plan-2020

3.5 Examples of enhanced engagement

We are looking to enhance the way we do customer engagement, as well use the information that we have more effectively. To demonstrate this, the following section outlines case studies for:

- water tariff structures
- stormwater pricing
- wet weather overflow abatement.

3.5.1 Water tariff structures

Issue

Sydney Water's usage price has normally been set with close reference to our estimate of long-run marginal cost (LRMC). The LRMC is the cost associated with the next available water supply source. IPART then sets the fixed charge to recover the rest of our efficient costs for the supply of water services. See Chapter 10 and Appendix 5 for further information on LRMC.

With the refilling of storages after the millennium drought, lower consumer demand and the building of more supply capacity with the desalination plant, the LRMC has fallen significantly. This led to our concern that LRMC-based pricing could result in a major tariff restructure with usage prices halved and a threefold increase in existing fixed service charges. Substantial changes have already been proposed by regulators in other states, such as in South Australia. We believe customers would not desire such a significant change in tariffs. This is particularly in the light of existing customer insight which suggests most customers like to be rewarded for their effort in reducing water use. A substantial decrease in the usage price would work against this benefit, so we decided to investigate this through more targeted customer engagement.

Customer survey

We worked with the Australian Centre of Excellence for Local Government (ACELG) at the University of Technology Sydney to engage on tariff structures with our customers. The work initially involved four focus group discussions across the Sydney metropolitan area. Participants were sourced from a cross-section of the community. By better appreciating our customers' understanding of their water and wastewater bills and the tariffs that applied to them, we proceeded to develop questions that formed the basis of an online survey of about 1,700 participants.

The online survey assessed customer and community preference for bill certainty (a higher fixed service charge) versus bill control or greater reward for the effort of saving water (a higher usage price):

- We invited customers to make a simple choice between two tariff structures – a higher usage price and lower fixed charge (scenario one), or a higher fixed charge and lower usage charge (scenario two).
- We then gave customers a wide range of usage price/fixed charge combinations using a bill analyser tool (Appendix 4), which showed how their bills were affected by their tariff choices. The bill analyser tool was set up with a minimum usage price of $1.20, and a

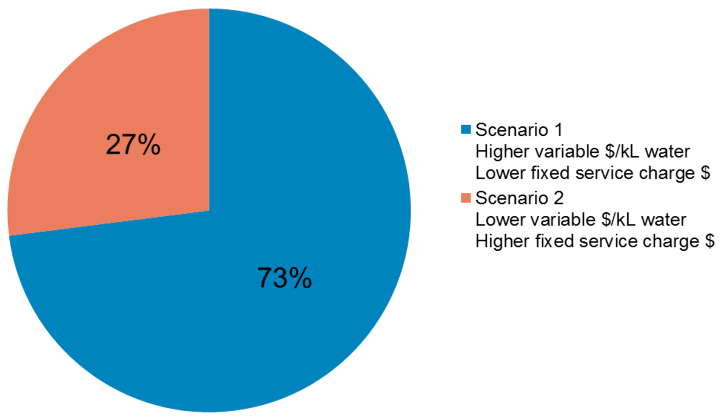
maximum usage price of $2.60. The service charge was designed to change to ensure that Sydney Water could still recover the same level of cost, based on the average user.

- Finally, customers were again asked to choose between the two tariff structures, but with the knowledge of the impact this would have on their bill.

Results of customer survey – preferences for bill structure

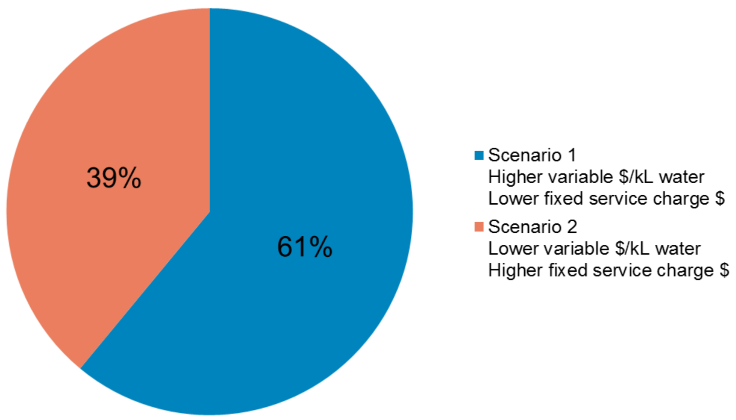
The study found that 73% of customers initially preferred scenario one (Figure 3-7). This means most customers would prefer bill control (more ability to influence the total bill through water savings) rather than bill certainty.

Figure 3-7 – Preference for tariff scenarios before being shown bill impact



However, after seeing the bill impact of a higher or lower usage charge, there was a swing towards scenario two (a higher fixed charge and lower usage price) although most (61%) still stated that they preferred a higher variable price Figure 3-8. 37% of participants changed their initial stated response but the shift was not unidirectional. Two thirds chose scenario two but a third chose scenario one.

Figure 3-8 – Preference for tariff scenarios after being shown bill impact



Distribution of preferred prices

Looking at the overall distribution of prices from the bill analyser tool, there are three distinct preferred prices – $1.20, $1.90 and $2.60 per kL (Figure 3-9). While there is a substantial proportion who prefer $1.90–$2.30 per kL, this group also includes about a third of customers who chose 'the middle road', some because they remained confused about how water is charged or were sceptical of government, or uninterested in pricing mechanisms. For those that consciously chose 'the middle road', they were still not concerned about the pricing mechanism. These customers wanted a quality and reliable supply, water priced low as possible, or believed the amount was reasonable/fair.

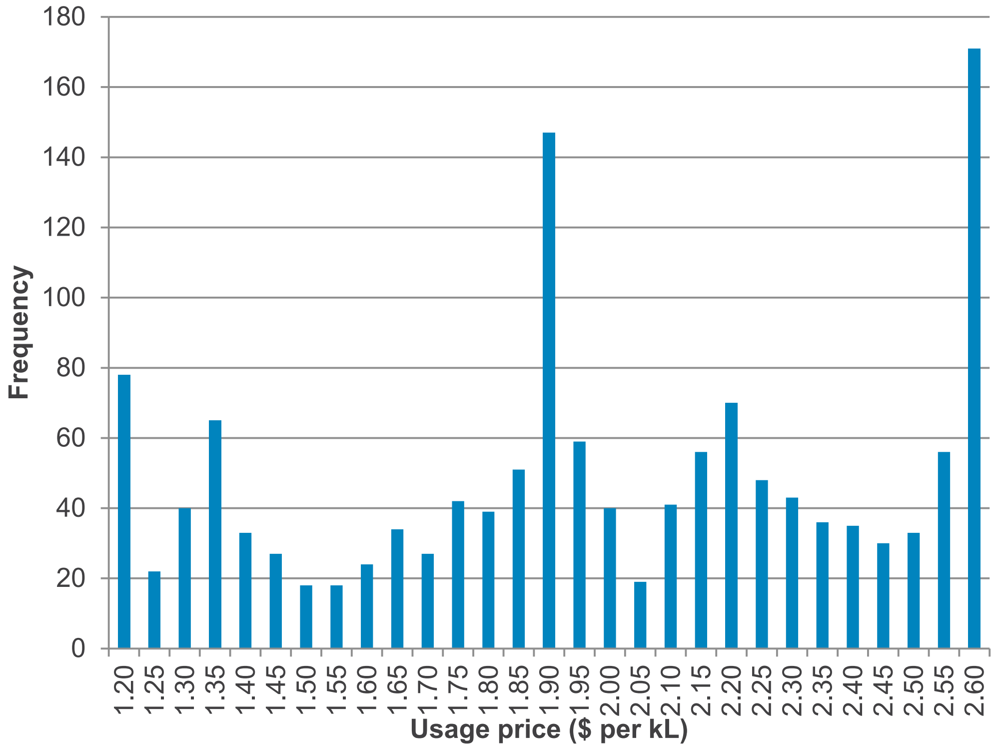
There was another peak around $2.20 per kL and many participants who chose this price (or $2.25 per kL) stated they wanted prices to remain the same (current usage price is $2.23 per kL). See Table 3-2 for recurrent characteristics of people who chose specific prices.

Table 3-2 – Characteristics of people who chose specific usage prices

$1.20 per kL	$1.90 per kL	$2.20 per kL	$2.60 per kL
• Female • Middle-ring LGAs (Fairfield, Strathfield etc) • Very large households • Lower level of education • Prefer price per litre of water lower • Lower income • Homemaker • Unemployed • High water user • Medium water user	• Middle-aged, 70+ • Coastal/harbour side/ Nth Beaches LGAs • Large and small households • Apartments • Renters • Trades • People who notice their bill change a lot • I really don't think about the supply of water, I just want it to be as cheap as possible • High water user • Medium water user	• 60-70+ • Wollongong • People who notice their bill change a lot • Retired • Low water user • Medium water user	• Male • Younger, middle-aged • North shore/Nth Beaches LGAs • Small/medium households • Share houses • Apartments • Don't notice their bill change a lot • Not concerned about the environment • Prefer price per litre of water higher • Higher income • Single • Low water user • Medium water user

Figure 3-9 includes 1,402 responses of the total participants (1,684). We asked participants why they chose usage prices and decided to remove certain responses like 'random', 'to see results' and unrelated answers. This ensured the results reported were robust. The overall distribution does not change if we include these responses, and these respondents were more likely to choose 'the middle road'.

Figure 3-9 – Distribution of preferred usage prices



Low, medium and high users

If we separate out preferences of low, medium and high water users, before seeing their bill, 82% of low water users prefer scenario one, compared with 72% and 71% of medium and high water users respectively (Figure 3-10). However, after seeing the impact this would have on their bills the preference for a higher usage charge dropped for all three groups, especially for medium and high users, and preference for scenario two became the majority for high users (Figure 3-11). This suggests the preferred pricing structure is heavily influenced by the customer's bill.

Figure 3-10 – Preference for tariff scenarios before being shown bill impact for low, medium and high users

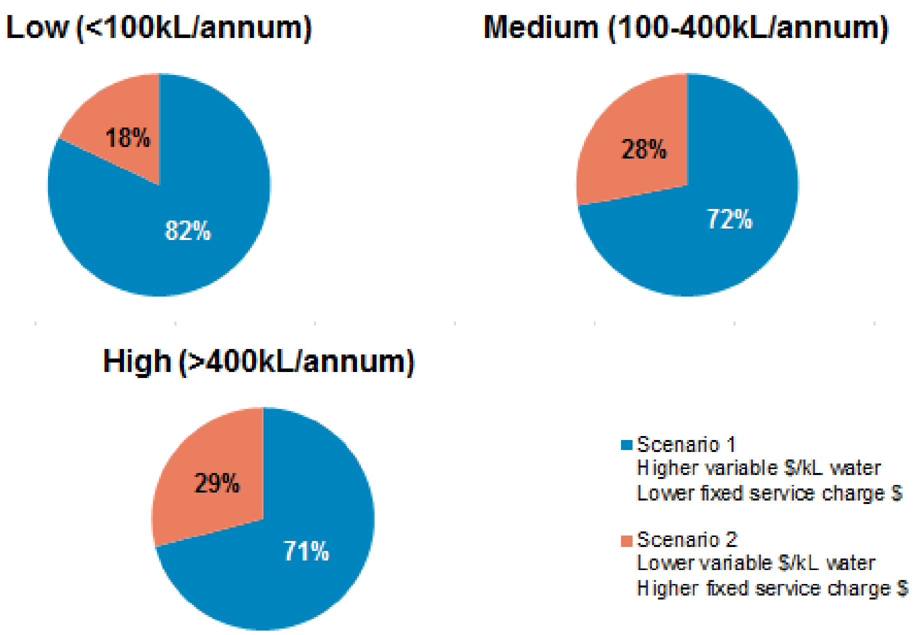
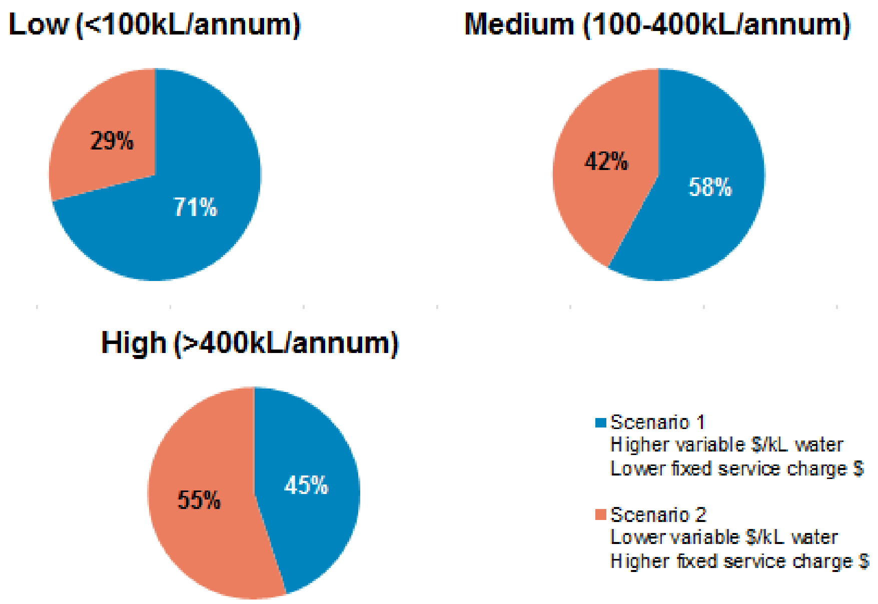


Figure 3-11 – Preference for tariff scenarios after being shown bill impact for low, medium and high users



A more detailed set of results on the water tariff pricing study including results on service performance standards and demand management preferences can be found in Appendix 4.

Outcome

Using the customer insights from this work, along with the traditional cost estimation techniques, and the expected change in the wastewater service charges based on our costs, we have proposed the following tariff structure for water:

- a $1.97 per kL usage price
- a fixed annual service charge of $98.52 a year.

This feedback from customers and the engagement with our Customer Council, has also formed the basis of our proposal to now recover the costs associated with SDP being switched on through a combination of an increase in the usage price and service charge, rather than as in the past, a higher fixed service charge. Further detail in relation to the proposal is highlighted in Chapter 10.

We believe that our approach to setting the proposed tariffs, which has used substantial customer engagement, is a major innovation in the way usage prices and service charges are set by water utilities. We believe that by understanding our customers' preferred pricing structures, we avoid any large changes to the tariff structure from simply following economic theory that is unsupported by customers.

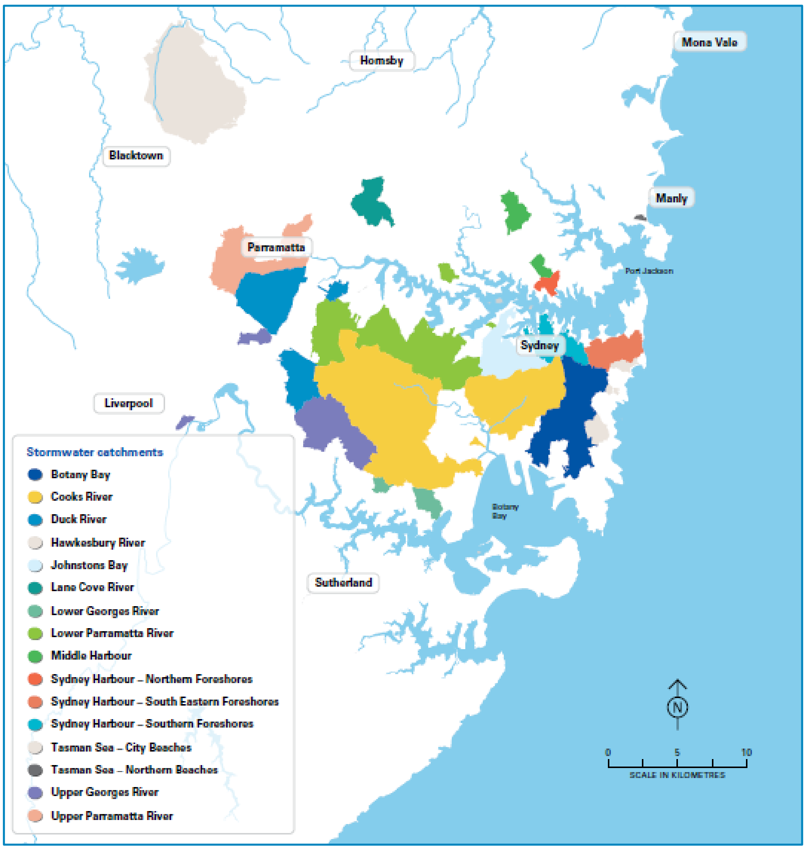
3.5.2 Stormwater pricing

Issues

Currently, Sydney Water supplies stormwater services to 570,000 residential dwellings, across 30 different LGAs. This is equivalent to 28% of the 1.7 million residential dwellings we provide water services to (2013–14). Generally speaking, Sydney Water's stormwater areas are in the CBD and Inner West of Sydney (Figure 3-12). However, 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. 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. This raises the question of whether the wider community that benefits from the infrastructure should pay some contribution towards fixing it, rather than just the local beneficiaries. Stormwater investment also contributes to improved waterways that can be enjoyed by the wider community.

Stormwater pricing is a sensitive issue as these prices are low, and any major increase in investment has very large price ramifications due to the smaller customer base. Increasing the customer base would avoid major price increases, and would enable a more efficient allocation of resources, as people who receive some benefit from this infrastructure could contribute.

Figure 3-12 – Sydney Water's stormwater catchments



Engagement

As part of the water tariff engagement with ACELG, we are also currently engaging with customers on stormwater pricing. This work involves focus groups and an online study and uses the same methodology as the water tariff pricing research. As discussed in Section 3.4, the stormwater pricing engagement will take this a step further using deliberative democracy in 2015.

Information from stormwater pricing engagement is important, given stormwater benefits more people than those who pay for it, and there are anticipated increases in future capital expenditure (ie the 2020 price path). This research seeks to understand what the community believes should be done in terms of the scale of investment and the way the investment is funded. Stormwater pricing engagement is ongoing and more extensive customer engagement will be conducted to guide future decisions.

Initial stormwater pricing responses

All focus groups initially showed very limited knowledge of stormwater, how it is paid for and the nature of the larger infrastructure that manages it. Many were unaware of the difference between stormwater and wastewater infrastructure, and only a handful of participants made spontaneous mention of stormwater treatment or recycling.

Attitudes to alternative charging scenarios

After educating participants on the role of Sydney Water's stormwater infrastructure, most felt that the increased costs should be spread across the entire Sydney Water customer base, including residential and business customers, on the grounds of equity. Especially since the wider community benefits from flood prevention, and cleaner waterways around areas where they live, work or recreate and we should share the costs. However, a subset of participants were not in favour of sharing costs, primarily because they were already paying their local council for stormwater services and they would be paying for services that did not benefit their local area. The focus groups not in favour of contributing to the service for these reasons tended to be west of Sydney. See Appendix 4 for more detailed information on this study.

3.5.3 Wet Weather Overflow Abatement

Issue

Sydney Water's wastewater system includes emergency relief structures which allow excess wastewater to overflow at planned locations (often in local waterways) rather than flooding residential and commercial properties. Wet weather overflows are triggered by intense and often localised wet weather events, when large amounts of stormwater enter the wastewater network. Wet weather overflows can affect the ecosystem (aquatic and terrestrial), public health and aesthetics of the natural environment.

Each of Sydney Water's wastewater treatment systems operates under Environment Protection Licences (EPLs) issued by the Environment Protection Authority (EPA). The licences for the four major coastal wastewater systems have Pollution Reduction Programs that require works to meet long-term 2021 frequency targets for wet weather overflows.

We have invested $1.5 billion since 2000 to meet the targets. This has dealt with about 80% of overflows in the four coastal systems, resulting in cleaner beaches and waterways that can be enjoyed by the community.

However, as outlined in Chapter 2, Sydney Water estimated in 2012 that to meet the remaining 20% of targets would require $5.5 billion of additional expenditure, increasing existing wastewater customer bills by over a third for at least the next 50 years. This would involve building new structures and extensively upgrading existing facilities. Sydney Water would need to:

- construct up to 48 storages with total capacity of over one billion litres
- amplify over 900 kilometres of pipes
- amplify 31 wastewater pumping stations
- improve over 1,700 kilometres of wastewater pipes
- reduce the number of illegal connections of stormwater to the wastewater system.

Construction on this scale in highly developed areas of Sydney would affect thousands of residents across the four wastewater systems and it would have a significant impact on the community. In addition, there are potentially diminishing benefits to the environment and community from such large additional expenditure because frequency targets does not take into account the volume of overflow, the location of the overflow and the resilience of the receiving waters.

Later this year, Sydney Water intends to propose to the EPA a new licence measure in the EPLs for the Malabar, North Head, Bondi and Cronulla systems. Our proposal is designed to drive better community and environmental outcomes at a substantially lower cost, resulting in almost no change in customer wastewater bills. The measure we are proposing is outcomes-based and would allow us to tailor appropriate solutions that better target the environmental and community risks from overflows. This allows us to consider alternatives to containment or network augmentation solutions.

Customer survey and outcomes

An online and interactive survey was carried out during 2014–15 to measure how often people use the local creeks, rivers and waterside reserves and parklands in four catchment areas. The study also measured the different types of use, the frequency of use and gathered feedback on the environmental issues the community was experiencing. We captured this information for 34 sub-zones across the four catchments.

By combining this information with existing literature on the economic market and non-market valuations of such areas and the cost of alternative solutions, we have developed a cost-benefit analysis tool. This allows us to prioritise improvement works with solutions that address the risk to the community and environment, and generate the largest gains for our customers and the community. The prioritisation tool is intended to assess how we best invest to meet our proposed new licence measure.

This example shows how we are better using feedback from our customers to prioritise our investments to where they provide the greatest benefit to the environment and community.

4 Modernising regulation

Key messages

- To mitigate risks to our customers and business, we have improved how we do business. However, we believe that our current regulatory framework limits our ability to respond to external factors that affect how we work.
- Over the last 30 years regulation has evolved, as regulators have moved from schemes mainly designed to protect customers, to schemes that give businesses stronger incentives to promote long-term benefits to customers.
- The UK water and energy sectors and the Australian and New Zealand energy sectors have adopted stronger incentive-based forms of regulation in the 2000s, and these frameworks have continued to change to meet new challenges.
- The NSW urban water market is subject to a complex policy, legislative and regulatory framework that is primarily aimed at protecting customers, the community and environment. There are weak incentives to actively promote better outcomes for customers, the community and the environment.
- IPART’s regulation of Sydney Water has remained largely unchanged since 1993. Historically, the regulations have delivered good outcomes. In recognising current, emerging and future challenges, IPART should now consider adopting more incentive-based forms of regulation, such as greater price flexibility and cost-efficiency incentive schemes for Sydney Water.
- We have based our proposals on well-established schemes used in other sectors and propose the schemes be introduced in a measured way.

The urban water sector is typically viewed as stable and reasonably certain, with long-lived infrastructure, low technology change and steady demand. This has also been largely reflected in the policy, legislative and regulatory frameworks governing the urban water market in NSW. Despite the perceived stability, the sector has been subject to some uncertainty since the 2000s. The Millennium Drought presented a unique challenge for water utilities, policy makers and regulators, contributing to a high degree of demand and supply-side uncertainty in the urban water market.

The result in the NSW urban water market, as with other state-based urban water markets in Australia, was an impact on customer bills and the return to shareholders. We have improved our internal practices and processes to become better equipped to manage and mitigate the exposure of our customers and shareholders to risks over time. However, Sydney Water believes we have limited ability to further improve or prevent adverse outcomes to customers arising over the longer term from the current, emerging and future challenges, if the economic regulatory framework from the early 2000s in NSW continues without enhancement.

Economic regulation in the NSW urban water sector has not evolved to deal with the greater uncertainty, nor has it evolved in line with regulation overseas or in other sectors. The limited evolution of economic regulation of water has been reflected in two significant reports – the Frontier Economics report on behalf of the Water Services Association of Australia (WSAA[18]) and the Harper Review[19]. Both highlight that economic regulation of the urban water sector across all states of Australia appears less evolved than the regulation in the energy sector and is far from best practice.

Sydney Water recognises IPART has a more mature economic regulatory framework for water than exists in most other states. Also, IPART has made significant incremental improvements in determining key elements of its building blocks and its regulatory processes over last few years. For example, IPART has significantly improved its approach to determining the weighted average cost of capital (WACC),[20] clarified how it will consider financeability in reviewing prices,[21] and is providing greater transparency of its financial models and decision making. We believe IPART now has an opportunity to move further towards best-practice regulation and modernise regulation in the water sector by adopting more incentive-based schemes. This will ensure Sydney Water has greater flexibility to promote better long-term outcomes for customers, while dealing with the uncertainties within each pricing period.

We believe the benefit of more incentive-based schemes for customers is that providing businesses with greater flexibility leads to more cost-effective solutions, and better outcomes, than if outputs were set externally to the business. Also, the advantage for regulators is that it allows them to step back from detailed operational matters of the business. This reduces the overall burden of regulation in terms of resource and time needs devoted by regulators, or other external bodies.

This chapter explains Sydney Water's case for modernising regulation by outlining:

- the evolution of economic regulation to more incentive-based schemes
- incentive regulations that have been adopted in the UK water and energy sectors, and the Australian and New Zealand energy sectors
- Sydney Water's complex policy legislative and regulatory framework and IPART's current regulation of Sydney Water
- Sydney Water's proposal to modernise regulation by introducing pricing flexibility, cost incentives, and dealing with some existing regulatory anomalies.

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[18] Frontier Economics, *Improving economic regulation of urban water*, A report prepared for the Water Services Association of Australia (WSAA), August 2014.

[19] I. Harper, P. Anderson, S. McCluskey, M. Obrien, *Competition Policy Review – Final Report* (Harper Review), March 2015.

[20] IPART, *Review of WACC Methodology – Final Report*, December 2013.

[21] IPART, *Financeability test in price regulation – Final Decision*, December 2013.

4.1 Evolution of economic regulation

4.1.1 Transition from rate-of-return to price-cap regulation

Economic regulation of monopoly providers has evolved over the past 30 years. It is well-established economic regulation must deal with inefficiencies, created by monopolies, by either constraining the use of market power to increase prices or preventing lazy monopolists from passing on higher costs to customers. In doing so, regulators also have looked to ensure regulated businesses still have the opportunity to recover efficient costs, including their capital costs.

Initial regulations established in the US in the early 20th century tried to balance the interests of customers and the firm, by constraining the monopoly and only allowing it to earn a fair rate of return on its capital costs. Known as rate-of-return (ROR) regulation or cost of service regulation, it was acknowledged over time that due to a lack of information about the business, providing guaranteed returns on actual costs created very weak incentives for efficiency.[22]

To resolve the asymmetry of information between regulators and businesses, regulators looked to collect information and/or provide businesses with the right incentives to reveal their true costs and pursue efficiencies. This resulted in regulatory frameworks that are better at driving outcomes for customers because they provide firms with stronger incentives.

In preference to ROR regulation, which was viewed as being a low-powered or weak incentive regime, in the 1980s the UK adopted the higher powered, incentive-based, price-cap regulation developed through the work of Professor Stephen Littlechild and Professor Michael Beesley.[23] Price-cap regulation is also sometimes known as “CPI-X” or “RPI-X” regulation, after the basic formula used to set prices for the regulated basket of services. That is, the price levels across services are constrained to increasing by the rate of inflation (based on the consumer price index or retail price index) minus any expected efficiency savings over the period denoted by ‘X’.

Price-cap regulation drives better outcomes for customers by providing businesses with incentives for cost reduction, along with the freedom and incentive for price rebalancing.[24] Incentives for cost efficiency exist as any savings within the regulatory period go to shareholders until prices are reset.[25]

The flexibility to change relative prices in the regulated basket of services, combined with the weighting schemes, promotes price rebalancing towards more allocatively efficient pricing structures. The benefits of price-cap regulation to customers, business and regulators are well-

[22] H. Averch and L.L. Johnson, *Behavior of the Firm under Regulatory Constraint*, American Economic Review, 1962, Vol. 52, pp 1053-69, highlight that ROR regulation creates an incentive for the monopoly to inefficiently over-capitalise in production in order to maximise profit.

[23] S. Littlechild, *Regulation of British Telecommunications’ Profitability*, HMSO, London, 1983.

[24] I. Vogelsang, *A 20-year perspective on incentive regulation for public utilities*, Regulation and Investment Conference ACCC, Sydney March 26-7, 2001.

[25] The key to the incentives under the price cap approach is the length of time for which revenues are de-linked from the controllable costs. Once these are de-linked, businesses retain the benefits from reducing costs for the regulatory control period, compared with the alternative where costs are not reduced, or are reduced by a lesser amount.

established and it is now the predominant form of regulation worldwide, with more than 20 OECD countries using it for at least one regulated industry.[26]

4.1.2 Enhancing price-cap regulation with financial incentives

While price-cap regulation provides stronger incentives for efficiency, over time it has been acknowledged that the basic framework needed to evolve as the challenges regulators faced changed. One issue identified with the basic scheme is that the power of the incentive to make cost-efficiencies declines over the regulatory period, as a business recognises it will be unable to retain the efficiency savings when prices are next reset. This results in businesses potentially not acting in the best interests of customers. For example, it might look to achieve efficiencies only in the early years of the regulatory control periods, and defer realising efficiency gains until the next regulatory period.

To overcome this, a financial incentive scheme was introduced to allow businesses to retain gains for a defined period of time regardless of the year of the regulatory period in which the cost efficiency is achieved. This provides businesses with a continuous and equal incentive for cost efficiency in each year of the regulatory period. Also, to ensure cost reductions were not simply driven by businesses lowering service standards, the cost-efficiency incentive schemes were often complemented by service performance incentive schemes. This financial incentive rewards businesses for delivering services at the quality desired by customers.

The new financial incentive schemes designed to enhance and augment the basic price-cap regulation, were introduced in the UK water and energy sector in the 2000s. They have also been adopted in the Australian and New Zealand energy sector in the 2000s and 2010s. A primary benefit of the schemes is that the private information of businesses can be harnessed to benefit consumers. This is because financial incentives, to a large extent, leave decision making in the hands of the business, and it is not prescribed by regulators. It means that businesses have greater flexibility in how they deliver on outcomes and which projects they prioritise. This has practical operational benefits because decisions are made in ‘real time’ with best available information. It can also encourage businesses to innovate more than they otherwise would do.

4.1.3 Menu regulation

More recently, regulators for the UK water and energy sectors have gone down the path of adopting schemes such as menu regulation. Based on the work of Laffont and Tirole in the late 1980s and early 1990s[27] menu regulation is arguably the strongest form of incentive-based regulation.

Menu regulation recognises that asymmetric information about the scope that a business has for cost reduction can cause tension between incentivising cost reduction and setting cost-based prices. It looks to overcome this by giving businesses incentives to submit truthful forecasts and self-select into the most appropriate regulatory scheme for its expected costs. In theory this should

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[26] J. Mirlees-Black, *Reflections on RPI-X Regulation in OECD Countries*, CCRP Working Paper No.25, 2014.

[27] J.J. Laffont and J. Tirole, *A theory of incentives in procurement and regulation*, MIT Press,1993.

increase the accuracy of business plans submitted to the regulator, and do so with a minimum level of regulatory burden.[28]

Menu regulation operates by having the regulator provide the regulated business with a suite or menu of contracts that it can choose from. These are designed in such a way that businesses with more potential for cost reductions have incentives to choose a higher powered regulatory regime that provides greater return for cost savings. Conversely, those businesses with less scope for cost reductions have incentives to apply for the lower powered regulations that provide limited returns, but ensure the business can recover its costs.

If a business with a high scope for cost reduction were to submit a business plan and apply for a lower powered regulatory regime, it would fail to maximise the returns it could achieve. Alternatively, if a business with a low scope for cost reduction were to submit a business plan and apply for a higher powered regulatory regime, it risks not being able to recover its costs.

A very significant challenge with the regime is setting up a baseline level of expenditure for the menus. The benchmark is important, as it ultimately determines the reward that businesses get. If this baseline is set too high, then more companies are more likely to choose the higher powered contracts, as they find it easier to achieve cost reductions and achieve the greater rewards. To establish these baselines requires substantial information from the businesses over time, and often the use of benchmarking techniques employing econometrics and statistics.

Given menu regulation was introduced by UK regulators after over 20 years of ongoing evolution of incentive schemes, (and 20 years after the theory was developed by Laffont and Tirole), we consider there would probably need to be a similar evolution in the NSW urban water market, before menus could be introduced here.

On the basis of the higher powered incentives menu regulation offers, we would support any moves IPART makes to adopt more incentive-based schemes that aspire and would allow for a gradual transition towards menu-based approaches over the next 2–3 pricing determinations. IPART may also need to consider what data it needs to collect over time from the regulated businesses to ensure it has enough information to form the initial baseline expenditure. This is critical for menu-based regulation to work.

4.2 Regulation in other sectors and overseas

Incentive schemes have been widely adopted by regulators and are now generally considered to be a part of a best practice regulatory framework that promotes outcomes in the long-term interests of customers. Regulators of the UK water sector and the UK, Australian and New Zealand energy sectors, have all developed and introduced financial incentive-based schemes to augment their basic forms of price-cap regulation. Outlined below is an overview of the evolution of regulation and the incentive schemes in the UK water sector, and in the UK, Australian and New Zealand energy sectors.

[28] For an overview of menu regulation see Oxera, *Menu Regulation: is it here to stay?,* January 2008, and Queensland Competition Authority, *Incentive regulation: theory and practice*, September 2014.

4.2.1 Evolving regulation and incentives in the UK water sector

Water companies in the UK were privatised in 1989, and made subject to price-cap building-block regulation by Ofwat. Ofwat conducts price reviews every five years, although companies can ask it to conduct an interim determination within the review period if material issues arise.

The first Periodic Review in 1994 ('PR94')

Ofwat used the first review period to set the key regulatory principles by which it would set price limits, including introducing the Regulatory Capital Value (RCV) mechanism. The first Periodic Review in 1994 lowered the price limits that were initially set for the water companies by the UK Government. By doing this, it set the general tone for price regulation in the water sector – in terms of regulatory expectations of how companies can challenge themselves, and in benchmarking companies against their peers to encourage efficiencies and expand the frontiers of what is achievable.

In the period after PR94, Ofwat introduced the Overall Performance Assessment (OPA) – a scorecard of performance measures used to compare companies against each other. Financial rewards (+0.5% on price limits) and penalties (-1%) were applied to the best and worst companies, in the first year of the next review (2000).

The second strengthening of the regulatory incentives ('PR99')

The second strengthening of the regulatory incentives took place at PR99 when Ofwat introduced rolling incentive allowances for capital and operational expenditure. This is effectively what is referred to in Australia as an Efficiency Benefit Sharing Scheme. Companies could keep any outperformance against regulatory assumptions on efficiency savings for the full length of a review period, as a way to counter distortions within the original regulatory model.

Periodic Reviews of 2004 ('PR04') and 2009 ('PR09')

At PR04 the Efficiency Benefit Sharing Scheme (EBSS) was enhanced by giving companies at or close to the frontier an extra reward. That is:

- +50% of total outperformance in the previous five-year period for the best
- +25% for those close but not at the frontier
- limiting the risks carried by under-performing companies to 10% of total turnover for the underperforming service.

The EBSS established by Ofwat effectively provides for a carryover, but then an extra reward for being at the frontier. The benefits of one-off efficiency gains are fully passed through to the business, recurring efficiency gains are shared with customers, and any over-expenditure is borne by the business.

PR09 saw a change in the way Ofwat wanted companies to work.[29] It required companies to produce a 'strategic direction statement' as part of the price review process to give early

[29] Ofwat, *Future water and sewerage charges 2010-15: Final determinations*, November 2009.

indications of the company's future priorities. Ofwat also introduced a suite of new incentive schemes:

- the service incentive mechanism (SIM) replaced the OPA measure of performance. The new scheme still provides financial rewards and penalties, and measures comparative and absolute performance, but takes more account of qualitative and quantitative aspects of the 'customer experience' – primarily around customer contacts with the companies.
- the Capital Expenditure Incentive Scheme (CIS) was based on the model of menu regulation. It encouraged companies to produce realistic and credible expenditure forecasts before price limits were set and to outperform the final determination. The reward for outperformance was higher for those companies that made more challenging expenditure assumptions in the first place.
- the Revenue Correction Mechanism allowed companies to share the benefits and risks of recovering more or less revenue than was assumed in price limits.

The latest Periodic Review ('PR14')

At PR14, Ofwat proposed another suite of changes to the way it incentivises companies. These proposals are a sea-change in the way companies are regulated and incentivised.[30]

One proposal encouraged a better price review process, providing early determinations for those companies whose final business plan submissions are of a very high standard. Others are about the price limits themselves – for the first time Ofwat have set separate limits for water and wastewater services (only an indicative split had previously been set), and for wholesale and retail services. Companies have four price limits from 2015, instead of the single price limit previously employed.

Within the price limit, Ofwat is using:

- expenditure total expenditure (TOTEX) approach to remove any perceived capital bias[31]
- menu regulation within the wholesale controls
- average costs to serve within the retail controls.

4.2.2 Evolving regulation and incentives for energy regulation in the UK, Australia and New Zealand

The UK and Australian energy sectors are both regulated using the price-cap building block approach, augmented by a number of financial incentive-based schemes. The New Zealand regulator applies 'a default price-cap based' form of regulation that does not employ a building block approach, but still has very similar incentive schemes. If the default price path does not

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[30] See Ofwat, *Setting price controls for 2015–20 – final methodology and expectations for companies' business plans*, July 2013; Oxera, *Ofwat's final methodology – now for implementation*, August 2013.

[31] Ofwat, *Capex bias in the water and sewerage sectors in England and Wales – substance, perception or myth? A discussion paper*, May 2011.

provide businesses with an adequate return, businesses in New Zealand can opt for a customised price path that takes a price cap incentive-based building block approach.

An overview of the regulations recently put in in place by each of the regulators is described below.

Ofgem – the fifth Distribution Price Control Review (DPCR5) and the RIIO model of regulation

As part of its fifth regulatory review covering 2010–15 (DPCR5), Ofgem introduced a range of incentives and mechanisms. These encourage the 14 electricity distribution networks to better control environmental impacts, deliver improved customers service and ensure efficient investment to maintain network quality.[32]

To ensure efficient investment in network quality, like Ofwat, Ofgem introduced incentive-based menus through an Information Quality Incentive (IQI). The IQI is designed to:

- improve the quality of information distributors provide in submissions, with incentives to submit forecast plans that reflect the true efficient costs of the business
- encourage cost efficiencies during the regulatory period, by providing the opportunity to earn higher returns from outperforming its expected controllable costs
- equalise the opex and capex incentives, irrespective of actual opex and capex profile, by splitting the total costs, so that 85% of costs are entered into the RAB and are recovered over 20 years, and 15% as opex.

A key difference of Ofgem's menu is that while Ofwat's original menu was based on capex, Ofgem's menu is over TOTEX. The primary motivation for this is the regulator's desire to stop the perceived bias that energy businesses had towards capital-intensive solutions. As outlined earlier, Ofwat also moved to a TOTEX approach in PR14.

Acknowledging there needs to be significant change in future regulatory periods to accommodate the substantial investment required in Britain's gas and electricity networks, and the change in the way energy networks will need to be designed, operated and priced, Ofgem also launched the new RIIO model of regulation. RIIO, which stands for revenue equals incentives plus innovation and output, is the culmination of a two-year review of energy network regulation as part of Ofgem's RPI-X@20 project (that is, regulation 20 years after introducing RPI-X regulation). Ofgem estimated that this new model for regulating the gas and electricity networks could save gas and electricity consumers up to £1 billion over the first eight years.[33]

Ofgem has already adopted the RIIO model for the transmission and gas distribution price controls, and they will be implementing it for electricity distribution businesses in 2015. The scheme retains many features of the existing regime, but also includes new features such as:[34]

- eight-year price controls

[32] Ofgem, *Electricity Distribution Price Control Review Final Proposals: Incentives and Obligations*, December 2009.

[33] Ofgem, *RIIO: A New Way to Regulate Energy Networks*, October 2010.

[34] Oxera, *Its name is RIIO: a new model for regulating Britain's energy networks*, November 2010.

- incentives focused on particular outcomes including customer satisfaction, reliability and availability, safe network services, connection terms, environmental impact, and certain social obligations
- early completion of price control reviews for businesses that base their price proposals on a well-developed business plan that is robust and developed using stakeholder targets and entailing an ambition to be among the best performing utilities higher returns for businesses that deliver lower costs
- more intrusive regulation and lower returns for businesses that do not perform.

Incentive regulation in the Australian energy sector[35]

Before the energy distribution businesses were subject to national regulation, the Victorian regulator introduced an Efficiency Benefit Sharing Scheme (EBSS) over opex and service performance incentive schemes in the early 2000s. Based largely on the incentive schemes in the UK water sector, the schemes were subsequently introduced by the Australian Energy Regulator (AER) to regulate all transmission network businesses in 2007 and distribution network businesses in 2008.

The AER has also introduced a capex-based EBSS, referred to as a Capital Expenditure Sharing Scheme (CESS) to apply to all distribution businesses by 2016. Previously the AER had expressed concerns about having a CESS on the basis that it could lead to benefits for businesses from deferring capex, but then including it in next period's capex allowance. This would create higher bills for customers over the longer term.

The EBSS and CESS are designed to overcome the problem of a declining incentive over each regulatory period for cost-efficiency and to provide incentives to improve opex and capex efficiency. The schemes allow businesses to retain a fixed percentage of any efficiency gains in NPV terms, irrespective of the nature of the reduction and the time the efficiency gain occurs. Both schemes also operate symmetrically so that outperformance and underperformance are shared between Network Service Providers (NSPs) and customers, and the sharing ratio of the gains based on the five-year carryover in NPV terms is 30:70 between businesses and customers. As the EBSS and CESS achieve the same sharing ratio, it neutralises the incentive between opex and capex.

The AER has recognised there may be issues with having incentives schemes where costs are inefficient. So, it has recently benchmarked opex across all businesses. According to the AER, this has revealed significant inefficiencies in a number of the NSW and Queensland state-owned

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[35] The information is drawn from: AER, *Final Decision, Electricity transmission network service providers Service Target Performance Incentive Scheme*, December 2012; AER, *Electricity Transmission network service providers service target performance incentives schemes – Final Decision*, December 2013; AER, *Better Regulation, Explanatory Statement, Capital Expenditure Incentive Guideline for Electricity Network Service Providers*, November 2013; AER, *Better Regulation, Explanatory Statement, Expenditure Forecasts Assessment Guideline*, November 2013.

businesses, resulting in the AER removing the EBSS until these businesses move closer to the frontier.[36]

The service target performance incentive scheme (STPIS) provides incentives for electricity transmission and distribution network service providers to improve or maintain service quality, while they pursue cost reductions. The scheme links the allowed revenue to performance against defined service measures. The current STPIS has three components:

- service component to reduce the frequency and duration of unplanned outages – maximum reward/penalty of $\pm$ 1% of the maximum allowable revenue
- market-impact component, which provides incentives to reduce impact of unplanned interruptions – maximum reward of 0-2% of the maximum allowable revenue
- network-capability component, encouraging businesses to complete low-cost projects that cost up to 1% of the maximum allowable revenue in any one year to deliver improvements in network capability, availability or reliability.

As a complement to the EBSS, which provides rewards for minimising controllable costs, the regulatory framework for the Australian electricity industry also provides mechanisms for dealing with large unanticipated material increases in costs within the regulatory control period that are beyond the business' control. Referred to as contingent projects and cost pass-through events, the two schemes reduce the risk of businesses not being able to meet obligations due to limits on its financial capacity from unfunded projects, and ensure customers do not pay for projects that do not occur within the regulatory control period.

Australian electricity transmission companies have been able to propose contingent projects as part of their regulatory submissions since 2005, when the National Electricity Rules (NER) came into effect. The rationale for this mechanism reflects the often lumpy nature of transmission investment driven by various trigger events often outside the network's control, and the significant size of such investments. In 2012 the Australian Energy Market Commission (AEMC) approved rule changes to allow distribution network businesses also to include contingent projects in their regulatory proposals. This contingent project mechanism is similar to that which applies to transmission networks, including setting the same threshold of the project capital expenditure exceeding the greater of 5% of the value of the annual revenue requirement for the first year of the relevant regulatory period, or $30 million.

The NER[37] specifies that any of the following events will be considered a cost pass-through event for electricity network businesses:

- a regulatory change event
- a service standard event
- a tax change event

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[36] See AER, *Final Decision Actew AGL distribution determination 2015–16 to 2018–19, Attachment 9 – Efficiency benefit sharing scheme*, April 2015; and AER , *Final Decision Ausgrid distribution determination 2015–16 to 2018–19, Attachment 9 – Efficiency benefit sharing scheme*, April 2015.

[37] NER rule 6.6.1 for electricity distribution networks, and rule 6A.7.3 for electricity transmission networks.

- an insurance event (for transmission only)
- a retailer insolvency event (for distribution only)
- any other event specified in a determination as a pass-through event for the determination.

These events and their associated pass-through processes are well defined in the NER. The pass-through events must be material, which the AER generally defines within its determinations as meaning 'the costs associated with the event would exceed 1% of the smoothed forecast revenue specified in the final decision in each of the years of the regulatory period that the costs are incurred'. Similar schemes apply in the UK.

Incentive regulation in the New Zealand energy sector

Since 2010, the Commerce Commission has regulated electricity distributors using what is known as default/customised price-quality regulation. This arrangement means there is a low cost way of setting price-quality paths for all suppliers of regulated services using the default price path (DPP). The regulations also provide individual businesses with the valuable option of having an alternative price-quality path set to meet special circumstances using a customised price path (CPP). The CPP is closer to the traditional building block approach that both the AER and IPART use to regulate energy and water utilities.[38]

In establishing the rules for the DPP to apply to the 16 electricity distributors over 2015–20, the Commerce Commission has made a number of improvements:[39]

- a new incentive-based approach to regulate service quality – revenue now depends on the average reliability of the network. If reliability is better than the target, future revenues will be increased, but if it is worse, any future revenues are reduced. The revenue increase and decrease are capped at ±1% of the maximum amount by which a business's revenue can go up on down depending on its performance
- more appropriate incentives for opex efficiency – businesses are no longer exposed to the full cost of responding to external events that have a temporary impact on expenditure, such as storms, and are unable to boost profits by concentrating costs in a particular year. The retention factor on opex efficiencies is now about 35%, based on the benefits of the efficiency gains being held for five years from the date that the gain is made
- a new incentive mechanism for capex efficiency – businesses are now allowed to retain a constant 15% of each dollar of capex they save. This retention factor reduces the maximum difference between capital and operating incentives that existed in the 2010–15 period
- new energy efficiency and demand management incentives – there is now a mechanism that compensates businesses for revenue foregone as a result of demand-side-management initiatives. The businesses are no longer penalised for investing in short-life assets, if that is more efficient than investing in long-life assets.

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[38] Commerce Commission, *Default price-quality paths for electricity distributors from 1 April 2015 to 31 March 2020, Main policy paper*, 28 November 2014.

[39] Commerce Commission, *Amendment to input methodologies for electricity distribution services and Transpower New Zealand – Incremental Rolling Incentive Scheme*, 27 November 2014.

These new incentive schemes appear to leave the Commerce Commission well placed to consider adopting menu regulation for the New Zealand energy sector in the 2020–25 regulatory period.

4.3 Sydney Water's regulatory framework

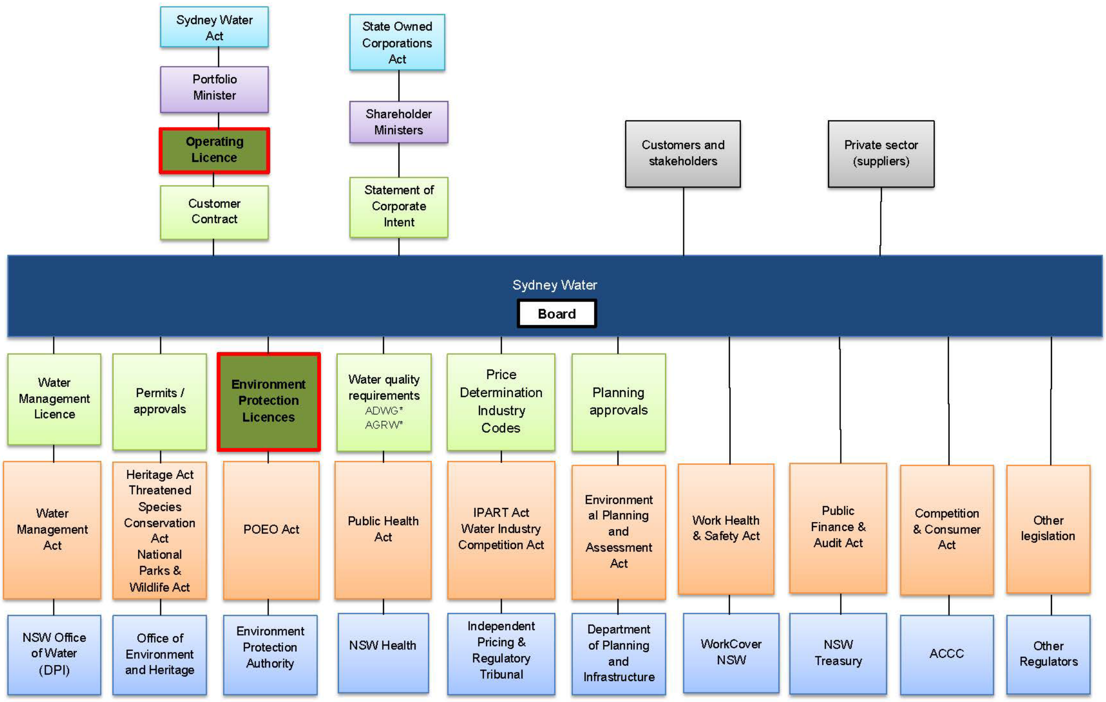
4.3.1 Our evolving policy, legislative and regulatory framework

Sydney Water operates in a complex and evolving regulatory framework, with multiple regulators and government agencies overseeing different aspects of its activities, especially in the environmental and public health areas. This framework has developed over time. There have been significant refinements and maturity since the introduction of the *State Owned Corporate (SOC) Act 1989* and the *Sydney Water Act 1994*.

In relation to the policies, legislation and regulation governing Sydney Water, there has consistently been a strong emphasis on need to safeguard and protect the interests of customers, the community and the environment. For example, the Sydney Water Act requires us to meet three equal-weighted objectives of being a successful business, protection of the environment, and protection of public health.[40] The equal importance attributed to each objective appears to have been a response to concerns that as a newly corporatised monopoly supplier subject to an immature regulatory regime, Sydney Water might choose to pursue business success by exercising market power – increasing prices and deteriorating the quality of services. The equal importance of each objective provides a safeguard against these adverse outcomes and acknowledges that Sydney Water was predominantly self-regulated before 1994.

[40] *Sydney Water Act 1994*, Sections 21(1)(a),(b) and (c)

Figure 4-1 – Our legislative and regulatory framework



* ADWG = Australian Drinking Water Guidelines / AGRW = Australian Guidelines for Recycled Water

Since 1994, the safeguards to protect society against public health risks and major pollution events have subsequently evolved through explicit legislative and regulatory arrangements and licensing regimes – the *Public Health Act*, the *Protection of the Environment Act*, Sydney Water's Operating Licence and Environment Protection Licences (EPLs). Also, economic regulation that constrains the exercise of market power by Sydney Water is done through IPART's pricing determination process and, since 2008, there has been a competition and licensing framework with third party access rules through the *Water Industry Competition (WIC) Act*. The range and complexity of regulatory and government agencies and the related instruments of Sydney Water's current legislative and regulatory framework are outlined in Figure 4-1. Further detail on the legislative and regulatory framework is outlined in Appendix 3.

In addition to the current safeguards, the portfolio minister also has the power to issue directions under the SOC Act for Sydney Water to complete projects in the public interest, which may not be in the shareholders' interests. To ensure this investment is not deemed imprudent, the portfolio minister can also direct IPART (under the *IPART Act 1992*) to provide for the cost to be recovered through Sydney Water's regulated charges. This was the case for the Ministerial direction issued for the Sydney Desalination Plant and recycled water initiatives for Rosehill-Camellia, and most recently for augmenting the stormwater network in Green Square. From Sydney Water's experience, the Minister has only exercised these powers in very exceptional circumstances.

4.3.2 Scope for improving policy, legislation and regulation

Sydney Water acknowledges that the policy, legislative, and regulatory arrangements have developed considerably and provides important safeguards to ensure we maintain minimum service standards.

Nevertheless, Sydney Water believes there is scope for improvement in the overall framework for the NSW urban water market, on the basis of the following:

- **Safeguards exist in multiple pieces of legislation, which creates scope for confusion**. For example, do the objectives in the *Sydney Water Act* requiring us to protect health and the environment mean that we must exceed the minimum standards in the existing operating and environmental licence conditions? Or do the licence conditions, which were developed after the Act, specify the intent of the obligations under the Act? The latter interpretation would provide a more practical, consistent interpretation of our obligations under the Act.
- **There is no guarantee that environmental protections are efficient.**
  The EPA under its legislation has no explicit requirement to consider the efficiency of standards or requirements it imposes on Sydney Water. IPART noted this in its recent submission to the EPA on the EPLs for wastewater treatment,[41] outlining that to the extent certain environmental regulations were inefficient, it could determine that only a portion of the associated costs be passed through to customers via prices. By doing this, IPART is effectively signalling that it will impose an efficiency requirement on the EPA's licence conditions. This could be significant in the future, given the substantial costs that could be incurred if existing licence standards were tightened.
- **The legislation has at times been added to on an incremental basis and driven by reaction to immediate market circumstances**.
  Policies, legislation and regulation, developed reactively or incrementally, can create gaps, uncertainty, confusion, inconsistency, over-regulation and unintended consequences. This could leave both Sydney Water and our customers worse off.

  For example, if another agency imposes a new standard on Sydney Water that causes a substantial increase in our costs mid-determination, we will not fully recover costs under the current regulatory regime. IPART could deal with this if they introduced a cost recovery methodology.

  Another example is the WIC Act. The WIC Act arose during the drought and was established to harness the innovation potential of the private sector and to promote recycling. The three main elements of the Act were that it set up a licensing framework for private water utilities, a third party access regime, and gave IPART the power to arbitrate on sewer mining disputes. However, it has provided for very limited new entry by smaller providers on the competitive fringe, with only about a dozen separate schemes covered by just over 20 separate licences. At this stage, the third party access framework of the WIC

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[41] IPART, *IPART submission on Environment Protection Authority Review of Sydney Water Corporation's Environment Protection Licences for Sewage Treatment*, 1 May 2015.

Act has not been used. Given that IPART perceives there may be limits in how the wholesale access regime operates under the WIC Act, it has signalled that as part of the 2015–16 pricing review for Sydney Water and Hunter Water, it will consider regulating wholesale access prices.

- **There is a fundamental tension between a policy of maintaining postage stamp pricing, and a desire to promote competition**.
  The policy of postage stamp pricing of services is effectively a universal service obligation. It means those geographic regions that have lower water and wastewater costs subsidise those with higher water and wastewater costs. If competition is encouraged, entrants will look to enter those higher margin areas. Unless the wholesale access price includes a contribution towards maintaining the postage stamp price, it will be set too low, and there is the potential for inefficient entry. This will artificially increase the postage stamp price – the entirely opposite outcome for an effectively competitive market. The NBN is dealing with a very similar issue, where the uniform wholesale postage stamp price is being undercut by TPG in its profitable CBD and metropolitan markets. For NBN to recover costs in the face of such entry, it must charge higher postage stamp prices or have TPG contribute towards preserving existing postage stamp price levels.
- **Despite the strong safeguards in place, there is no incentive for businesses to actively promote better outcomes for customers, the community and the environment**.
  The IPART regulatory framework that Sydney Water strongly supported previously was a more low-powered or weak incentive-based regulatory regime that typically prescribed prices and tariff structures. We propose that, in line with best practice regulation, IPART could introduce stronger incentive-based schemes into the regulatory framework to promote the long-term interests of customers.

Sydney Water appreciates IPART does not have the remit to deal with all the shortcomings and broad ranging issues of the existing framework. We do support the initiatives IPART is currently engaged in to highlight and address some of the gaps with the existing framework (for example, no efficiency requirement for EPLs, consideration of wholesale pricing in the price review). Sydney Water believes that IPART can influence a key component for improving the overall framework. That is, to complement the existing safeguards, IPART can introduce regulation that provides stronger incentives for businesses to promote better outcomes for society.

4.3.3 IPART's regulation of Sydney Water

The underlying economic regulatory framework governing the NSW urban water market, and the Australian water market more generally, has remained relatively unchanged since 1993. The prices IPART determines are based on a fairly elementary price-cap regulation building-block model.

In this simple price-cap model employed by IPART, expected demand and forecast opex and capex are subject to an up-front efficiency audit along with the an assessment of prudency of actual capex over the previous regulatory period. From this the allowed revenues are estimated, and then based on levels of expected demand, prices and the underlying tariff structures are determined by the regulator for water, wastewater and stormwater services for a four-year period.

This form of regulation ensures customers pay for the efficient costs of the business, and do not fund what the regulator deems to be imprudent past capex or inefficient forecast capex or opex. Also, once tariffs are determined, the changes allowed within the regulatory period are only from the inflation adjustments that occur every year. Unlike other price-cap regulated businesses, Sydney Water does not have the flexibility to adjust the prices it sets under the cap, and IPART has traditionally set price levels and prescribed tariff structures.

This type of monopoly regulation, involving a large upfront assessment of past and future forecast expenditure before the regulatory period to set prices and tariff structures, is beneficial for both customers and businesses where there is a relatively predictable, foreseeable and stable market environment over the course of the regulatory period. The current regulatory framework is less appropriate for dealing with uncertainty, as there is an inability to respond to material new information revealed during the regulatory period.

Under the current regulation, there is no way to adjust tariff structures to ensure prices are cost-reflective and add value to customers. If IPART establishes the right financial incentive schemes, these would encourage Sydney Water to respond more efficiently to changes in information and divert from ‘approved’ plans if this maximises benefits for customers.[42] Based on experience in the UK and Australia, financial incentives can be delivered mechanically providing confidence to businesses that they will be rewarded (or penalised) for changing behaviours. Where there is greater uncertainty, these types of regulations will better enable us to deliver outcomes in the best interests of our business, our customers, the community and the environment.

Sydney Water believes that over the past decade there has been considerable uncertainty in the urban water market in NSW within regulatory periods. This uncertainty will continue in the future with a range of current, emerging and future challenges facing the NSW urban water market. There is consequently a need to modernise economic regulation to better account for uncertainty and to ensure Sydney Water can continue to deliver outcomes that are in the long-term interests of customers. We believe economic theory and real world outcomes from the UK water and energy sectors demonstrate that the best-performing regulated businesses will also be those subject to best practice regulation.

4.4 Sydney Water’s proposal to modernise regulation

Sydney Water considers that any best practice regulatory economic framework should provide firms with strong incentives to do the right thing and pursue allocative, productive, and dynamic efficiencies. It should encourage firms to innovate, and drive more cost-effective solutions than if outputs were prescribed externally to the business. Strong incentives also allow the regulator to ‘step back’ from detailed operational matters of the business, potentially reducing the overall burden of regulation on both the regulator and the firm. This avoids the risk that information asymmetry leads regulators to make decisions about the business that are not in customers’ interests.

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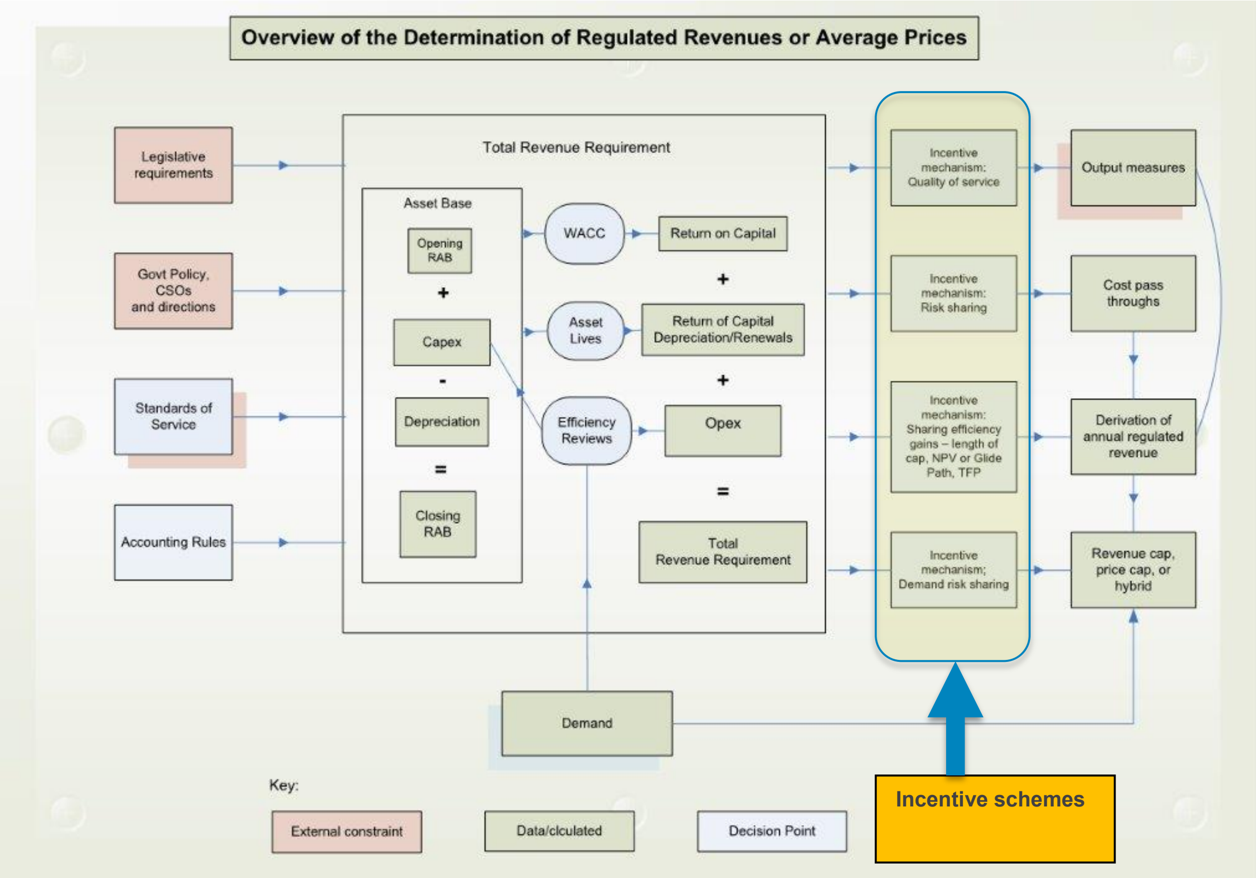
[42] The current approach provides an incentive to respond flexibly and efficiently to changing circumstances. These incentives diminish rapidly during the regulatory period. By the last year of the regulatory period, when circumstances are most likely to have changed and so changes in expenditure may be most needed, the regulated business only achieves a very small reward for seeking the lowest cost solution.

Despite being subject to price-cap regulation, IPART has not provided Sydney Water with the pricing flexibility normally allowed for under a typical price-cap regulatory regime. IPART has in the past prescribed both the level and the structure of all Sydney Water prices for water, wastewater and stormwater services to residential and non-residential customers. This is at odds with the approach IPART has for regulating electricity prices, where price flexibility was provided through a weighted average price cap (WAPC)[43]. While this prescriptive pricing is not supported by Sydney Water currently, we acknowledge that we have previously supported regulation with some price prescription. This was driven by a view that significant or contentious price changes may be more acceptable to customers if they had the backing of the regulator.

As highlighted above, IPART's current approach to incentives is at odds with the regulation of the water sector in the UK, and the energy sectors in the UK, Australia and New Zealand, where numerous enhancements have been made to traditional price-cap regulation. The incentive schemes aim to ensure regulated businesses have the necessary flexibility to promote outcomes in the long-term interests of customers. These schemes have continually evolved and have delivered significant benefits to customers and rewarded businesses for better customer outcomes. The importance of incentive regulation and the benefits it has realised worldwide were highlighted by Jean Tirole being awarded the Nobel Memorial Prize in Economic Sciences in 2014, in part, for his contribution to the area.

[43] IPART also previously used a revenue cap and a hybrid approach that provided for similar pricing flexibility.

Figure 4-2 – Overview of the determination of regulated revenues of average prices



Sydney Water believes IPART now has an opportunity to move further towards best-practice regulation, by strengthening the current incentives, and modernising regulation for the urban water market in NSW and Australia. We are proposing new schemes for 2016–20 that involve:

- greater price flexibility (within clearly set boundaries), by introducing a weighted average price cap (WAPC), which will enhance allocative efficiency over time
- providing stronger incentives for productive efficiency and cost minimisation by introducing:
  - an efficiency benefit sharing scheme for opex and a partial scheme for capex
  - a cost recovery scheme with a cost pass-through mechanism for material increases in cost within the regulatory period.

Details of each of our proposed schemes are outlined in Chapter 10.

Sydney Water believes these proposals will allow improved performance and deliver better long-term outcomes for customers. The schemes will help create a more robust long-lasting regulatory framework for IPART that encourages us to continue to 'do the right thing', and drives further allocative, productive and dynamic efficiencies, because this is also the 'right thing' for our customers. It keeps the key elements of the building blocks that contribute to the Total Revenue Requirement. As shown in Figure 4-2, the incentive schemes augment the traditional building blocks used to determine price.

In assessing our proposed modernising of regulation, we encourage IPART to consider whether the outcome is better than what would have happened without these incentive schemes, rather than whether they are perfect. That is, will the incentive schemes, motivate Sydney Water to act to deliver better value for our customers?

As shown in Section 4.2, there is much existing practice from overseas and other sectors. Our proposed schemes have been heavily based on tried and tested incentives that have delivered significant benefit to customers since the early 2000s. To reduce any risk of adverse outcomes to customers, we propose that IPART introduce the schemes in a measured way, with a roadmap to strengthen the incentives over time and introduce additional schemes in future regulatory periods (for example service performance incentives and demand management incentives).

Chapter 11 also identifies existing regulations that we believe are promoting sub-optimal outcomes, resulting in proposed changes to the regulatory treatment of tax and land sales.

5 Annual revenue requirement, prices and bills

Key messages

- We are proposing an average revenue of $2.4 billion a year over 2016—20, which is about $149 million lower than the yearly target in the current price path.
- We are proposing lower prices in real terms:
    - Residential water and wastewater service charges will drop by 4.9%, and water usage price by 13.9% in 2016–17. Prices then remain steady in real terms over the price path.
    - Stormwater service charge will also drop by about 11% in real terms over the price path.
- Residential customers will save about 8.6% in their annual water and wastewater bills in real terms, with virtually no increase in nominal terms over the four-year pricing period.
- The bill saving is about $105 ($2015–16) in the first year of the pricing period for a residential single household.
- Most non-residential customers will experience up to a 10% saving on their bill in real terms.

This chapter provides an overview of Sydney Water's proposed annual revenue requirement of $9.7 billion, the pricing of services to customers, and the effect on customer bills. The chapter is structured as:

- an overview of our 2016 proposal
- the annual revenue requirement, with an explanation of the key drivers based on the RAB-based building block approach to regulation
- our proposed prices for water, wastewater, stormwater services, and other products
- the expected savings to our customers from the proposed price changes
- proposed changes to our tariff structures.

5.1 Overview

In this chapter, we have calculated our annual revenue requirement (ARR) and prices based on a four year determination period 2016–17 to 2019–20.

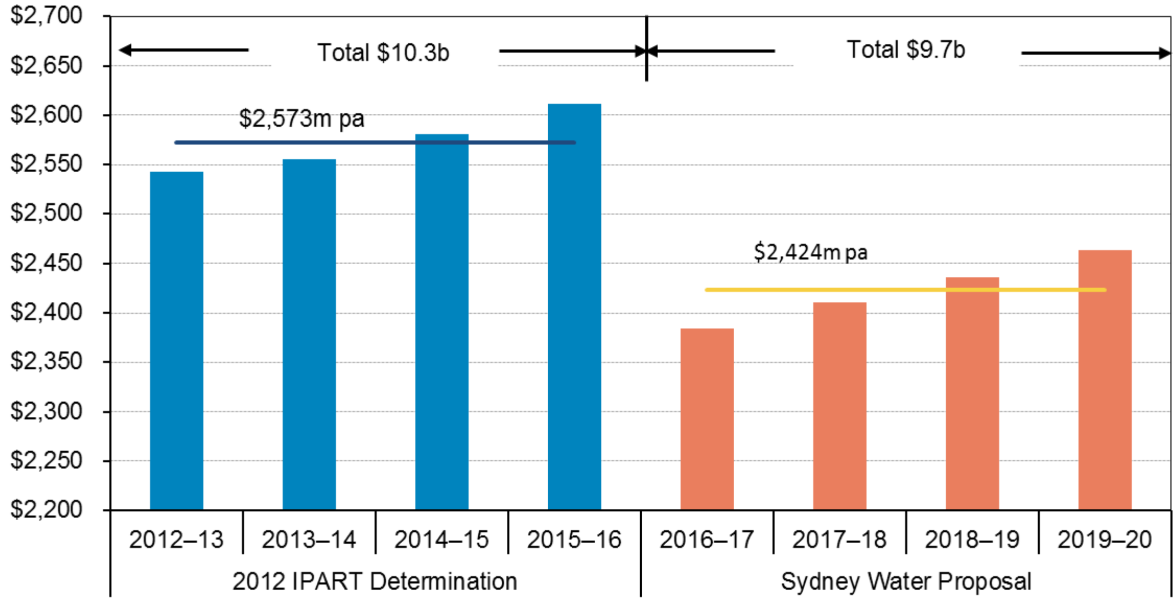
5.1.1 Annual revenue requirement

Sydney Water proposes a total ARR of $9.7 billion over the next price path, $600 million below the level set in the 2012 pricing determination (see Figure 5-1). The reduction is made possible by operating and capital cost efficiencies, and lower cost of funding (Figure 5-6).

With the proposed price path, the target revenue for water and wastewater (Figure 5-2) services in the final year of this submission (2019–20) is 5.7% in real terms ($146 million) lower than the determined target revenue of the final year (2015–16) of the 2012 Determination.

Similarly, for stormwater services (Figure 5-3), the proposed target revenue in 2019–20 is 4.8% lower than the level determined for 2015–16 (with appropriate volume adjustment)[44].

Figure 5-1 – Target revenue ($2015–16 million)



[44] The volume estimated for calculating the stormwater revenue (under the new area based charging) in the 2012 Determination was inaccurate. To compare like with like, Figure 5-3 incorporates the appropriate volume adjustment.

Figure 5-2 – Notional and target water and wastewater revenues ($2015–16 million)

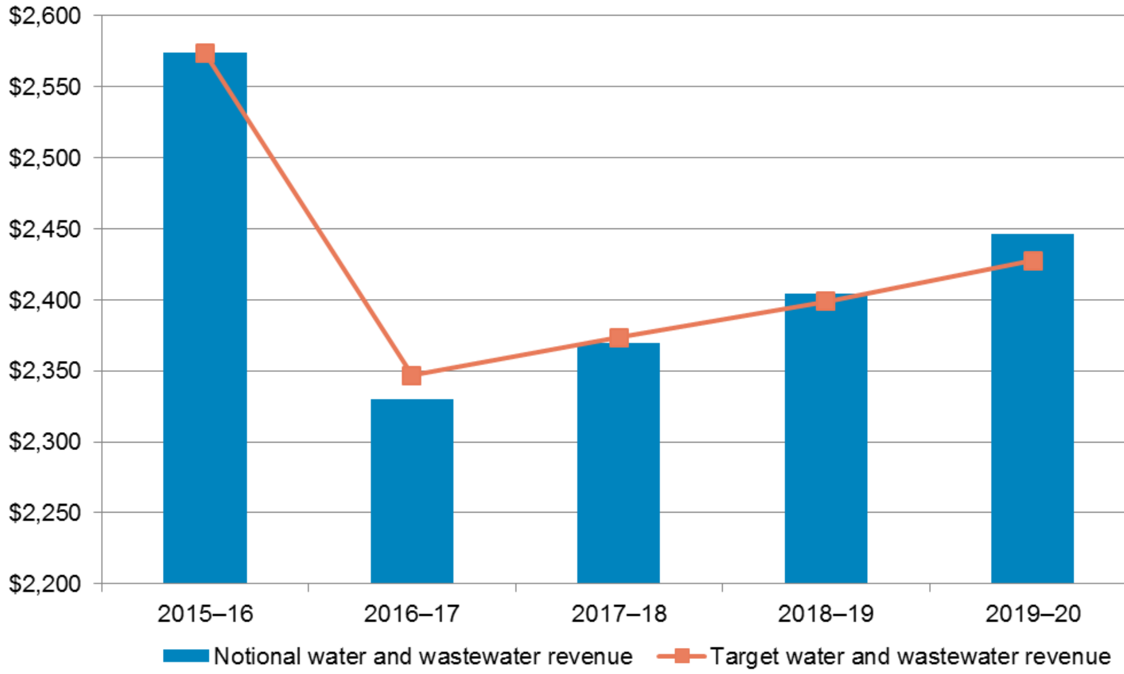
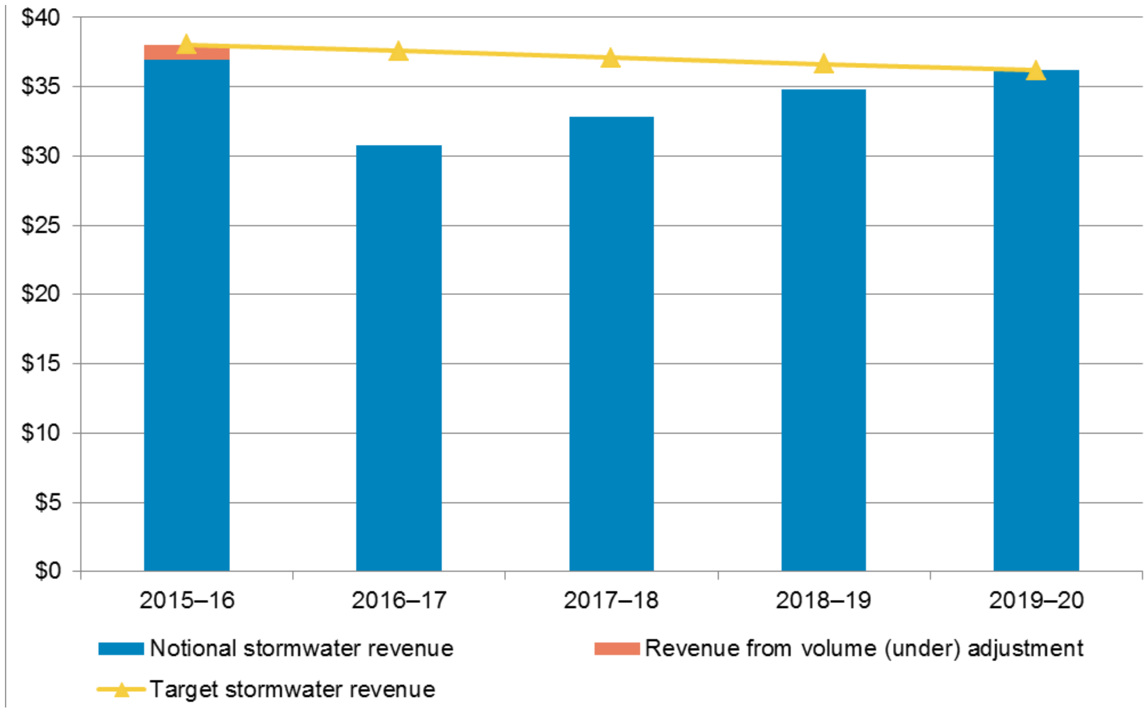


Figure 5-3 – Notional and target stormwater revenue ($2015–16 million)



5.1.2 Building block revenue

Figure 5-4 shows Sydney Water's 2016 proposed ARR, represented by the key elements of the 'building block' approach to price setting.

Figure 5-4 – Building block revenue for 2016 proposal ($2015–16 million)

Annual Revenue Requirement (ARR)

	Opex Total	**$5,002**	*51.7%*
	- Core opex	$3,079	
	- Water purchase and treatment	$1,923	
Plus	**Return on Assets**	**$3,109**	*32.1%*
Plus	**Regulatory Depreciation**	**$1,289**	*13.3%*
Plus	**Return on Working Capital**	**$24**	*0.2%*
Plus	**Tax Allowance**	**$260**	*2.7%*
	Notional ARR (incl tax)	**$9,685**	
	Target ARR (incl tax)	**$9,695**	

Note: 1. The values are the sum of 4 years of proposed costs for 2016–20
2. The return on assets, depreciation and return on working capital are mid-year values

5.1.3 Prices

We are proposing prices that, in real terms, are lower than the levels at 2015–16. Customers will benefit from a 4.9% drop in water and wastewater service charges, and a 13.9% drop in the water usage price. The proposed prices are summarised in Table 5-1.

These prices are consistent with our proposal for a weighted average price cap (WAPC) approach to pricing (see Chapter 10). We propose that prices only rise by inflation over between 2017–18 and 2019–20, equivalent to a K = 0, so that WAPC ≤ CPI + 0.

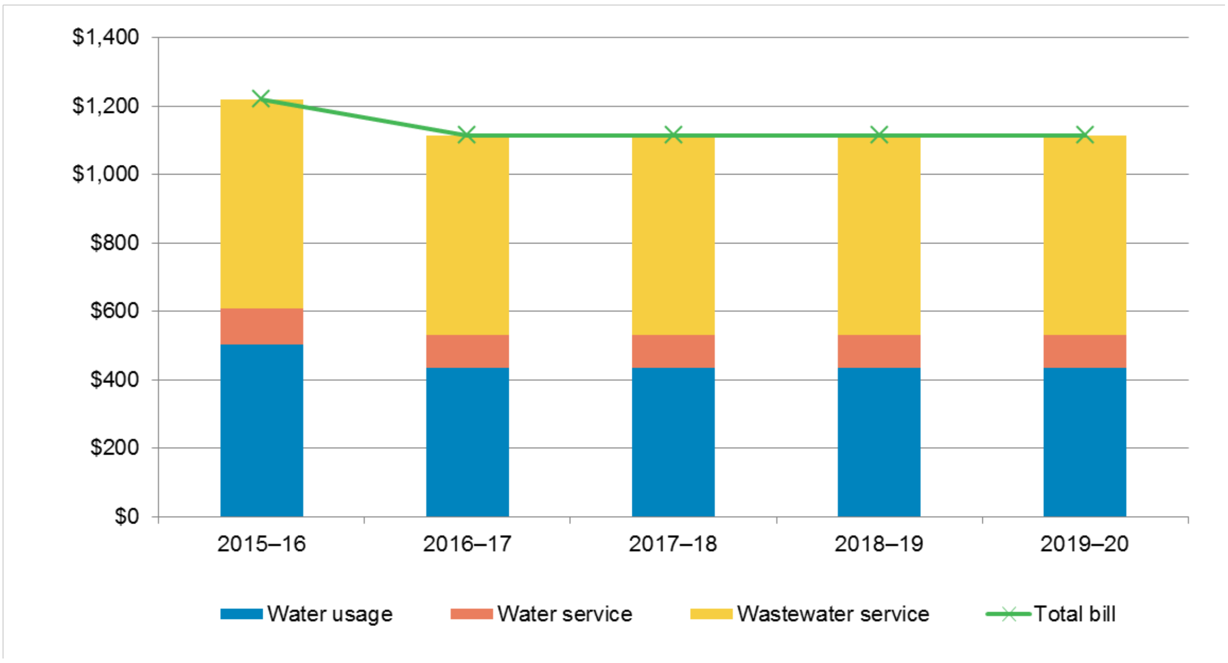
Table 5-1 – Proposed prices of major products ($2015–16)

	2016–17	2017–18	2018–19	2019–20
Water				
Usage charge ($/kL)	1.97	1.97	1.97	1.97
Service charge - residential ($/year)	98.52	98.52	98.52	98.52
Wastewater				
Usage charge ($/kL)	1.10	1.10	1.10	1.10
Service charge - residential ($/year)	582.34	582.34	582.34	582.34
Stormwater				
Service charge - residential single ($/year)	83.96	81.54	79.20	76.92
Service charge - residential multi ($/year)	30.79	29.90	29.04	28.21

5.1.4 Savings for customers

Residential customers with an average water use of 220 kL a year will save 8.6% or $105 on their bill in 2016–17. This saving will remain constant over the rest of the price path. Figure 5-5 shows the relative components of the total bill.

Figure 5-5 – Component of residential water and wastewater bill with 220 kL a year water use ($2015–16)



Overall, of our non-residential customers:

- 43% will receive up to a 10% real bill saving
- about 50% will receive a 15–17% real bill saving
- about 7% will see a 35–39% real bill saving.

Figure 5-6 – Contributing factors for residential customer bill reduction ($2015–16)

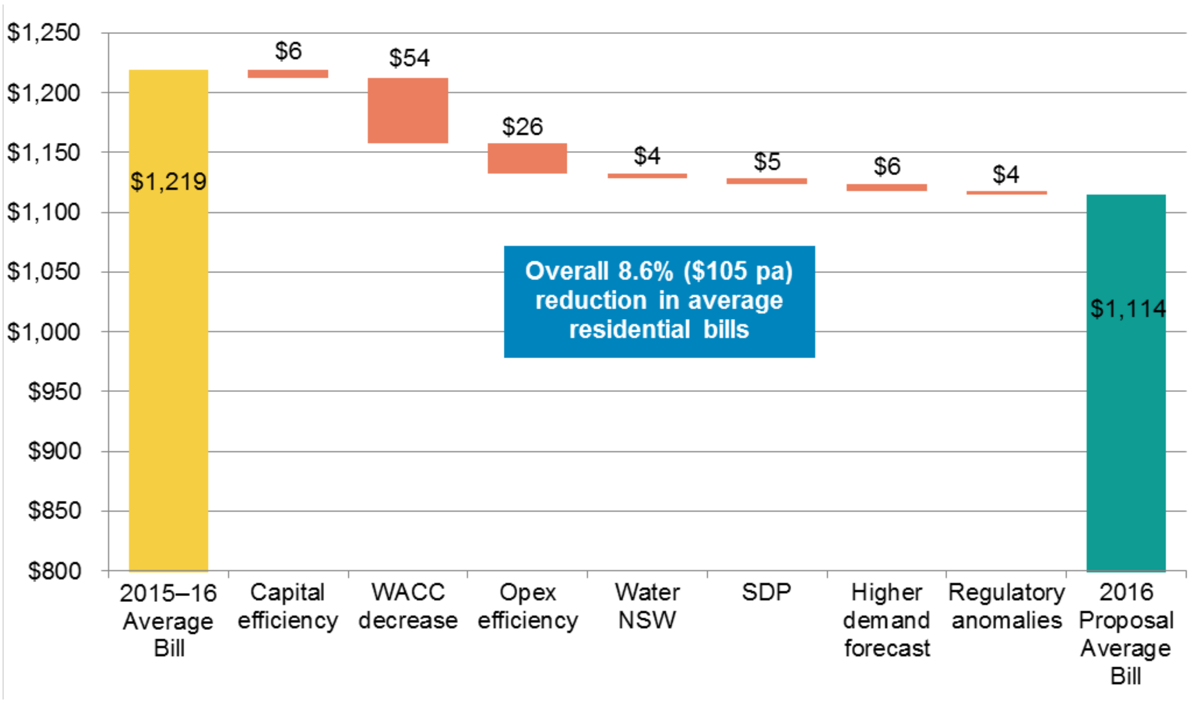


Figure 5-6 shows the main factors that drive the residential bill saving. About 70% of the reduction is driven by external factors, such as lower regulatory rate of return (WACC), cost benefits passed through from the bulk water suppliers and higher water demand forecast (that drives a lower price). Our capital and operating efficiencies provide about 30% of the bill reduction.

5.1.5 Changes in tariff structure

To allocate the target revenue requirement between customer groups, we have used the proposed tariff structure, based on the number of deemed 20 mm connections[45].

Sydney Water has also proposed minor changes to dual occupancies, private joint service arrangements and other tariff structures, as detailed in Section 5.5.

5.2 ARR

5.2.1 Approach – proposed target ARR

We use the building block approach as determined by IPART to calculate our notional revenue requirement for water, wastewater and stormwater drainage services in each year of the price path. For water and wastewater, we propose target revenues for each year on an NPV-neutral basis. For stormwater, the revenues over the price path are slightly NPV-positive. For all three services, we aim to balance the interests of customers and Sydney Water in providing and using water and wastewater services.

[45] This proposed methodology aligns with the preferred methodology by IPART for allocating residual revenue requirement; as laid out in its discussion paper, IPART, *Cost-of-service of water and sewerage services for metropolitan water utilities*, November 2014.

To derive the revenue requirement, we exclude costs of unregulated services from the cost base used in the building block calculations. Further details on opex and capex are set out in Chapters 7 and 8. The costs for unregulated services, as shown in Table 7-5 for the proposed 2016–20 period are relatively insignificant, averaging only about $14 million a year.

Smoothing of the price path

Sydney Water's forecast costs, and subsequently the notional ARR, vary from year to year. If we propose prices that are strictly aligned to the yearly profile of the notional ARR, it is likely that there would be unnecessary fluctuations in prices over the period, which may be confusing and not necessarily in customers' interests. To avoid this, we propose a profile of cost recovery that reduces the potential adverse effects on customers' bills. We refer to this process as 'smoothing'.

As part of the submission process, we have evaluated various options for smoothing the forecast cost profile for 2016–20. In designing the preferred path for prices, bills and revenue (that is, deriving a target revenue requirement), we have considered the key principles shown in Table 5-2. We have based this on our understanding of what customers and Sydney Water would prioritise, and existing regulatory guidelines.

Table 5-2 – Key factors in smoothing of price path

Key factors	Principles
Customers	No real average bill increase Immediate savings preferred Steady prices over time
Sydney Water	Revenue stability Ability to manage customer bills beyond 2020 to avoid large swings To maintain key financeability ratios
Regulatory guidelines/practice	NPV neutral over 4–year price path No cross-subsidy between products However, Sydney Water note that the price path provided by IPART in 2012 was set in a NPV positive manner to allow for the large tariff changes imposed.

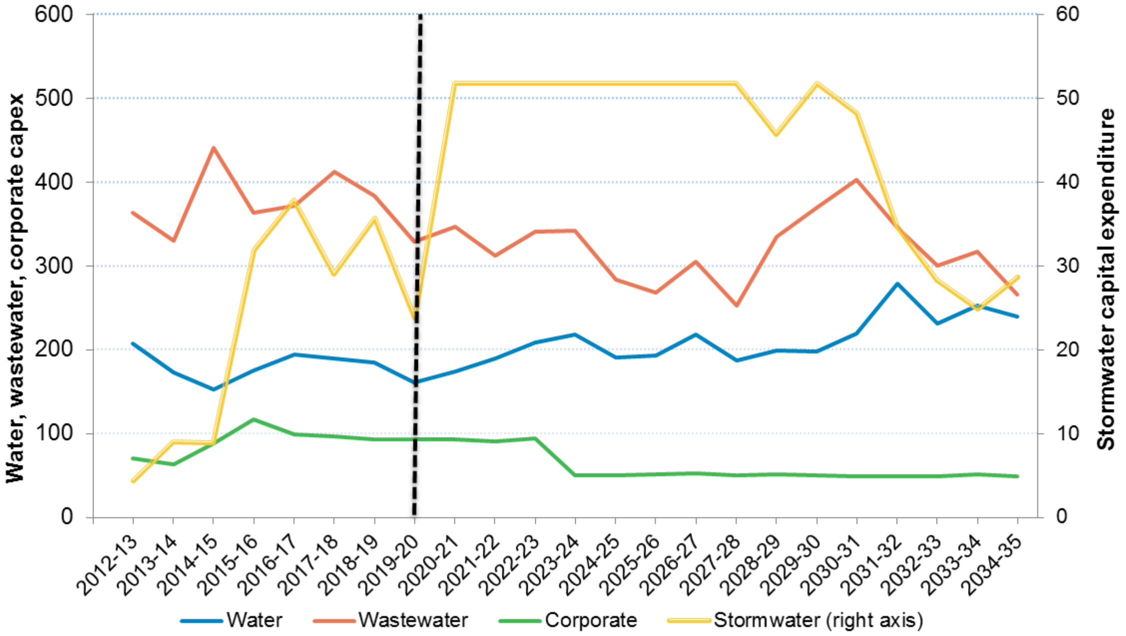
We set price levels for water, wastewater and stormwater services considering our revenue requirement and bill impacts for customers. The price path we propose in this submission is:

- Water and Wastewater – a large price drop in 2016–17 followed by flat prices (in real terms) for the remaining three years. The revenue requirement is NPV-neutral over the four years, and closely reflects the expected profile of cost (see Figure 5-2).
- Stormwater – a small price drop in 2016–17 and further price decreases (in real terms) over the price path to converge at the 2019–20 price. The revenue requirement is marginally NPV-positive over the four years.

When considering price levels and profiles over time, we look at how we can maintain stable prices in the longer term, over the 2016–20, 2020–24 and 2024–28 price periods. For example, our longer term infrastructure investment plans for various products suggest an increase in stormwater investment (see Figure 5-7) in the 2020–24 period. We are also mindful of the current low interest rate environment that may not continue in the long-term. Rates may revert back to previous levels, so the WACC for future regulatory periods may well be higher, putting upward pressure on prices for all services.

For stormwater, in the light of a higher forecast capital requirement in the longer term and in the interest of price and revenue stability, we propose that the stormwater prices change smoothly over the determination period in real terms. We propose that the targeted revenue in the final year for stormwater equals the notional revenue requirement of stormwater for that year. With this price path, the proposed revenue for stormwater in 2016–20 will be marginally NPV-positive. In the interest of price stability, we propose stormwater revenues be NPV-negative in the 2020–24 period, and so NPV-neutral over the next eight years.

Figure 5-7 – Twenty-year capex spend profile by products ($2015–16 million)



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Establishment of ARR for water, wastewater and stormwater services

The starting point in establishing the ARR for standard regulated services is to calculate the notional revenue requirement using the 'building block' approach.

As part of the process, we have also forecast the amount of revenue that we will generate from separately regulated services, such as trade waste services and a range of other fees and charges. We deducted these other revenues from the notional revenue to avoid double recovery. Sydney Water's infrastructure and operating costs are complex and extensive and it is difficult to accurately allocate costs to some of these minor services. To allow for this, we include costs associated with these services in our ARR, and in parallel, we deduct the revenue from these sources from the ARR to determine the revenue from water, wastewater and stormwater charges.

Similarly, for the costs of the Blue Mountain Septic Pump Out (BMSPO) scheme, where costs are included in the ARR, they are removed from the overall revenue requirement against the contributions expected from the NSW Government. We have also deducted a proportion of the forecast rental income from notional revenue requirement, in line with IPART's benefit sharing of revenue between Sydney Water and customers.

Sydney Water has proposed prices on the basis that SDP will be in 'shutdown' mode for the entire 2016–20 period, and that any costs associated with switching on the plant (if and when it happens) be passed on to customers. Our proposal for recovering SDP costs through the cost pass-through mechanism when it is in operations is separately detailed in Chapter 10.

5.2.2 Proposed annual revenue requirement to 2020

Table 5-3 shows our proposed notional revenue requirement and target revenue requirement.

Table 5-3 – The elements of notional revenue requirement ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Operating expenditure		1,252.8	1,254.0	1,248.2	1,247.1
Allowance for return on assets		752.0	770.0	787.0	800.1
Allowance for regulatory depreciation		293.5	312.7	332.2	350.7
Allowance for return on working capital		5.6	5.7	6.0	6.5
Total notional revenue (before tax)		**2,303.9**	**2,342.5**	**2,373.4**	**2,404.5**
Allowance for tax obligations		57.0	59.8	65.4	78.3
Total notional revenue requirement		**2,360.9**	**2,402.3**	**2,438.8**	**2,482.8**
Total target revenue	**2,610.9***	**2,384.5**	**2,410.6**	**2,435.5**	**2,464.0**
Real post–tax WACC	5.6%	4.6%	4.6%	4.6%	4.6%

* The June to June CPIs as advised by IPART in the *Submission Information Package* are used for escalation from $2011–12 to $2015–16

Chapter 7 details our proposed operating expenditure.

We calculated the allowance for a return on assets by multiplying the rate of return by the value of the regulated asset base (RAB) and half the capital expenditure and disposals in each year of the determination period.

Deciding on the appropriate rate of return on our RAB is an important step in setting our notional revenue requirement. Further details on the proposed weighted average cost of capital (WACC) can be found in Chapter 9. We used a real post-tax WACC of 4.6% in calculating our ARR.

The allowance for regulatory depreciation (that is, a return of assets) is estimated by dividing the asset value by its remaining life. Adjustments for asset changes through the year are also required in estimating depreciation. In this section, we also set out the calculation of regulatory depreciation.

The allowance for tax obligations is estimated based on IPART's post-tax framework as published in December 2011.

The allowance for return on working capital is estimated based on IPART's standard approach in setting the allowance for working capital. In this approach, IPART calculates the payables, receivables and inventory requirements based on some pre-assumed days for sales and expenditure.

Setting and adjusting the Regulatory Asset Base (RAB)

To calculate the allowance for a return on assets and the allowance for regulatory depreciation, we have calculated the forecast opening RAB as at 1 July 2016 and rolled forward the RAB to the end of the determination period.

The method for rolling forward the RAB considers capital expenditure, asset disposals, depreciation and an adjustment for inflation. In simple terms, capital expenditure and the inflation adjustment are added to the opening RAB, and asset disposals and depreciation are subtracted. This provides a closing RAB position. The opening RAB position for any year is equal to the closing RAB position of the previous year. This process has been followed each year for which the RAB has been rolled forward.

The resulting annual values for the RAB are shown in Table 5-4 (2012–16) and Table 5-6 (2016–20).

The initial RAB was established by IPART in 2000 (this is known as 'the line in the sand') and it has been rolled forward using this method since then. A specific new issue in this review is the adjustment for finance leases (see below).

Forecast opening RAB as at 1 July 2016

To establish the value of the opening RAB, we have rolled forward the 1 July 2012 RAB to 30 June 2016 by including the actual capital expenditure to 31 December 2014, and forecast spend for the remaining 18 months.

Table 5-4 – Annual value of the RAB for 2012–16 ($ nominal, million)

	2012–13	2013–14	2014–15	2015–16
Opening RAB	12,868.5	13,549.6	14,254.2	14,967.5
Capital expenditure	597.1	548.2	682.4	691.4
Cash capital contribution	1.9	0.0	12.2	0.0
Asset disposals[1]	7.0	13.9	42.1	80.3
Regulatory depreciation (allowed)	223.0	244.3	264.3	283.2
Indexation	315.9	414.5	349.6	381.8
Closing RAB	**13,549.6**	**14,254.2**	**14,967.5**	**15,677.2**

[1]The asset disposals are net sale proceeds after benefit sharing using Sydney Water's proposal.

Other adjustments we made in the rollover of the 2012 opening RAB (see Table 5-4):

- We deducted the actual capital contributions from the RAB, including $10 million in 2014–15 from the Housing Accelerated Funds (HAF) for the Green Square development (see Chapter 11 for further details).

- We deducted the actual asset disposals (including corporate assets) to December 2014, and estimated disposals for the period, January 2015 to June 2016. The calculation for this disposal amount (that is, sales proceeds net of sales costs) deducted has incorporated the 50% benefit sharing proposal for property sales, as detailed in Chapter 11.
- We deducted regulatory depreciation, as allowed for by IPART in the 2012 Determination.
- We indexed the allowance for actual and forecast inflation, based on a combination of indexing the annual opening RAB and half the capital expenditure and disposals. This is because we assume that half occurred at the beginning of the year and half at the end of the period.

Table 5-5 shows the actual and forecast regulatory capital expenditure (and related adjustments for pricing) used in the rollover process for the opening RAB. Two major adjustments that we have made to derive the capital expenditure to be used in the RAB are:

- we adjusted the ‘Commercial Agreement Adjustments’ to reflect changes to the asset recognition timing (on a cash payment basis), for assets built by developers for us
- we deducted Rouse Hill land acquisition costs, as these costs are to be recovered through the Rouse Hill land charge.

More information on capital expenditure is provided in Chapter 8.

Table 5-5 – Regulatory capital expenditure and adjustments for 2012–16 period ($ nominal, million)

	2011–12	2012–13	2013–14	2014–15	2015–16
Capital Investment Programs					
Water	169.0	191.9	164.5	149.0	175.3
Wastewater	333.2	337.0	314.6	420.8	377.5
Stormwater (incl 16A Green Square)	9.4	4.1	8.6	8.7	31.9
Rouse Hill drainage					
Land acquisition		5.4	1.1	11.4	2.5
Civil projects[1]		0.4	0.2	0.6	1.3
Corporate	90.3	64.9	59.9	86.6	116.9
Total capital investment programs	601.8	603.6	548.9	677.1	705.3
Commercial Agreement Adjustment					
Water	3.9	-0.5	0.1	6.7	1.8
Wastewater	5.9	-0.7	0.2	10.0	-13.3
Rouse Hill Drainage Adjustment					
Land acquisition	0.0	-5.4	-1.1	-11.4	-2.5
Capital expenditure in RAB					
Water	172.9	191.4	164.7	155.6	177.1
Wastewater (incl RH civil works)	339.1	336.6	315.0	431.4	365.5
Stormwater (incl 16A Green Square)	9.4	4.1	8.6	8.7	31.9
Corporate	90.3	64.9	59.9	86.6	116.9
Total capital expenditure in RAB	**611.7**	**597.1**	**548.2**	**682.4**	**691.4**

[1] The capital expenditure of the Rouse Hill drainage civil project is reallocated to wastewater civil capital expenditure. This is consistent with the allocation in IPART's 2012 Determination.

Note: The 2011–12 actual capital expenditure is to replace the forecasts in IPART's 2012 Determination.

RAB rollover to the end of the 2016 price path

To roll forward the RAB to 30 June 2020 (see Table 5-6 below), we made the following adjustments.

- We established separate RABs (one for water, and one wastewater) for the finance lease assets, with their civil, electrical, mechanical, electronic and non-depreciating (CEMLND) asset class values. See Chapter 11 for details of our proposed regulatory treatment of the leases.
- We adjusted the opening RAB by $17.1 million for unrecovered land acquisition costs for Rouse Hill stormwater. We only require a limited amount of land to build civil structures. See Chapter 11 for details of our proposal for the Rouse Hill land charge.

- We added the forecast efficient capital expenditure, in line with our submission, (details in Chapter 8) to the closing value of the RAB from the previous year.
- This capital expenditure includes $24.1 million ($2015–16) for civil works for Rouse Hill stormwater. Allocating these costs to the wastewater RAB is consistent with IPART's 2012 Determination. The treatment reflects that the capital expenditure on drainage-related civil works (including land on which civil works sit) in the Rouse Hill area improves the quality of water discharged into the Hawkesbury-Nepean river system. As water quality improvement benefits all residents of the Sydney basin, under the beneficiary pays principle, all Sydney Water's wastewater customers should share the associated costs.
- We made other adjustments to the value of the RAB for each year, including deducting regulatory depreciation. The depreciation for finance leases is calculated separately, based on the assumed useful life of the lease assets, and is discussed in Chapter 11 and Appendix 10[46].
- We deducted forecast disposals of assets, as detailed in Chapter 11.

Table 5-6 – Annual value of the RAB for 2016–20 ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20
Opening RAB				
RAB excl finance leases	15,677.2	16,095.1	16,507.8	16,861.8
RAB of finance leases	683.2	667.1	650.9	634.8
Adjustment[1]	17.1	0.0	0.0	0.0
Total opening RAB	16,377.6	16,762.2	17,158.7	17,496.6
Capital expenditure	710.3	735.2	696.4	605.3
Cash capital contribution	0.0	0.0	0.0	0.0
Asset disposals[2]	25.6	18.8	18.8	18.8
Regulatory depreciation				
Depreciation excl finance leases	284.0	303.7	323.6	342.6
Depreciation of finance leases	16.1	16.1	16.1	16.1
Total depreciation	300.2	319.8	339.8	358.7
Closing RAB	**16,762.2**	**17,158.7**	**17,496.6**	**17,724.5**

[1] The adjustment is the unrecovered land acquisition costs for Rouse Hill stormwater.

[2] The asset disposals are the net sale proceeds after benefit using Sydney Water's proposal.

[46] This information is commercial-in-confidence and only made available to IPART.

We made other adjustments to the 2016–17 to 2019–20 forecast regulatory capital expenditure to derive the capital expenditure to be used in the RAB. These are:

- the 'Commercial Agreement Adjustment'
- the Rouse Hill land acquisition cost adjustments (see Table 5-7).

Table 5-7 – Regulatory capital expenditure and adjustments for 2016–20 ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20
Capital Investment Programs				
Water	194.8	189.4	185.4	161.2
Wastewater	371.9	404.5	386.7	337.0
Stormwater (incl 16A Green Square)	37.9	29.0	35.7	23.8
Rouse Hill drainage				
Land acquisition	2.7	2.7	2.1	1.5
Civil projects[1]	8.7	10.8	4.6	0.0
Corporate	99.3	96.2	93.6	93.5
Total capital investment programs	715.3	732.5	708.0	617.1
Commercial Agreement Adjustment				
Water	-2.8	-2.9	-6.3	-2.7
Wastewater	0.6	8.2	-3.2	-7.6
Rouse Hill Drainage Adjustment				
Land acquisition	-2.7	-2.7	-2.1	-1.5
Capital expenditure in RAB				
Water	191.9	186.5	179.0	158.6
Wastewater (incl RH civil works)	381.2	423.5	388.1	329.4
Stormwater (incl 16A Green Square)	37.9	29.0	35.7	23.8
Corporate	99.3	96.2	93.6	93.5
Total capital expenditure in RAB	**710.3**	**735.2**	**696.4**	**605.3**

[1] The capital expenditure for Rouse Hill drainage civil projects is reallocated to wastewater civil capital expenditure. This is consistent with the allocation in IPART's 2012 Determination.

Finance lease assets

A lease is an agreement where the lessor conveys to the lessee, in return for a payment or a series of payments, the right to use an asset for an agreed period. A finance lease, from an accounting standards perspective, is a lease that transfers substantially all the risks and rewards incidental to ownership of the asset to the lessee.

Sydney Water has been in constructive discussions with IPART on the issue of the regulatory treatment of finance leases since late 2013. In September 2014, IPART released a discussion paper to interested parties outlining a variety of options for the regulatory treatment of finance leases.[47] We continued to discuss the issues with IPART and submitted a position paper[48] to them (which sets out our preferred methodology for incorporating finance leases for price-setting purposes). IPART outlined its preferred option in January 2015[49]. (See Chapter 11 for details of Sydney Water's proposed regulatory treatment of our finance leases).

- In line with IPART's preferred position on the treatment of finance leases, we have incorporated a separate RAB for the lease assets in the opening 2016–17 RAB. We have established the RAB for each lease asset by discounting future lease payments, using the prevailing regulatory WACC.
- Table 5-6 shows the proposed RAB values for Sydney Water's finance lease assets.

Regulatory depreciation

Sydney Water estimates depreciation on a straight-line basis. This approach is consistent with IPART's method in previous determinations.

Our estimates of regulatory depreciation by product are shown in Table 5-8.

Table 5-8 – Regulatory depreciation by products ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20	Total
Water	72.2	74.7	77.1	79.3	303.2
Wastewater	149.0	157.2	165.8	173.6	645.6
Stormwater	2.4	2.7	2.9	3.1	11.0
Corporate	60.4	69.2	77.9	86.6	294.1
Subtotal	284.0	303.7	323.6	342.6	1,253.9
Finance Leases					
Water	14.2	14.2	14.2	14.2	56.8
Wastewater	1.9	1.9	1.9	1.9	7.8
Total finance leases	16.1	16.1	16.1	16.1	64.6
Total regulatory depreciation[1]	293.5	312.7	332.2	350.7	1,289.2

[1] This is a mid-year value.

During the previous price determinations, IPART decided that Sydney Water's three high-level asset classes would be further divided into civil, electrical, mechanical, electronic and non-depreciating (CEMLND) asset classes. IPART also created a corporate RAB split into CEMLND categories. This helps us set depreciation estimates that reflect the likely economic life of the

[47] IPART, *Regulatory treatment of finance leases*, 17 September 2014

[48] Sydney Water, *Preferred Regulatory Treatment of Finance Leases*, 10 October 2014.

[49] IPART, *Regulatory treatment of finance leases – Fact Sheet*, January 2015

assets. This means we will recover the costs of assets over their useful life from the benefit generated by their output.

In line with this rationale, we propose adding two separate RABs and useful lives for our water and wastewater finance lease assets. The contractual arrangements for the water assets require the electrical, electronic and mechanical elements of the leased assets to be maintained in a fair operational condition.

With the modelling on a CEMLND basis, Sydney Water effectively has 30 RABs. We have five RABs for each of the water, wastewater and stormwater services, five for the corporate RAB, and another 10 for leased assets. Table 5-9 shows the opening asset value for each RAB, and Sydney Water's estimate of the remaining life for each.

Table 5-9 – Opening RAB ($2015–16 million) and remaining economic lives at 1 July 2016

	Civil	Electronic	Mechanical	Electrical	Non–depreciating	Total
Water						
Opening Value	4,358.4	152.2	152.0	54.9	126.4	4,843.9
Remaining Life	93.2	9.3	29.7	20.5		
Wastewater						
Opening Value	5,668.1	112.0	640.2	412.2	3,084.8	9,917.3
Remaining Life	80.9	9.3	16.5	16.9		
Stormwater						
Opening Value	268.8	0.0	0.0	0.0	17.6	286.4
Remaining Life	116.6	0.0	0.0	0.0		
Corporate						
Opening Value	228.3	324.1	10.2	0.0	84.2	646.8
Remaining Life	62.7	6.4	5.0	0.0		
Subtotal	10,523.6	588.2	802.5	467.1	3,313.0	15,694.4
Finance Leases						
Water						
Opening Value	397.8	33.3	52.6	43.8	0.0	527.5
Remaining Life	55.8	16.1	20.8	20.1		
Wastewater						
Opening Value	155.7	0.0	0.0	0.0	0.0	155.7
Remaining Life	80.0	0.0	0.0	0.0		
Total finance leases	553.5	33.3	52.6	43.8	0.0	683.2
Total opening RAB	11,077.2	621.5	855.0	510.9	3,313.0	16,377.6

Allowance for tax obligations

In the 2012 Determination, IPART adopted a post-tax framework using a separate building block to calculate the tax allowance. Sydney Water has generally adopted the framework in calculating the tax allowance for this submission. However, we have identified a number of internal inconsistencies in the way the current regulatory tax allowance is calculated.

If left unchanged, these inconsistencies would mean we would not recover appropriate tax paid under the Australian taxation legislation within the current post-tax building block framework. We propose[50] tax adjustments that address some of the regulatory anomalies. We also propose that IPART applies a true-up process for the regulatory tax adjustment for property sales to avoid potentially high regulatory tax losses in any given year. In light of the material nature of the actual or forecast tax loss for the current 2012 Determination period for property sales, we propose the following adjustment mechanism to recover the net capital gains incurred or forecasted in the 2012–2016 price path.

Capital gain on property sales

We propose to recover the actual or forecast capital gains for 2012–13 to 2015–16 in the 2016–17 to 2019–20 price path. Although with a lag, this approach will ensure that the randomness and volatility of the forecast are minimised, and only appropriate tax is allowed for in the regulatory building block framework.

Assuming that IPART accepts our proposed 50:50 sharing arrangement (refer to Chapter 11), only 50% of the tax on capital gains on property sales will be included in the tax calculation.

If IPART does not accept this property sales benefit sharing proposal, we propose that it would be equitable to assume we will be allowed to recover the full amount of capital gains in the tax block calculation (ie the capital gains shown will be doubled).

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[50] A paper dated 21 January 2015 was submitted to IPART by Sydney Water – *Regulatory treatment of tax, Sydney Water's analysis and position* – outlining Sydney Water's proposals and analysis.

Table 5-10 – Regulatory tax allowance ($ nominal, million)

	2016–17	2017–18	2018–19	2019–20
Income				
Regulated notional revenue (excl tax)	2,361.5	2,461.0	2,555.9	2,654.1
Cash and non–cash contribution	152.9	161.7	156.3	163.0
Capital gain on property sales[1]	3.5	9.1	35.1	62.5
Total income	2,517.9	2,631.8	2,747.4	2,879.6
Expenditure				
Operating expenditure	1,284.1	1,317.5	1,344.2	1,376.6
Interest expense allowance	650.9	682.9	715.3	745.5
Tax depreciation	381.8	415.0	445.3	459.9
Total expenses	2,316.8	2,415.4	2,504.8	2,582.0
Accumulated tax losses	0.0	0.0	0.0	0.0
Taxable income after tax losses	**201.1**	**216.4**	**242.6**	**297.6**
Tax allowance (adjusted for gamma[2])	**58.4**	**62.8**	**70.4**	**86.4**
Tax allowance ($2015–16)[3]	**57.0**	**59.8**	**65.4**	**78.3**

[1] The capital gain in the tax block is the forecast after benefit sharing using Sydney Water's proposal.
[2] It is assumed gamma value = 0.25
[3] The inflation rate in the post-tax WACC is used to convert between constant $2015–16 and nominal in the tax allowance calculation

Table 5-10 shows the elements that made up Sydney Water's proposed year-on-year tax allowance for the submission. See Chapter 11 for more information on our proposals on regulatory tax adjustments.

Approach – tax allowance calculation

The nominal tax liabilities (as shown in Table 5-10) are calculated using the corporate statutory tax rate multiplied by taxable income and adjusted for the value of franking credits. These are then converted into a real amount for inclusion in the ARR.

Our approach for some of the 'income elements' used in the tax block includes the following:

- The 'notional revenue before tax' figures as set out in Table 5-3, expressed in nominal terms for tax block calculations.
- The cash and non-cash contribution:
  - We used a five-year average to forecast the annual cash contribution for use in the tax building block. This average value is then indexed annually over the determination period.

- Non-cash contribution forecast is a more complex. The assets free of charge (AFOC) consist of two parts – urban development and major infrastructure development. The forecast for urban development considers the actual AFOC for each dwelling and the forecast development rate across different geographic areas. For major infrastructure developments, the forecast is based on the information on scheduled projects informed by private companies and government agencies.
- Non-cash contribution also includes the gifted meter assets from developers in relation to new multi-unit developments. A forecast of $2 million a year from this contribution is expected in the 2016–17 to 2019–20 periods.

- Capital gain on property sales – see earlier comments.

Our approach for some of the 'expenditure elements' used in the tax block calculations are discussed below:

- Interest expense allowance – A notional capital structure of 60:40 (debt:equity) is used in the post-tax building block methodology. This also results in a higher interest expense used in the regulatory tax block calculation than the actual interest paid by Sydney Water.
- Tax depreciation – Tax depreciation was calculated using the straight-line method (like regulatory depreciation) and self-assessed asset lives until June 2012. From July 2012, Sydney Water moved to adopt the diminishing value method to front load tax depreciation as well as shorter useful lives set by the tax rules, for all new assets. The impact of this move under the current regulatory framework is that higher tax depreciation can be claimed upfront which will lower the regulatory tax allowance in the earlier years, but increase in the later years. While the tax legislation allows the selection of the diminishing value method for new assets, it does not allow us to adjust the depreciation method or the useful lives for any of our existing assets.
- With the adoption of the diminishing value method for new assets, we forecast tax depreciation for the next determination to increase from $382 million in 2016–17 to $460 million in 2019–20. This is, on average, $91 million higher than regulatory depreciation in nominal terms (excluding finance lease assets).

We have assumed a gamma value of 0.25. This is the value currently used by IPART in the tax allowance calculation to adjust for franking credits[51]. The figure was also determined by the Australian Competition Tribunal decision in 2011[52]. A higher gamma results in a lower tax allowance.

Recently, the Australian Energy Regulator (AER) adopted a gamma value of 0.4[53], however this decision is now the subject of an appeal to the Australian Competition Tribunal. We consider strong evidence still exists for IPART to adopt a value of 0.25. Sydney Water also notes that IPART has accounted for the gamma in estimating its short-term market risk premium (ST MRP)

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[51] IPART, *Review of Imputation Credits (gamma), Research – Final Decision,* March 2012

[52] Australian Competition Tribunal, 'Application by Energex Limited (Gamma)' (No 5) [2011] ACompT, 9 May 2011.

[53] AER, *Ausgrid – Determination 2014–19 Rate of Return Fact Sheet*, April 2015, p 3.

for the WACC[54]. Therefore, we would expect any change to the gamma would be reflected in an adjustment to the value of the ST MRP.

Allowance for return on working capital

The allowance represents the holding cost of net current assets. In calculating the amount for this submission, we have adopted the standard approach as determined by IPART.

Table 5-11 shows the elements that we used in the calculation.

Table 5-11 – Elements for calculation of working capital allowance ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20
Receivables	284.0	288.8	292.6	296.4
Inventory	0.9	0.9	0.9	0.9
Prepayments	0.0	0.0	0.0	0.0
Accounts payable	161.3	163.5	159.8	152.3
Net working capital	123.6	126.2	133.7	145.1
Return on working capitals[1]	**5.6**	**5.7**	**6.0**	**6.5**

[1] This is a mid-year value.

5.2.3 Post building block adjustments

Sydney Water's overall revenue requirement includes revenue for water, wastewater and stormwater services. It also includes some revenue for 'other fees and charges', such as trade waste charges and ancillary and miscellaneous customer service charges.

To calculate the revenue we will recover from water, wastewater and stormwater charges only, we have subtracted the expected revenue required from 'other fees and charges' from the overall notional revenue requirement. This is shown in Table 5-12.

[54] IPART, *Review of WACC Methodology, Research – Final Report*, December 2013, pp 17-18.

Table 5-12 – ARR and post building block adjustment ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20
Return on assets	752.0	770.0	787.0	800.1
Return of assets (depreciation)	293.5	312.7	332.2	350.7
Operating expenditure	1,252.8	1,254.0	1,248.2	1,247.1
Return on working capitals	5.6	5.7	6.0	6.5
Tax obligation	57.0	59.8	65.4	78.3
Total notional revenue (pre–adjustments)	2,360.9	2,402.3	2,438.8	2,482.8
Less Adjustments:				
Ancillary services	11.6	11.4	11.3	11.3
Trade waste	29.9	29.9	29.9	29.9
Waste safe	1.3	1.3	1.3	1.3
Blue Mountains CSO	0.3	0.3	0.3	0.3
Rental income (50%)	6.0	6.1	6.2	6.3
Total adjustments	49.1	49.0	48.9	49.0
Total notional revenue from tariffs	**2,311.7**	**2,353.2**	**2,389.9**	**2,433.7**

Ancillary and miscellaneous customer services

Sydney Water provides a number of ancillary and miscellaneous customer services including, supplying property sewerage diagrams, billing record searches, development requirements applications and water service connection installation applications. Ancillary and miscellaneous services accounts for about 350,000 transactions each year. The number of transactions has been constant over the 2012–16 price path. We expect demand for these services will remain constant over the 2016–20 period. The proposed prices for the products have marginally reduced as a result of cost efficiencies from improved processes and online trading. This has resulted in a $1 million revenue reduction in 2016–17 and will remain constant to 2019–20, as shown in Table 5-13.

We propose to introduce a cost-reflective late payment fee set at $4.10 ($2015–16). This proposed fee is well below the comparable fees of other utilities such as AGL, Origin, Integral, Energy Australia and Optus. It will provide an incentive for customers to pay their bill on time and reduce the current level of late payments. This will also eliminate the current cross-subsidy from those who pay their bills on-time to those who do not.

The introduction of the late payment fee will increase additional ancillary revenue. We forecast total additional revenue to be $6.8 million over the four-year price path. A detailed overview of ancillary and miscellaneous services (including late payment fee) is outlined in Appendix 2. These include:

- proposed prices, estimated volumes and income for existing services
- introduction of new services

- proposal to retire obsolete services
- revision of current services.

Sydney Water will charge customers a small fee for payment of bills by credit card. This is in line with the direction from NSW Treasury in May 2012. See Chapter 7 for more details.

Table 5-13 – Ancillary services revenue and volume ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Ancillary services	10.7	9.7	9.7	9.7	9.7
Volume	350,000	350,000	350,000	350,000	350,000
Late payment fee	0.0	1.9	1.7	1.6	1.6
Volume	0	472,500	425,200	382,725	382,725
Total ancillary revenue	10.7	11.6	11.4	11.3	11.3

Trade waste (pollutant charges) and trade waste ancillary (agreement fees) charges

Sydney Water conducted a comprehensive review of trade waste costs and charges in 2011. This resulted in significant changes in the structure of trade waste charges in the 2012–16 price path.

For the 2016 pricing submission, we propose only four small changes to the charges structure:

- Reducing the industrial agreement charge for risk index 6 and 7 industrial customers, to reflect a reduction in Sydney Water audit inspections from four inspections a year to two inspections for risk index 6 customers, and a reduction to one inspection a year for risk index 7 customers.
- Replacing the footnote (in the price table) in the substance charge for commercial customers with a commercial activity code ‘pre-treatment not maintained in accordance with requirements’.
- Reducing the substance charge for the commercial activity ship to shore to $0.00.
- Managing shopping centres with sophisticated centralised on-site pre-treatment (treatment other than grease traps or grease trap equivalents) as industrial customers (risk index 6) and receiving site-specific substance charges (this will recognise improvements in performance beyond that provided by grease traps).

Proposed trade waste charges and the rationale for our proposed changes are outlined in Appendix 2.

Trade waste revenue

There are two groups of trade waste charges:

- Charges associated with treatment (pollutant charges).
- Charges associated with managing trade waste discharge (agreement fees).

Some trade waste customers have Wastesafe fees. These cover the costs of monitoring liquid waste pits.

Our proposed changes will have very minor effects on trade waste charges. We forecast trade waste revenue from both pollutant charges and trade waste ancillary to remain fairly constant from 2016–17 to 2019–20. Table 5-14 shows the forecast trade waste revenue.

There is significant turnover in the trade waste sector as businesses regularly change hands. However, we expect little actual growth. We forecast a small increase in pollutant charge revenue between 2015–16 and 2016–17. As this is charged in arrears, there is a lag effect in revenue from when prices increased between years in the current determination.

Table 5-14 – Trade waste and Wastesafe revenue ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Pollutant Charge					
Commercial substance charge	13.4	13.7	13.7	13.7	13.7
Industrial pollutant charge	11.0	11.4	11.4	11.4	11.4
Total Pollutant Charge	24.4	25.1	25.1	25.1	25.1
Agreement Fees					
Commercial agreement fee	3.0	3.0	3.0	3.0	3.0
Industrial agreement fee	1.8	1.9	1.9	1.9	1.9
Total agreement fees	4.8	4.9	4.9	4.9	4.9
Wastesafe Fees	1.3	1.3	1.3	1.3	1.3
Total Tradewaste Fees	30.5	31.2	31.2	31.2	31.2

Other adjustments

Blue Mountains septic pump-out

In 1988, at the direction of the then NSW Government, Sydney Water began subsidising septic pump-out services for certain unsewered urban properties in the Blue Mountains to relieve the cost burden on households and to help protect the environment. Sydney Water would not have provided the subsidy on commercial grounds. In November 2012, we proposed to transfer the pump-out service to the Blue Mountains City Council from 1 July 2013 and phase out the subsidy.

However, in January 2015, the NSW Government announced the reinstatement of the subsidised pump-out service, with the remaining pump-out customers reimbursed by Sydney Water for most of their paid pump-out fees. The cost to Sydney Water of reimbursing the pump-out customers will be recorded as an expense in Sydney Water's accounts, and regulatory operating expenditure.

We estimated that the average subsidy will be about $5,100 a customer and that the subsidy will be indexed annually to CPI. From 2016–17, we estimate that about 50 customers will receive the pump-out subsidy. The amount of the subsidy we provide each year will be reimbursed to us from the NSW State Budget as a Community Service Obligation (CSO), recorded as income in our accounts.

The forecast cost to Sydney Water should equate to the projected subsidy from the government for the scheme. Because we have included the cost in the regulatory operating expenditure, we have deducted the income in the building block adjustment as shown in Table 5-12.

Rental income

Rental income is made up of non-regulated activities on Sydney Water sites (such as third parties installing telecommunications towers). In line with IPART's approach of sharing revenue equally between Sydney Water and our customers, we deduct 50% of forecast rental income from our notional revenue requirement.

Sydney Water currently receives on average around $11.7 million a year ($2015–16) in rental income (before 50:50 benefit sharing). We project this will grow to $12.6 million in 2019–20 ($2015–16). Driving this growth are opportunities that Sydney Water has identified to further increase rental revenue from the optimized use of existing system assets. The initiatives include:

- leasing assets for signage and commercial activities by marketing sites which are currently not subject to lease or licence arrangements
- creating additional functionality from the Jones Lang LaSalle leasing contract by providing us with the ability to recover costs such as land tax and council rates from lease or licence tenures.

Government contributions for Priority Sewerage Program (PSP) schemes

There is no government contribution expected for PSP schemes to Sydney Water for the 2016–20 period, so we have not made any adjustment relating to this item.

5.3 Proposed prices

Table 5-15 shows the allocation of the ARR between water, wastewater and stormwater.

Table 5-15 – Target revenue by product ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20
Water	1,130.9	1,143.3	1,154.0	1,167.8
Wastewater	1,216.0	1,230.3	1,244.9	1,260.0
Stormwater	37.6	37.1	36.6	36.2
Total	**2,384.5**	**2,410.6**	**2,435.5**	**2,464.0**

The ARR estimates in the table above have been used to propose prices for the services. Appendix 1 contains a comprehensive list of all proposed water, wastewater, stormwater and recycled water charges.

5.3.1 Proposed prices for standard water, wastewater and stormwater services

Table 5-16 shows Sydney Water's estimated prices for the major services for the next regulatory period. We have estimated the water and wastewater prices on an NPV-neutral basis. This means that although the price increase for a service may not match the annual increase in the ARR for that service, Sydney Water is no better off or worse off over the next price path (assumed to be four years). For stormwater, the proposed price path is slightly NPV-positive, to reduce the impact of a potential bill shock in 2020.

In 2016–17, the first year of the next price path, Sydney Water proposes, in real terms:

- a water usage charge reduction of 13.9%
- no change to the wastewater usage price
- a reduction in water and wastewater service charges of 4.9%
- a small reduction in the stormwater service charge and a gradual drop of 11% by 2019–20.

We propose that the prices for water and wastewater are held constant (that is, only go up with inflation) over the rest of the determination period. In terms of our proposal for a weighted average price cap, this equates to setting a K factor = 0 for the years 2017–18 to 2019–20, where K is the annual average increase in charges allowed by IPART (before inflation).

Details on the rationales for our proposed tariff change for water and wastewater usage charges are set out in Chapter 10.

Table 5-16 – Prices for major services ($2015–16)

	2015–16	2016–17	2017–18	2018–19	2019–20
Water					
Usage charge ($/kL)	2.288	1.97	1.97	1.97	1.97
Annual Change		-13.9%	0.0%	0.0%	0.0%
Change from 2015–16					-13.9%
Service charge – residential ($/year)	103.55	98.52	98.52	98.52	98.52
Annual Change		-4.9%	0.0%	0.0%	0.0%
Change from 2015–16					-4.9%
Wastewater					
Usage charge ($/kL)	1.10	1.10	1.10	1.10	1.10
Annual Change		0.0%	0.0%	0.0%	0.0%
Change from 2015–16					0.0%
Service charge – residential ($/year)	612.10	582.34	582.34	582.34	582.34
Annual Change		-4.9%	0.0%	0.0%	0.0%
Change from 2015–16					-4.9%
Stormwater					
Service charge – residential single ($/year)	86.44	83.96	81.54	79.20	76.92
Annual Change		-2.9%	-2.9%	-2.9%	-2.9%
Change from 2015–16					-11.0%
Service charge – residential multi ($/year)	31.70	30.79	29.90	29.04	28.21
Annual Change		-2.9%	-2.9%	-2.9%	-2.9%
Change from 2015–16					-11.0%

Note: The 2015–16 prices shown in the table are the prices determined by IPART in its 2012 Determination (CPI of 2.5% assumed for 2015–16). No further adjustment is made.

5.3.2 Proposed prices – other products

Unfiltered water

This is water that has chemical treatment, but not at a water filtration plant. Sydney Water currently only sells a small amount of unfiltered water to BlueScope Steel's Port Kembla plant in Wollongong.

In line with IPART's decision in the 2012 Determination, we are proposing no change to the approach for unfiltered water charges with:

- a fixed service charge set at the same level as the fixed service charge for potable water, based on meter size
- a usage charge set at $0.30 per kL less than the usage charge for potable water (to reflect the difference in treatment costs).

Recycled water usage charge (Rouse Hill Recycled Water Plant)

Recycled water is highly treated wastewater suited for outdoor uses, toilet flushing, replacing dam flows into river systems and other non-drinking uses. It is widely accepted that wastewater costs more than fresh water does to treat for re-use.

Also, IPART has recognised, in its determinations, that recycled water can avoid Sydney Water incurring costs elsewhere in the distribution and supply system, for example, deferring the need to augment water supply and lower environmental impacts from wastewater discharges. See Chapter 11 for further discussion on recycled water and its regulatory framework for cost recovery.

In the 2012 Determination, IPART accepted Sydney Water's proposal to set the usage price for Rouse Hill recycled water at 80% of the charge for drinking water[55]. IPART also stated in the determination that it was the last time that IPART would set prices for Rouse Hill or any mandated recycled water scheme. IPART will only perform a price monitoring role for recycled water, Sydney Water is expected to set prices according to IPART's guidelines.

In this submission, Sydney Water proposes a drinking water usage price that is lower by 13.9% than the level in 2015–16. We believe that if we continue to set the recycled water usage price at 80% of what we charge for drinking water (in accordance with IPART's guidelines), 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.

Rouse Hill stormwater drainage charge

We provide stormwater services and bill customers a service charge for stormwater drainage in the Rouse Hill area. This was determined in 1993, and was called the Rouse Hill River Management Charge. The charge was intended to recover operating costs only, for activities like bush regeneration, weed and grounds management.

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.

In this submission, we propose to maintain the charge in real terms at $140.33 ($2015–16) over the 2016 determination period.

See Chapter 11 for more information on our proposal for rectifying the boundary issue for Rouse Hill stormwater customers.

Rouse Hill land charge for new properties in the Rouse Hill area

As part of its 2012 Determination, IPART established a new charge to recover a portion of Sydney Water's capital costs for the Rouse Hill trunk drainage system, known as the Rouse Hill Land Charge. It was based on the principle that Rouse Hill customers are the major and direct beneficiaries of Sydney Water's land purchases, as this protects their properties from flooding. IPART set the charge based on estimates of the total amount of land to be acquired by Sydney Water for stormwater management and the number of new properties in Rouse Hill. We were to apply the charge to all new properties that connected to our services between July 2012 and June 2022.

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[55] Sydney Water based its proposal on IPART's recommendations in its September 2006 Final Report Pricing arrangements for recycled water and sewer mining.

The Rouse Hill Land Charge, initially set at $969 a year ($2012–13), was based on estimates that Sydney Water would need to acquire 50 hectares of land. In 2013, after public concerns about the charge, Sydney Water agreed with the NSW Government to lower the land charge to $237 a year ($2013–14), and only allow for 11 hectares of land to be purchased. Latest estimates by Sydney Water indicate that the area of land Sydney Water will need to acquire is about 19 hectares.

We propose to maintain the Rouse Hill land charge at the current level plus CPI and recover these additional land costs by allocating them (a net amount of $17.1 million) to Sydney Water's wastewater RAB (see Table 5-6).

This is consistent with the principle agreed by IPART for the costs of Rouse Hill stormwater civil works, where costs are already allowed to be recovered through the wastewater RAB. The alternative would be to recover the costs from customers connecting new properties by June 2026 through increasing the Rouse Hill land charge. This would involve a large customer impact on those customers as the Rouse Hill land charge would need to be increased to $533.70 ($2015–16). Charging these customers in this way would not have any efficiency gains and it would not induce any changes that could reduce these land acquisition costs or reduce future land acquisition needs.

See Chapter 11 for more details on our Rouse Hill land charge and boundary setting proposals.

5.4 Bill impacts

Residential and non-residential customers pay for water services through a fixed water service charge and a consumption-based variable charge. By 1 July 2015, all residential customers will pay the same fixed service charge. Non-residential customers pay a fixed charge directly linked to the size of their water meter.

For wastewater services, residential customers only pay a fixed charge. All residential customers pay the same wastewater charge, regardless of property type. Non-residential customers pay a fixed service charge (based on water meter size and discharge factor) and a usage charge, but only where the volumes they discharge go over a daily discharge allowance (a threshold). This means some non-residential customers only pay a fixed charge.

Customers influence their water bills (and wastewater bills for some non-residential customers) by changing their water usage. Typically, water service charges represent 18% of the total water bill for residential customers.

5.4.1 Savings for residential customers

Sydney Water has assessed the impact of our proposed prices on customers. The price impact is based on a typical single dwelling household dwelling using 220 kL (the current average use) of water each year, as well as the expected impact on typical residential units using 160 kL a year. The results are shown in Table 5-17 (in real terms) and Table 5-18 (in nominal terms).

The annual bill of a single dwelling household with average water use will be 8.6% lower, in real terms, by the end of the four-year determination period. This means that a typical single dwelling household will save about $105 a year from the total water and wastewater bill in 2016–17, the first year of the 2016 price path.

If we assume that the inflation is 2.5% a year, most households will experience a very minor increase, only 0.9% in total water and wastewater bills by the end of the four-year determination period, an increase of $11 from a bill of $1,219 in 2015–16 to $1,230 by 2019–20. In simple terms, this represents a much slower rate of increase than for other household items.

To help IPART compare Sydney Water with other metropolitan water utilities, we also include a 200 kL usage assessment, as well as the expected impact on larger residential water users (that is, those using 350 kL a year), both with and without inflation.

Table 5-17 – Residential water and wastewater bill ($2015–16) – without inflation

	2015–16	2016–17	2017–18	2018–19	2019–20
160 kL/year [1]	1,082	996	996	996	996
Annual Change		-7.9%	0.0%	0.0%	0.0%
Change from 2015–16					-7.9%
200 kL/year	1,173	1,075	1,075	1,075	1,075
Annual Change		-8.4%	0.0%	0.0%	0.0%
Change from 2015–16					-8.4%
220 kL/year [1]	1,219	1,114	1,114	1,114	1,114
Annual Change		-8.6%	0.0%	0.0%	0.0%
Change from 2015–16					-8.6%
350 kL/year	1,516	1,370	1,370	1,370	1,370
Annual Change		-9.7%	0.0%	0.0%	0.0%
Change from 2015–16					-9.7%

[1] The water use of 160 kL a year and 220 kL a year is the average use of residential multi premises and metered single houses, respectively.

Note: The residential water and wastewater bill of 2015–16 is based on 2015–16 determined prices (with assumed CPI of 2.5% for 2015–16) indexed to $2015–16. No further adjustment is made.

Table 5-18 - Residential water and wastewater bill ($ nominal) – with inflation

	2015–16	2016–17	2017–18	2018–19	2019–20
160 kL/year	1,082	1,021	1,046	1,072	1,099
Annual Change		-5.6%	2.5%	2.5%	2.5%
Change from 2015–16					1.6%
200 kL/year	1,173	1,102	1,129	1,157	1,186
Annual Change		-6.1%	2.5%	2.5%	2.5%
Change from 2015–16					1.1%
220 kL/year	1,219	1,142	1,170	1,200	1,230
Annual Change		-6.3%	2.5%	2.5%	2.5%
Change from 2015–16					0.9%
350 kL/year	1,516	1,404	1,439	1,475	1,512
Annual Change		-7.4%	2.5%	2.5%	2.5%
Change from 2015–16					-0.3%

Note: Assumed CPI/inflation of 2.5% a year.

Larger household users will see a greater saving of 9.7% (without inflation) over the four-year determination period. When inflation is considered, the users will still enjoy a 0.3% reduction in their bill by 2019–20.

5.4.2 Savings for non-residential customers

There is no typical non-residential customer. Non-residential customers range from large industrial manufacturers to commercial offices, small food outlets, schools and hospitals. Water use and wastewater discharge vary greatly across and within those groups.

To provide an appropriate and representative view of the impact of our proposed prices on the non-residential sector we analysed non-residential property types by income.

To model the financial impact of the proposed prices changes, we identified six significant non-residential segments (see Table 5-19). Taken together, these segments cover a significant portion of non-residential customers – about 74% of the total revenue and 76% of the total customer base. Industrial and commercial property types represent 26.3% and 37.1% respectively of total revenue from non-residential customers.

Table 5-19 – Significant non-residential segments

Customer type	Type	Meter size mm	Average usage kL/ year	Discharge factor %	Feature
Industrial	Low Medium High	20 40 80	200 5,800 26,000	82 77 69	represents 26.3% of non-residential revenue
Commercial	Low Medium High	20 50 80	310 6,700 21,000	83 82 82	represents 37.1 % of non-residential revenue
Public Hospital	Medium High	80 100	20,000 33,000	89 89	average bill is 21.5 times that of the average non-
Private School	Low Medium High	50 80 100	7,700 24,000 35,000	84 85 83	average bill is 14.8 times that of the average non-residential bill
Commercial strata unit	Low Medium High	20 25 40	130 180 2,100	80 81 88	average bill is 0.1 times that of the average non-residential bill
Industrial strata unit	Low Medium High	20 25 50	75 90 32,000	80 80 69	average bill is 0.2 times that of the average non-residential bill

For each of these significant non-residential segments we have modelled the impact of the proposed prices for low, medium and high water users. The defining criteria that we use for classifying low, medium and high customers in each of the customer types is shown in Table 5-19. above.

A summary of the customer impact is identified in Table 5-20 below. Sydney Water has engaged with IPART on our detailed approach and analysis of this new measure.

Table 5-20 – Non-residential water and wastewater bills ($2015–16) – without inflation

Customer type	Water consumption	2015–16	2016–17	2017–18	2018–19	2019–20
Industrial	Low	$1,173	$1,075	$1,075	$1,075	$1,075
	Change from 2015–16					-8.4%
	Medium	$21,604	$18,191	$18,191	$18,191	$18,191
	Change from 2015–16					-15.8%
	High	$92,557	$78,606	$78,606	$78,606	$78,606
	Change from 2015–16					-15.1%
Commercial	Low	$1,425	$1,291	$1,291	$1,291	$1,291
	Change from 2015–16					-9.4%
	Medium	$27,232	$22,507	$22,507	$22,507	$22,507
	Change from 2015–16					-17.4%
	High	$82,504	$69,180	$69,180	$69,180	$69,180
	Change from 2015–16					-16.1%
Public hospital	Medium	$82,028	$68,501	$68,501	$68,501	$68,501
	Change from 2015–16					-16.5%
	High	$134,071	$112,378	$112,378	$112,378	$112,378
	Change from 2015–16					-16.2%
Private schools	Low	$30,723	$25,620	$25,620	$25,620	$25,620
	Change from 2015–16					-16.6%
	Medium	$93,369	$78,865	$78,865	$78,865	$78,865
	Change from 2015–16					-15.5%
	High	$136,724	$115,090	$115,090	$115,090	$115,090
	Change from 2015–16					-15.8%
Commercial strata units	Low	$1,013	$937	$937	$937	$937
	Change from 2015–16					-7.5%
	Medium	$1,943	$1,245	$1,245	$1,245	$1,245
	Change from 2015–16					-35.9%
	High	$10,720	$8,282	$8,282	$8,282	$8,282
	Change from 2015–16					-22.7%
Industrial strata units	Low	$887	$829	$829	$829	$829
	Change from 2015–16					-6.6%
	Medium	$1,720	$1,059	$1,059	$1,059	$1,059
	Change from 2015–16					-38.4%
	High	$106,269	$93,592	$93,592	$93,592	$93,592
	Change from 2015–16					-11.9%

Note: The non-residential water and wastewater bill for 2015–16 is based on 2015–16 determined prices (with 2015–16 assumed CPI of 2.5%) indexed to $2015–16. No further adjustment is made.

Table 5-21– Non-residential water and wastewater bill ($ nominal) – with inflation

Customer type	Water consumption	2015–16	2016–17	2017–18	2018–19	2019–20
Industrial	Low	$1,173	$1,102	$1,129	$1,157	$1,186
	Change from 2015–16					1.1%
	Medium	$21,604	$18,646	$19,112	$19,590	$20,080
	Change from 2015–16					-7.1%
	High	$92,557	$80,571	$82,586	$84,650	$86,767
	Change from 2015–16					-6.3%
Commercial	Low	$1,425	$1,324	$1,357	$1,391	$1,425
	Change from 2015–16					0.0%
	Medium	$27,232	$23,069	$23,646	$24,237	$24,843
	Change from 2015–16					-8.8%
	High	$82,504	$70,909	$72,682	$74,499	$76,362
	Change from 2015–16					-7.4%
Public hospital	Medium	$82,028	$70,214	$71,969	$73,768	$75,612
	Change from 2015–16					-7.8%
	High	$134,071	$115,187	$118,067	$121,019	$124,044
	Change from 2015–16					-7.5%
Private schools	Low	$30,723	$26,260	$26,917	$27,590	$28,280
	Change from 2015–16					-8.0%
	Medium	$93,369	$80,836	$82,857	$84,929	$87,052
	Change from 2015–16					-6.8%
	High	$136,724	$117,968	$120,917	$123,940	$127,038
	Change from 2015–16					-7.1%
Commercial strata units	Low	$1,013	$960	$984	$1,009	$1,034
	Change from 2015–16					2.1%
	Medium	$1,943	$1,277	$1,308	$1,341	$1,375
	Change from 2015–16					-29.2%
	High	$10,720	$8,489	$8,701	$8,919	$9,142
	Change from 2015–16					-14.7%
Industrial strata units	Low	$887	$849	$870	$892	$915
	Change from 2015–16					3.1%
	Medium	$1,720	$1,086	$1,113	$1,141	$1,169
	Change from 2015–16					-32.1%
	High	$106,269	$95,932	$98,330	$100,789	$103,308
	Change from 2015–16					-2.8%

Note: Assumed CPI/inflation of 2.5% a year.

Our further analysis shows that generally, most of our non-residential customers (approximately 43% of non-residential segment) will experience up to a 10% saving on their bill (in real terms, without inflation) in 2016–17. Bills for a small portion of the non-residential customers (about 6.5%), will fall by more than a third (35% to 39%).

If we assume inflation to be 2.5% each year, then most non-residential customers will still benefit from moderate bill reductions by the end of the four-year determination period, as shown in Table 5-21.

The difference in savings for non-residential customers depends on the level of water and wastewater use, meter size and discharge factors, as shown by the example in Table 5-22. The changes proposed for the large meter sized service charge (see Section 5.5) contribute to sizeable savings for non-residential customers, with proportionately higher savings for customers with bigger meters.

Table 5-22 – Bill impact assessments for non-residential customer segments

Proposed non–residential service charge prices* for

- 20mm single metered customer (for both water and wastewater) will drop by 4.9%
- 25mm meter and greater sized customer (water only) will drop by 24.9%
- 25mm meter and greater sized customer (wastewater only) will drop by 44.4%

Example of non–residential segments

Non–residential segments presented	Key Features	Overall bill impact
• Commercial strata units – medium • Industrial strata units – medium	• 25mm meter • Low water usage • No billable wastewater usage • About 6.5% of non–residential maximise benefit of the "cost of service" initiative	~35.2% bill reduction

Non–residential bill with a 25mm meter, water consumption of 200kL/year and discharge factor of 78% ($2015–16)

Charge type	2015–16	2016–17	Change $	Change %
Water service charge	204.87	153.93	-50.94	-24.9%
Water usage charge	457.60	393.82	-63.78	-13.9%
Wastewater service charge	1,276.94	709.73	-567.21	-44.4%
Wastewater usage charge	0.00	0.00	0.00	0.0%
Total service charge	1,481.81	863.66	-618.15	-41.7%
Total usage charge	457.60	393.82	-63.78	-13.9%
Total annual water and wastewater bill	1,939.41	1,257.48	-681.92	-35.2%

Note
* The re–adjustment of meter sized service charge (i.e. rebase of service charges to the equivalent of a deemed 20mm meter instead of 25mm) is a part of IPART's price review initiative (Discussion paper – Cost–of–service of water and sewerage services for metropolitan water utilities, November 2014)

5.5 Proposed changes to price structures

5.5.1 Overview

The 2012 Determination introduced a transition path that by 2015–16, all metered residential properties (individually metered or sharing a water meter), regardless of property type, should pay the same water service charge. This approach sets the minimum service charge for residential customers at the price for a 20 mm water meter. This is a simple price structure for customers to understand and for Sydney Water to administer. It also removes an existing cross-subsidy of units by houses.

For this pricing submission, for non-residential customers we propose that IPART set the water service charges for the range of meter sizes on a scale referenced to the 20 mm service charge. This is a small change from the current approach that references all non-residential water service charges to a 25 mm water meter charge. It means a non-residential customer with a 20 mm water meter will contribute the same amount to our costs as a residential customer with a deemed 20 mm meter. This is also a simple price structure for customers to understand and for Sydney Water to administer.

Sydney Water proposes no change to the current method of allocating water service charges to mixed multi-premises with a common water meter. Currently, each property receives the minimum 20 mm water service charge. If a property installs an individual meter, charges will be based on the meter size.

Sydney Water proposes no change to the current method of allocating water service charges to non-residential multi-premises. Non-residential multi-premises that share a meter will each receive a pro-rata share of the water meter service charge. However, Sydney Water proposes to change the way we allocate water service charges to non-residential multi premises on a private joint service arrangement (see proposal in the following sections).

Sydney Water proposes no other changes (apart from those mentioned above) to the way we apply wastewater service and usage charges to non-residential customers.

The 2012 Determination introduced an annual reduction in the non-chargeable daily wastewater discharge allowance. Sydney Water proposes to maintain the current non-chargeable daily allowance while we do further work to understand wastewater costs, cost drivers and tariff structures better (see Chapter 10 for more details on our proposed approach to water and wastewater pricing).

See Chapter 10 for more information on Sydney Water's proposals for wastewater usage charge and non-chargeable daily allowance. Sydney Water has allowed for all the above proposals in modelling our proposed prices.

5.5.2 Harmonising fixed charges – proposed changes

Sydney Water is proposing a number of changes to the current (2012–16) pricing structure to:

- reduce complexity
- respond to changes in the operating environment
- create operational efficiencies (and reduce costs)

- make it easier for customers to understand their bills.

The changes proposed are:

- to base water and wastewater service charges for residential and non-residential customers on the number of deemed 20 mm water meters (a key base assumption for our pricing proposal)
- to regard unrelated non-residential multi-premises on a private joint service arrangement as two distinct properties, according to whether they are charged on the basis of meter size or a fixed charge
- for dual occupancies to pay one service charge each for water, wastewater and stormwater service charge
- to set the wastewater usage discharge allowance for non-residential customers at 0.822 kL a day (or equivalent to 300 kL a year) for 2016–20.

Joint services – unrelated non-residential multi-premises

A private joint service is where a water and/or wastewater service connection to one property serves a number of additional (dependent) properties. Unlike strata units there is no body corporate or owners' body corporate to administer repairs, allocate costs and settle disputes between owners using the services, including issues relating to water and wastewater services.

Joint services can exist as single dwellings, town houses, units, flats, non-residential properties, within multi-premises, or as mixed multi-premises. The properties can be metered, partially metered (some of the properties have their own sub-meter) or unmetered.

The current pricing mechanism works well for most joint service arrangements, except for unrelated non-residential multi-premises. We propose to simplify the way we charge the dependent properties for this joint service arrangement.

The following tables show the current and proposed method for allocating charges to these unrelated non-residential multi premises properties.

Under the current allocation method, the charges will be spread equally over the number of properties within the two multi premises, as shown in the example in Table 5-23. Generally, under the current method, the customers of this type of joint service arrangement will pay a disproportionately low service charge as compared with other customers.

Table 5-23 – Current method for allocating charges to unrelated non-residential multi premises on a joint service

Scenario	Current pricing outcome
Metered non–residential multi premise with 8 units on joint service with unrelated unmetered non–residential multi premise with 8 units	Each receives 1/16 of meter size based water service charge Each receives 1/16 of meter size based sewerage service charge One sewer usage daily allowance applies

Under the proposed method, as shown in Table 5-24, we propose to treat the property with the meter as a non-residential multi-premise, and apply meter-based water and wastewater charges accordingly (distributed among eight units only) to the multi-premise property. The second (unmetered) property will receive a base water and wastewater service charge. With this proposed change, the total revenue to be collected from these joint service arrangements will increase. We estimate that additional revenue will be about $388,090 a year, as shown in Table 5-25.

In this scenario, applying the unmetered service charge is not appropriate as water use is recorded through the meter. Water usage charges are raised accordingly and issued to the metered property.

Table 5-24 – Proposed method for allocating charges to unrelated non-residential multi premises on a joint service

Scenario	Proposed pricing outcome
Metered non–residential multi premise with 8 units on joint service with unrelated unmetered non–residential multi premise with 8 units	Each property within the metered non–residential multi premise receives 1/8 of the meter size based water service charge and 1/8 of the meter size based sewerage service charge. The metered non–residential multi premise receives one sewer usage daily allowance. Each unit within the unmetered mixed multi premise receives a fixed (base) water service charge and a fixed sewerage service charge.

There are 1,245 non-residential multi-premises on a joint service arrangement. Of these, 701 properties are associated with the first metered multi-premise and 544 are associated with the second unrelated non-residential multi-premise under the joint service arrangements.

Table 5-25 – Revenue impact of changes to joint service arrangements affecting non-residential multi premises ($2015–16)

Annual charges	Current ($)	Proposed ($)
Water service	22,024	78,355
Sewerage service	175,991	507,750
Total	**198,015**	**586,105**

Note: We estimate the revenue impact with 2015–16 determined prices (with 2015–16 assumed CPI of 2.5%) with no adjustment of SDP in water service charges.

Dual occupancies

A dual occupancy is where the property owner creates a second dwelling on that property. The secondary dwelling has its own entrance, kitchen facilities, bathroom and laundry facilities. These dual occupancies are typically known as the main dwelling and the granny flat. The two dwellings are linked by the owner (the property owner owns the main dwelling and granny flat) and cannot be independently sold.

Granny flats are commonly used to provide additional space and independent living arrangements for family members. Granny flats exist as separate structures, converted garages and flats integrated into the main house. These granny flats range from providing basic accommodation to well-appointed, custom-designed homes.

Identifying dual occupancies has always been challenging. Many were developed without any approval from local council and so were never directed to Sydney Water for development approval conditions. Our awareness of existing dual occupancies is limited to those where the owners submitted development applications to us and those identified by investigation (street walks, reports from neighbours). We have 13,616 instances of dual occupancies (13,616 properties, 27,232 dwellings).

In effect, we have a number of identified dual occupancy arrangements (13,616 properties) receiving two water and wastewater service charges, and an unknown number of undetected dual occupancies receiving one water service charge and one sewer service charge. The application of two sets of service charges has prompted significant customer interaction. Many customers have requested site visits to demonstrate that as their granny flat does not have a full kitchen, laundry, bathroom or separate entrance it is not liable for the second charge. Sydney Water staff rely on the evidence available on the inspection date and change records accordingly. We are unaware if the situation changes and the property would then meet the criteria to be considered a granny flat.

Making accommodation affordable and accessible to fill the emerging housing shortage is one government strategy to meet Sydney's projected population growth. In 2011 there was a significant change to planning requirements relating to dual occupancies:

- dual occupancy less than 60 m^2 would receive a fast track (10-day turnaround) lodgement and approval process
- the development conditions for the development were relaxed and a simpler assessment approval criteria introduced

- this type of development does not require a development application and as such is not forwarded to Sydney Water.

The number of granny flat constructions has risen significantly in response to relaxing planning requirements.

As Sydney Water will not be able to apply the existing tariff structure for dual occupancy to all emerging properties with dual occupancies, Sydney Water proposes that we apply only one water service charge and one wastewater service charge to all the existing dual occupancy properties. We estimate this proposed change will reduce revenue of $9.7 million, as shown in Table 5-26. We have included this impact in our modelling.

Table 5-26 – Revenue impact of changes to dual occupancy ($2015–16)

	Water service charge	Sewer service charge	Stormwater service charge	Rouse Hill Stormwater charge
Current tariff structure				
Number of dwellings being billed	27,232	27,232	6,480	70
Revenue	2,819,874	16,668,707	205,416	9,823
Proposed tariff structure				
Number of properties to be billed	13,616	13,616	3,240	35
Revenue	1,409,937	8,334,354	280,066	4,912
Revenue impact	**-1,409,937**	**-8,334,354**	**74,650**	**-4,912**
Total revenue impact				**-9,674,552**

Note: We estimate the revenue impact is estimated with 2015–16 determined prices (with 2015–16 assumed CPI of 2.5%) with no adjustment of SDP in water service charge.

5.5.3 Sewer usage discharge allowance fixed at 300 kL a year

This is not a proposal for price change but a proposal to maintain the current level and approach to determining billable sewerage usage volume.

Wastewater usage charges apply only where a non-residential customer has exceeded a daily discharge allowance (a threshold). For many years this discharge allowance (or so called free allowance threshold) was 500 kL a year (1.37 kL a day).

The 2012 Determination introduced a discharge allowance of 450 kL a year (1.23 kL a day) – an annual reduction of 50 kL a year. Over the four years the threshold reduced from 450 kL a year (2012–13) to 300 kL a year (2015–16). As the daily discharge allowance drops, the number of non-residential customers who are billed wastewater usage charges increases.

Some customers are confused by this charge, particularly if they exceed the threshold one quarter but not the next (and hence do not always receive a usage charge). They ask Sydney Water to explain the tariff structure and to reassess how we estimate wastewater discharges from their sites.

IPART, in its 2012 Determination, has expressed its intention to reduce the free allowance threshold to 150 kL a year in the 2016–20 determination period. Sydney Water proposes (see Table 5-27) that we keep the discharge allowance at 300 kL a year (0.822 kL a day).

Our analysis shows that by reducing the daily discharge allowance below 822 litres a day affects a large number of customers (41% increase in customer numbers) but produces only a small increase (9%) in the chargeable volume. Reducing the threshold below 822 litres a day will mean that small businesses like pharmacies, newsagents and small takeaway food outlets would now pay the wastewater usage charge. Given the limited scope for such businesses to reduce discharges, the efficiency gains are likely to be small, relative to the additional administrative costs.

Table 5-27 – Impact of decreasing the allowance from 300 kL in 2015–16 to 100 kL in 2019–20

	2016–17	2017–18	2018–19	2019–20
Sydney Water Proposal				
Daily allowance (kL/day)	0.822	0.822	0.822	0.822
Chargeable volume (ML)	66,435	66,437	66,440	66,442
Number of customers billed	40,197	40,559	40,920	41,282
Alternative of Decreasing Daily Allowance				
Daily allowance (kL/day)	0.685	0.548	0.411	0.274
Chargeable volume (ML)	67,650	68,918	70,472	72,290
Number of customers billed	43,543	47,551	52,593	58,250
Impact (Alternative vs SWC Proposal)				
Chargeable volume (ML)	1,215	2,481	4,032	5,847
% vs Sydney Water proposal	*2%*	*4%*	*6%*	*9%*
Number of customers billed	3,346	6,992	11,673	16,969
% vs Sydney Water proposal	*8%*	*17%*	*29%*	*41%*

See Chapter 10 for more detailed discussion on our approach to wastewater usage pricing. Sydney Water will look to do further work over 2016–20 to better understand our cost drivers, the environmental licensing impacts and customer preferences, and will use that to inform future consideration on wastewater usage charges.

6 Sydney Water's financial position

Key messages

- To ensure we can serve customers in the future, Sydney Water must remain a financially viable business.
- Sydney Water's financial position over the 2012–16 regulatory period has improved due to higher sales, operating and capital expenditure efficiencies and lower finance charges.
- Sydney Water's improved performance and improvements in the regulatory and operating environment, resulted in Moody's upgrading our credit rating from Baa2 to Baa1 (ie BBB to BBB+ rating from Standard & Poor's Ratings Services). This was our first ever credit rating upgrade.
- The benefit of our improved financial performance over 2012–16 is being passed onto customers in our pricing proposal over 2016–20. Our financial position over 2016–20 is forecast to be strong enough to support lower prices to customers while maintaining a high quality service.
- As the projected outcomes are consistent with maintaining at least a Baa2 rating there is no need for a financeability adjustment.
- We have identified a number of risks to our financial position in the short and longer term that could arise in relation to demand, opex, capex, interest rates, policy, legislative and regulatory changes. Sydney Water has proposed how we can manage such risks.

To deliver affordable services and promote the long-term interests of our customers, Sydney Water must remain viable and financially sustainable. This requires us to maintain good financial performance, which will also allow us access to funds to invest at the lowest possible cost. This chapter provides an overview of:

- our financial performance, how we compare with UK water utilities, our long-term position and risks to our financial position over this price period
- the current and future financeability of Sydney Water.

6.1 Financial performance

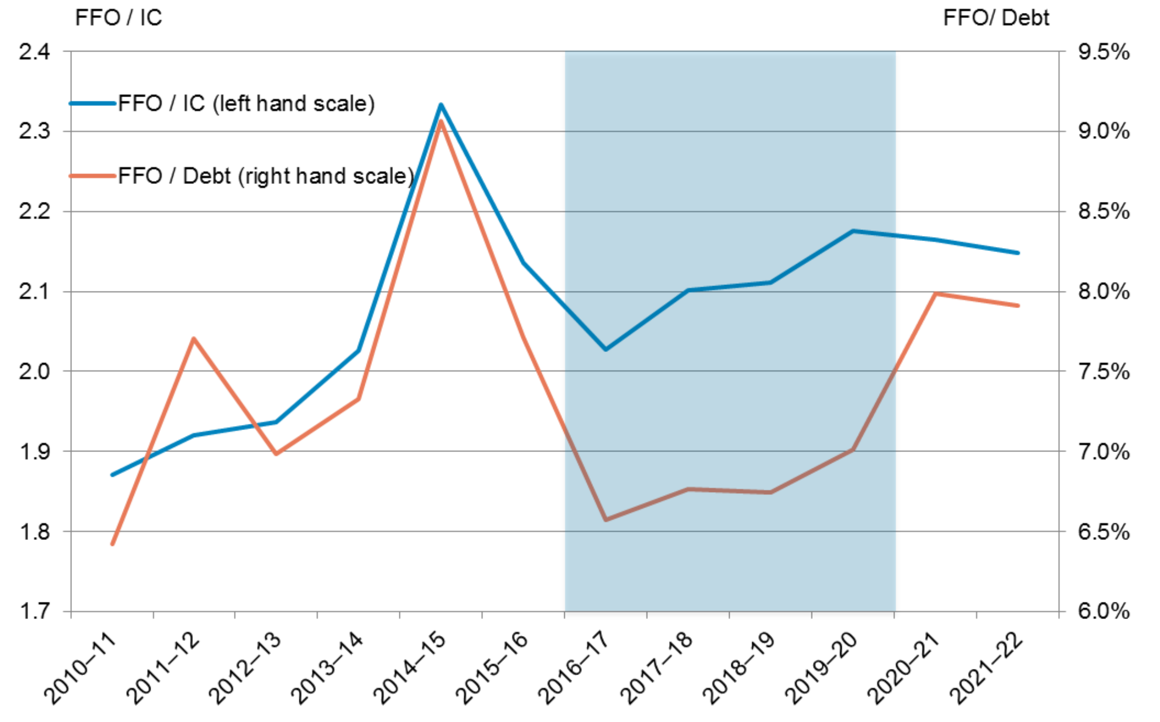
6.1.1 Projected financial performance

Based on our proposed revenue, prices and costs, we forecast Sydney Water's financial position to remain sustainable. Our current financial position is strong enough to offer lower prices to customers, without compromising the quality of our services or affecting our overall financial sustainability.

On the back of lower prices and lower revenue, there is a short-term risk that our individual credit metrics will fall slightly below the bounds for our current rating. However, over the course of the proposed price path from 2016–20, we expect our overall rating to remain within the broad parameters of a Baa (BBB) rated water utility. This is based on an assumption that the dividend payout ratio (DPR) returns to the shareholder benchmark of 70% during the price path.

Figure 6-1 shows expected improvement to key credit metrics relating to funds from operation to interest coverage (FFO/IC) and to debt (FFO/Debt). Whilst initially declining over the price path 2016–20, both remain within the target credit rating of at least Baa2 (BBB) and are expected to improve after 2020. This is primarily due to improvements in operating cash flow as projected revenues increase to match the current forecast for the long-term weighted average cost of capital (WACC) of 5.3%.

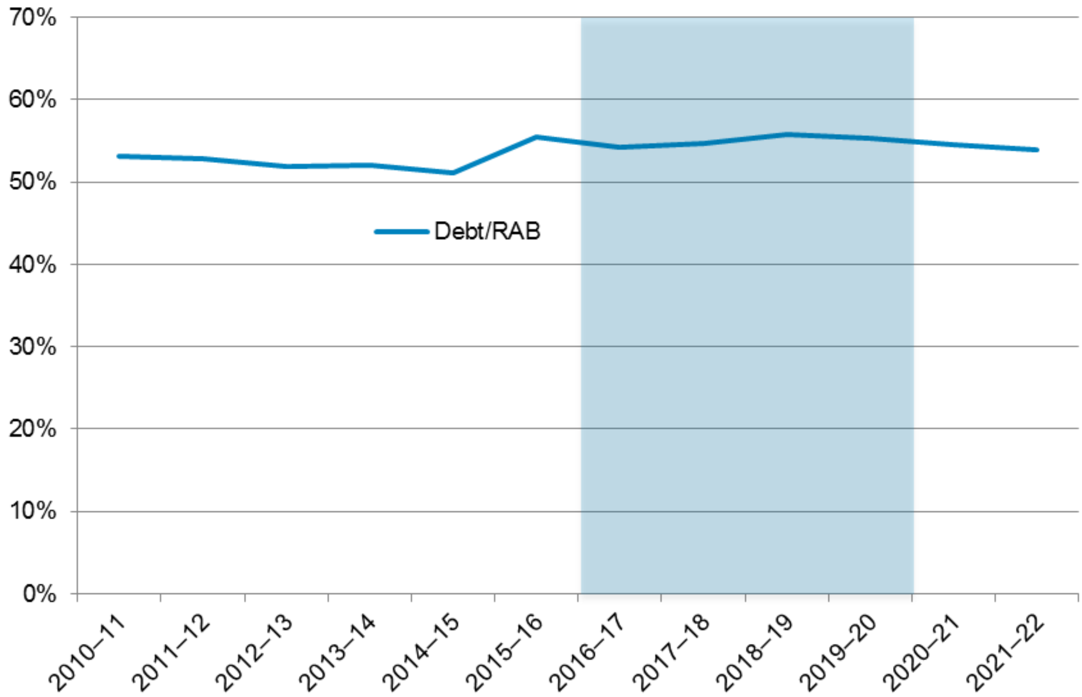
Figure 6-1 – Movement in funds from operations (FFO) interest coverage and FFO to debt over 2016–20



Note: The 2016–20 period starts on 1 July 2016

As shown in Figure 6-2, our debt to the regulatory asset base (Debt/RAB) is expected to marginally improve during the price path 2016–20. Gearing is constrained due to the expected return to the standard DPR of 70% and increases in our RAB value due to indexation.

Figure 6-2 – Movement debt to RAB over 2016–20



Note: The 2016 period starts on 1 July 2016

Underlying our forecast credit metrics are our forecast statutory profit and loss statement and balance sheet over 2016–20 as presented in Table 6-1 and Table 6-2.

The key outcomes from these tables are that:

- revenues decline from 2017 as proposed in this submission, primarily as a result of a lower WACC and operational efficiencies being passed on to customers
- operating costs decline in real terms due to the carry-over of operating cost efficiencies from 2012–16 and the renegotiation of water filtration costs
- financing charges are constrained by expected lower interest rates over 2016–20, consistent with the lower WACC assumption
- increases in the value of the regulatory asset base over and above net capital investment, due to indexation, constrains the increase in gearing from funding capital investment.

Table 6-1 – Sydney Water's forecast consolidated profit and loss ($ nominal, million)

	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
Income						
Regulated Income						
Usage Revenue	1,133.8	1,146.1	1,047.3	1,082.5	1,118.4	1,158.8
Service Revenue	1,382.1	1,437.8	1,375.9	1,427.7	1,481.5	1,537.4
Other	0.9	3.1	24.7	25.2	25.8	26.5
Total Regulated Income	**2,516.8**	**2,587.0**	**2,447.9**	**2,535.4**	**2,625.7**	**2,722.7**
Unregulated Income						
Grants, Subsidies etc	31.4	23.1	23.8	24.8	25.7	26.7
Capital Contributions	140.0	153.4	158.5	166.9	160.6	166.5
Other	20.0	2.4	4.6	6.8	6.8	6.8
Total Unregulated Income	191.3	178.9	186.9	198.5	193.1	200.1
Total Income	**2,708.1**	**2,765.9**	**2,634.8**	**2,733.9**	**2,818.8**	**2,922.7**
Expenditure						
Operations						
Bulk Water Purchases - WNSW	207.4	213.7	202.1	209.9	219.4	231.7
Bulk Water Purchases - SDP	196.0	197.8	198.9	200.5	202.2	204.4
BOO Water Filtration Tariffs	113.9	88.3	91.5	93.9	94.4	97.3
Employee-related expenses	350.9	352.8	357.9	361.3	370.6	378.6
Other Operating Expenses	459.7	485.6	494.7	512.9	520.1	528.8
Total Operations	1,327.8	1,338.3	1,345.0	1,378.5	1,406.7	1,440.8
EBITDA	**1,380.3**	**1,427.6**	**1,289.8**	**1,355.4**	**1,412.1**	**1,482.0**
WIP Writeoffs and Impairments	7.9	7.8	8.0	8.2	8.4	8.6
Loss on Disposals	16.6	24.2	24.8	25.4	26.0	26.7
Depreciation	235.0	263.0	270.0	285.0	307.9	329.7
EBIT	**1,120.8**	**1,132.7**	**987.1**	**1,036.8**	**1,069.8**	**1,117.0**
Interest Expense	425.0	468.5	466.4	483.1	516.8	534.9
Profit Before Tax	**695.8**	**664.2**	**520.6**	**553.7**	**553.0**	**582.1**
Tax Expense	208.8	202.1	156.1	165.9	166.2	174.7
Profit after tax	**487.0**	**462.2**	**364.5**	**387.8**	**386.8**	**407.4**

Table 6-2 – Sydney Water's forecast consolidated balance sheet ($ nominal, million)

	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
Current Assets						
Net Debtors and Prepayments	337.1	352.4	333.7	345.6	357.9	371.2
Other Current Assets	8.9	8.9	8.9	8.9	8.9	8.9
Total Current Assets	**346.0**	**361.3**	**342.6**	**354.5**	**366.8**	**380.1**
Non–current assets						
Investments	0.0	0.0	0.0	0.0	0.0	0.0
Property, Plant & Equipment	15,274.9	16,329.7	17,301.6	18,158.3	18,981.6	19,713.7
Intangible Assets	154.5	154.5	154.5	154.5	154.5	154.5
Total Non–Current Assets	**15,429.4**	**16,484.1**	**17,456.0**	**18,312.7**	**19,136.1**	**19,868.1**
Total Assets	**15,775.4**	**16,845.4**	**17,798.6**	**18,667.2**	**19,502.9**	**20,248.2**
Current liabilities						
Borrowings	1.2	0.2	0.0	0.0	0.0	0.0
Creditors	539.2	554.1	566.6	594.5	610.8	613.8
Other Financial Liabilities	5.9	12.4	13.8	18.3	20.4	22.6
Provisions	177.7	173.6	180.0	184.7	190.2	195.7
Tax Payable	38.1	14.1	10.2	10.7	10.7	12.0
Dividend Payable	664.0	622.2	364.5	387.8	270.8	285.2
Total Current Liabilities	**1,426.1**	**1,376.5**	**1,135.2**	**1,196.1**	**1,102.9**	**1,129.3**
Non–current liabilities						
Borrowings	6,267.3	6,864.9	7,608.0	8,116.1	8,619.2	8,893.4
Other Non–Current Liabilities	184.3	405.8	392.0	384.0	473.3	450.7
Provisions	909.4	937.3	979.0	1,019.0	1,061.6	1,105.4
Deferred Tax Liability	670.9	819.8	970.4	1,076.9	1,156.5	1,268.2
Total Non–Current Liabilities	**8,032.0**	**9,027.8**	**9,949.4**	**10,595.9**	**11,310.6**	**11,717.7**
Total liabilities	**9,458.2**	**10,404.3**	**11,084.6**	**11,792.0**	**12,413.5**	**12,847.0**
Net Assets	**6,317.2**	**6,441.1**	**6,714.0**	**6,875.2**	**7,089.4**	**7,401.2**
Equity						
Reserves	1,407.7	1,678.0	1,951.0	2,112.2	2,210.3	2,399.9
Retained Earnings	1,761.2	1,601.2	1,601.2	1,601.2	1,717.3	1,839.5
Share Capital	3,148.4	3,161.9	3,161.9	3,161.9	3,161.9	3,161.9
Total Equity	**6,317.2**	**6,441.1**	**6,714.0**	**6,875.2**	**7,089.4**	**7,401.2**

6.1.2 Benchmarked financial performance (UK, Australian, other)

Sydney Water's financial performance is in line with a number of water utilities in the UK. Whilst Sydney Water's funds from operations interest coverage (FFO/IC) is not as strong as other Baa listed water utilities, we are significantly lower geared at about 51% compared with a mean of 74%.

Table 6-3 compares key credit metrics for Sydney Water against benchmarked water utilities in the UK. Our benchmarked performance is comparable to Anglian Water although our gearing is significantly lower. If we were to gear up to IPART's notional gearing of 60% used in its WACC estimate and in determining the regulatory tax allowance in our building block, then this would place pressure on our credit metrics, in particular our FFO/Debt and FFO/IC.

Table 6-3 – Key statistics for Sydney Water and the UK water sector

Rating	Outlook	Name	FYE	Adjusted ICR	Net Debt / RAV	FFO Interest Coverage	FFO / Net Debt	RCF / Net Debt	RCF/ Capex
A3	Stable	Severn Trent Water Ltd. [2]	2014	2.0	68%	3.6	13.4%	6.9%	0.6
A3	Stable	United Utilities Water PLC [2]	2014	2.4	63%	4.2	14.1%	11.7%	0.8
A3	Stable	Wessex Water Services Ltd	2014	2.9	67%	4.4	14.3%	8.1%	0.7
A3	Stable	Dwr Cymru Cyfyngedig (Welsh Water)	2014	1.7	62%	2.9	11.5%	11.5%	0.9
A3		Mean		2.2	65%	3.8	13.3%	9.5%	0.8
Baa1	Stable	Affinity Water Ltd.	2014	1.4	80%	3.9	15.0%	9.4%	0.7
Baa1	*Stable*	*Anglian Water Services Ltd.*	*2014*	*1.7*	*80%*	*2.5*	*9.1%*	*4.7%*	*0.6*
Baa1	Stable	Bristol Water Plc	2014	2.5	68%	4.5	19.6%	15.6%	0.5
Baa1	Stable	Northumbrian Water Ltd. [3]	2014	1.7	70%	3.1	11.9%	4.8%	0.6
Baa1	Stable	Portsmouth Water Ltd.	2014	1.6	81%	3.0	13.5%	12.1%	1.1
Baa1	Stable	Severn Trent plc	2014	1.8	64%	3.6	14.1%	10.3%	0.8
Baa1	Stable	Sutton & East Surrey Water plc	2014	2.2	74%	3.7	15.8%	11.6%	0.8
Baa1	Negative	Thames Water Utilities Ltd.	2014	1.8	79%	2.9	9.4%	7.6%	0.6
Baa1	Stable	United Utilities PLC [4]	2014	2.7	57%	4.5	15.9%	11.8%	0.8
Baa1	Stable	Yorkshire Water Services Ltd.	2014	1.5	81%	2.5	8.4%	6.4%	0.8
Baa2	Negative	Southern Water Services Ltd.	2014	1.2	81%	2.7	10.8%	10.4%	1.0
Baa2	Stable	South East Water Ltd.	2014	1.9	84%	2.9	10.4%	7.6%	0.7
Baa2	Stable	South Staffordshire Water Plc	2014	2.5	64%	4.5	21.5%	16.0%	1.1
Baa2		Mean		1.9	74%	3.4	13.5%	9.9%	0.8
Baa1	***Stable***	***Sydney Water Corporation***	***2015***	***1.9***	***51%***	***2.3***	***9.1%***	***5.8%***	***0.6***

Source for above: *Moody's Investors Service. 2015 Industry Outlook. UK Water Sector. 13 October 2014. Appendix 5, Page 24.*

Note: Regulated asset base value (RAV) is another term for regulated asset base (RAB)

6.1.3 Financial performance over current determination

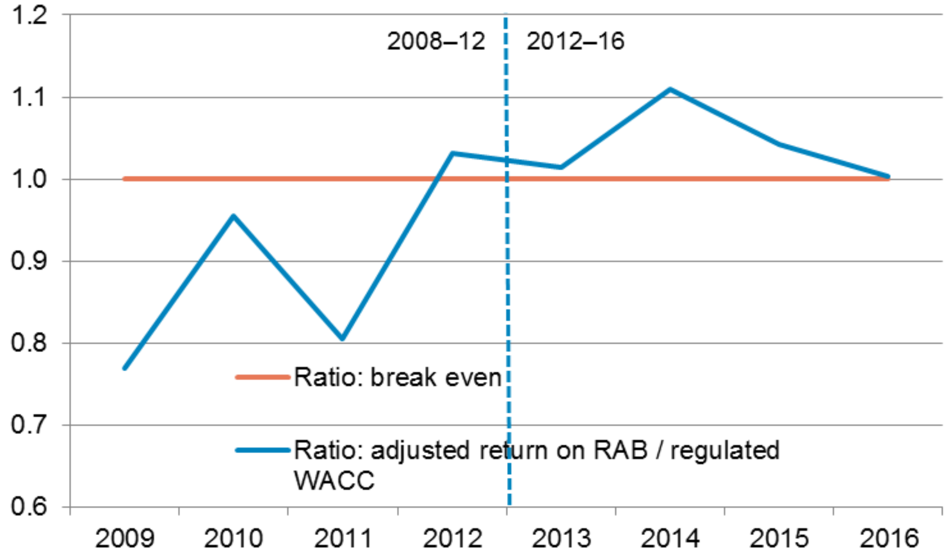
Over the current determination period, 2012–16, we have improved our financial performance compared with the previous price path. The improved financial performance is driven by:

- increased revenues from water sales and receipt of assets free of charge (AFOC)
- business efficiencies driving much lower opex than we expected (see Chapter 7)
- lower capex than anticipated due to efficiencies and deferrals (see Chapter 8)
- lower finance charges and reduced new borrowings arising from the above.

Our improved financial performance has resulted in returns above the WACC set by IPART for the 2012 price path. This performance contrasts with our performance over 2008–12, where returns were below IPART's WACC. This was largely driven by forecast water demand being significantly below actual demand as a result of there being no 'bounce back' after water restrictions were removed (see Chapter 12 for more information).

Figure 6-3 below shows the ratio of adjusted earnings on the regulated asset base (RAB) value compared with the regulated WACC from 2008 to 2016. In this ratio, breakeven is equal to 1.0.

Figure 6-3 – Adjusted return on the RAB compared with the regulated WACC



6.1.4 Long-term financial position

Sydney Water has developed a 20-year financial plan, supported by long-term investment, operations and maintenance plans. A long-term financial plan is limited by the many inputs and assumptions that are beyond the control of Sydney Water. These include external influences such as movements in global and local financial markets as well as political, regulatory and environmental factors and population growth. The current, emerging and future challenges faced by Sydney Water are outlined in Chapter 2.

We periodically update our long-term financial plan in response to changes in the internal and external environments. We will update this plan following the 2016 Price Determination and 2015 Operating Licence reviews.

Accepting the limitations imposed by these factors, we believe Sydney Water's long-term financial position over the next 20 years is sound and sustainable.

Figure 6-4 and Figure 6-5 show Sydney Water's key financial metrics of FFO/IC, FFO/Debt and Debt/RAB over the past three years, and forecast over the next 20 years. These remain within the current parameters for a Baa1 (BBB+) to Baa2 (BBB) rated water utility. All three metrics are expected to marginally improve over the forecast 20-year period, reflecting ongoing efficiencies, indexation of the RAB and the higher expected WACC in the longer term of 5.3%.

Figure 6-4 – Sydney Water's past and forecast key credit metrics

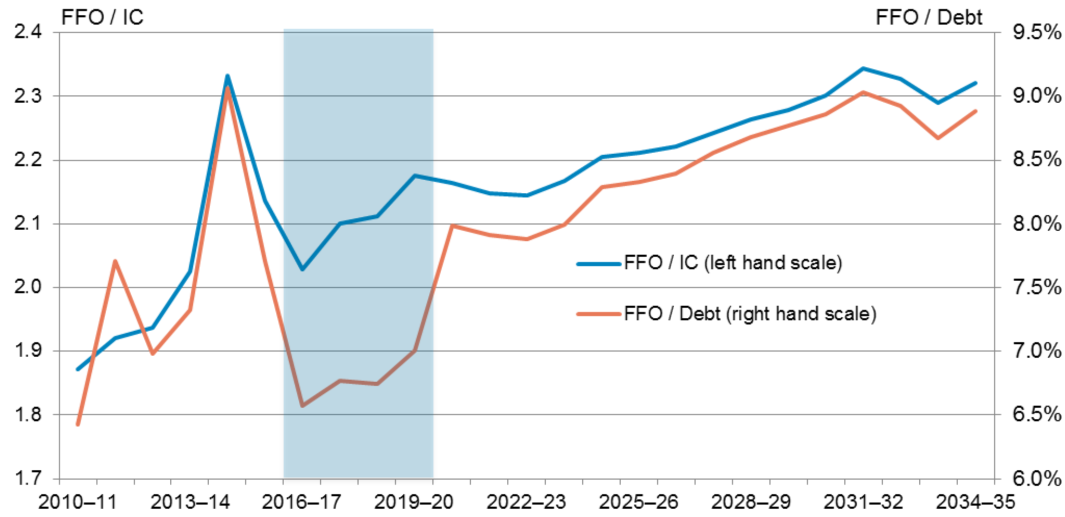
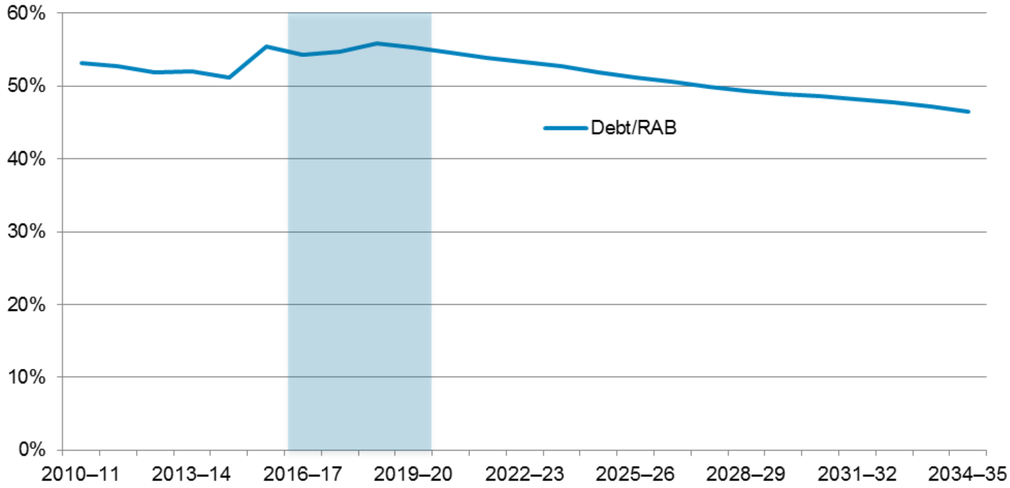


Figure 6-5 – Sydney Water's past and forecast Debt/RAB



6.1.5 Financial risks

In developing our pricing proposal and our 20-year forecasts, we have made a number of assumptions. While we believe Sydney Water to have a financially sound and sustainable position over 2016–20, there are a number of risks that can affect our projected financial position positively or adversely.

We have adopted a prudent approach to managing these risks, but note that under the proposed revenues and form of regulation, Sydney Water will continue to bear significant systematic[56] and non-systematic risks. The key interrelated risks and how we propose to manage them are set out below.

[56] Systematic risks are the variations in revenues and costs arising from general economic trends that affect general returns on assets while non-systematic risks are factors that affect revenues and costs independently of general economic trends, such as climate driven changes in demand. As outlined in Chapter 9, the WACC does not provide compensation for non-systematic risks.

- **Demand risk**
  Demand variations due to weather factors have a substantial direct impact on revenues and cash flows. The current mechanism for passing through this risk to customers is not effective because the threshold is so high, it is unlikely ever to be triggered. We have further improved our demand forecasting models to minimise errors in forecasting, but as highlighted in Chapter 12, the residual weather-related risk remains. Sydney Water's improved financial position is an essential element in providing the capacity to absorb this risk.

- **Opex risk**
  Opex risks relate to unanticipated changes in input costs such as wages, energy or chemical costs, and changes in policy, legislative and regulatory requirements (see below). The opex projections are based on continuation of the current 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. However, we propose a cost pass-through mechanism in Chapter 10 to mitigate the risk that identifiable specific factors beyond Sydney Water's control materially affect the costs or scope of projects, either up or down.

- **Capex risk**
  Capex risks relate to unanticipated changes in input costs, changes in tender market conditions and changes in policy, legislative and regulatory requirements (see below). The projections are based on a continuation of the current low rates of increase in specific unit costs and the current favourable tender market conditions that have also driven lower opex. The projections do not include contingency factors. The ongoing success of competitive tender processes and contestability will depend on the state of competition in the market for the services we are tendering on. It is possible in the future that we will achieve the lowest price in the market, but the price is higher due to more limited supply in the market. For example, with the significant future infrastructure work in NSW, such as WestConnex, there may be a combination of more limited supply of services and higher demand that pushes prices up. There is therefore a risk that our assumptions will prove to be optimistic. Under our proposal Sydney Water bears this risk. However, as for opex we propose a cost pass-through mechanism (see Chapter 10).

- **Interest rate risk**
  As the WACC is set for the regulatory period, Sydney Water is exposed to the risk of variations in interest rates during this period. Given that interest rates are currently at historically low levels, increases in interest rates may be more likely than decreases over the period as a whole. Recently other regulators (eg Australian Energy Regulator or AER) have introduced annual adjustments to the cost of debt to pass this interest rate risk onto customers. We have not requested annual adjustments for the cost of debt for this determination and will instead seek to manage this risk through our financing strategy.

- **Policy, legislative and regulatory risk**
  Sydney Water is exposed to a number of policy, legislative and regulatory risks, particularly in regard to housing affordability policies, environmental regulations and water quality standards. There is a significant risk due to the absence of an update to the 2010–11

Metropolitan Development Plan (MDP) and the uncertainty associated with release of land and location of future development. These risks are generally one-sided and result in increasing costs. In particular, given the estimate of a 5-6 times higher average cost associated with servicing greenfield versus infill area, any major variation in the assumed mix could result in a substantial increase in cost. We have not provided any contingency for these risks in our forecasts. Further, the cost impact is significant if the forecast growth levels are realised in the last year of the proposed price path, as we have only adopted a 'plan ready' strategy (see Chapter 8). Our objective is to ensure that policies in each of these areas are proportionate and efficient. Given this, it is important that a cost pass-through mechanism is provided to recover any material costs of regulatory and policy changes beyond Sydney Water's control (see Chapter 10).

In summary, the projections of costs underpinning the proposed revenues assume significant continuing productivity gains and do not include contingencies for the risks set out above. Hence, it is important that:

- the regulated revenues provide a buffer above the minimum requirements for financeability
- the cost pass-through mechanism (see Chapter 10) is adopted for significant cost and regulatory/policy risks that are outside Sydney Water's control.

If IPART considers that it is not possible to provide a cost pass-through mechanism, an ex-ante probabilistic allowance should be provided in the cash flows where possible. There are precedents for this in IPART's treatment of the Shoalhaven transfer for the Sydney Catchment Authority, the volume risk for State Water, and specific cost risks for SDP.

6.2 Financeability

6.2.1 What is financial sustainability?

Financial sustainability, also known as financeability, may be defined as the capacity of a business to finance its activities, including:

- day-to-day operations
- capital investments
- replacing, renewing and expanding infrastructure.

We finance these activities through debt and equity sources and through other arrangements such as leasing. The assessment of financial sustainability must accommodate appropriate returns to equity, debt and lease sources.

The objective of IPART's financeability test is to assess the financial sustainability of a utility during a regulatory period. To do this IPART assesses if the utility will be able to raise finance, consistent with an investment grade-rated firm, during a regulatory period. For this purpose IPART's benchmark investment grade-rated firm is Baa2 (BBB, S&P rating).

6.2.2 The role of the financial sustainability test

Based on Sydney Water's understanding, the role of IPART's financeability test is as follows:

1. The financeability test is not an alternative to the building block approach to setting revenue requirements.
2. The use of the test recognises that there is the possibility that the building block approach can result in periods when revenues fall below sustainable levels and that this is not in the interest of consumers.
3. It provides a 'soft floor' for revenues, and any adjustments made by IPART to the revenues should be NPV neutral. That is, an upward adjustment to revenues on financeability grounds would be offset by future downward adjustments.
4. The financeability test does not set a 'soft ceiling' on revenues. The building block revenues should be based on the best estimates of the components. Any adjustment on financeability grounds should only be because revenues are insufficient for a period and it should be explicit and NPV neutral. Parameters such as the WACC should not be used to achieve a specific financeability outcome.
5. A contentious issue in the assessment of financeability tests is whether the actual or notional gearing is used. IPART uses actual gearing because ratings are based on actual gearing. Other regulators, including Ofgem and Ofwat, both use notional gearing. This is consistent with the assumption used in the building block model and we believe is a better test of the reasonableness of the building block outcomes. Notional gearing also affects our tax allowance in the building block (see Chapter 5). We have already highlighted to IPART our concerns regarding the inconsistent use of notional and actual gearing in previous submissions on its financeability test[57]. We remain of the view that IPART should at least have regard to both sets of results, actual and notional gearing.

In assessing financeability, IPART will calculate the following three financial ratios:

- Funds from operations (FFO) interest cover: calculated as FFO plus interest expense divided by interest expense. This is a coverage ratio and measures a utility's ability to service its debt.
- Debt gearing to regulatory asset base (RAB): calculated as debt divided by the regulatory value of fixed assets. This is a leverage ratio and measures a utility's ability to repay its debt.
- FFO over debt: calculated as FFO divided by debt. This is a more dynamic measure of leverage than debt gearing and is a useful indicator of a utility's ability to generate cash flows.

In assessing a water utility's credit rating, a rating agency will apply a weighting of about 35% to the above ratios. It will also consider a utility's wider performance and environmental factors,

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[57] Sydney Water, *Sydney Water Submission to IPART discussion paper: Financeability test in price regulation*, December 2012, Sydney Water, *Sydney Water Response to IPART draft decision: Financeability test in price regulation*, October 2013.

including the regulatory environment in which it operates, a company's operational characteristics, business model and financial structure.

For NSW water utilities, Moody's Investors Service (Moody's) has stated that the following qualitative factors could adversely impact a rating:

- a material weakening of the financial profile due to operating issues or adverse hydrology conditions
- a consequent return of mandatory initiatives beyond current state-imposed rules to restrict water supply,
- changes to the regulatory environment.

Apart from these qualitative drivers, a Baa2–rated (BBB, S&P ratings) water utility within NSW will have the upper and lower bounds outlined in Table 6-4 for the above key credit metrics. These ranges reflect how our quantitative metrics are generally assessed by Moody's in the light of its assessment of our other qualitative metrics.

Table 6-4 – Maximum and minimum credit metrics for a Baa2 (BBB) rated utility

Baa2 (BBB) rating	FFO interest cover	Debt to RAB	FFO to debt
Upper bound	Up to 2 times	>55% <70%	Up to 7%
Lower bound	Down to 1.7 times	>69%	Down to 6%

If either the upper or lower bound was exceeded on a consistent basis, there would be an upgrade to Baa1 (BBB+) or a downgrade to Baa3 (BBB-). A movement in the rating may be warranted if one or two of the ratios are exceeded.

6.2.3 Sydney Water's credit rating

Sydney Water's current standalone or baseline credit assessment (BCA) is Baa1. Moody's supported this rating in their published credit opinion in March 2015[58]. This is Sydney Water's first ever credit rating upgrade. Figure 6-6 shows Sydney Water's credit rating history over the past 22 years.

Moody's noted that the strengthening of our baseline credit assessment resulted from the rating agency's expectation of improved transparency in the regulatory framework. Moody's expects that IPART will continue to exhibit consistency in its decisions, translating into increased stability in revenue outcomes for Sydney Water. The 2016 price determination will be the first opportunity for Moody's to assess the consistent application of IPART's regulatory regime.

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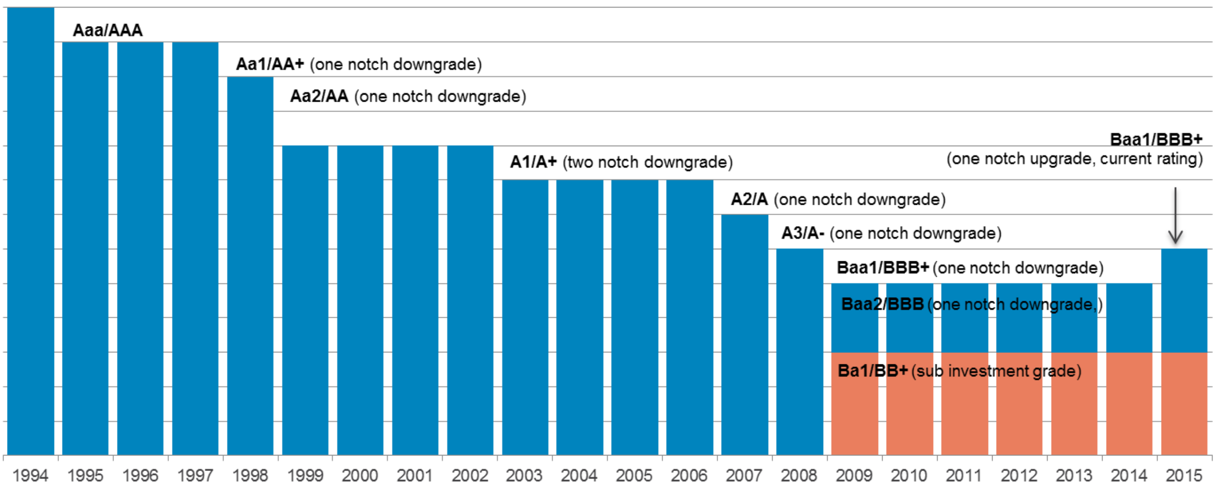
[58] See, Moody's Investors Service, *Credit Outlook. Credit Implications of Current Events*, 9 March 2015, p 51; and Moody's Investors Service, *Rating Action: Moody's upgrades Sydney Water's rating to Aa3; outlook stable*, 4 March, available at https://www.moodys.com/research/Moodys-upgrades-Sydney-Waters-rating-to-Aa3-outlook-stable--PR_319421?WT.mc_id=AM~RmluYW56ZW4ubmV0X1JTQl9SYXRpbmdzX05ld3NfTm9fVHJhbnNsYXRpb25z~20150304_PR_319421

Sydney Water’s believes that based on our pricing proposal and the key credit rating metrics, in the worst case, we will maintain our current credit rating. On the basis of these projected outcomes, Sydney Water does not believe there is any need for any financeability adjustment by IPART over 2016–20.

Figure 6-6 – Sydney Water's credit rating history



7 Operating expenditure

Key messages

- The management of operating expenditure is crucial for Sydney Water to be able to offer bill and price decreases to customers, whilst providing high quality services. Operating expenditure (opex) historically, and in our 2016 pricing proposal, comprises around 65% of our total expenditure.
- Over 2012–16, Sydney Water has improved the way we manage our opex. We expect to spend total regulatory opex of $5.4 billion over this period, which is $223 million (4%) less than IPART's determined opex. We expect to save $234 million in core regulatory opex (excluding bulk water costs), offset by a slight increase of $11 million in bulk water costs. The result is a decrease in opex costs per property of about 12% over the period.
- The opex efficiencies have been driven by improved procurement and outsourcing arrangements, using competitive tendering processes, which have accounted for around $200 million of savings. We made key savings in:
    - energy – $121 million
    - outsourcing and improved procurement practices – $52.8 million
    - materials – $32.3 million.
- Over the 2016–20 we have forecast efficient regulatory opex of around $5 billion. We have carried over the opex efficiencies realised over the current period, resulting in opex that is $393 million lower than we expect to spend in 2012–16. This drives 24% of the expected average residential customer bills decrease over the next period.
- About 73% of our forecast regulatory opex over the 2016–20 will be spent externally. About 38% of our opex will be bulk water costs. We will further improve our procurement and tendering processes over the next period, but we are forecasting more modest savings.

In this chapter we provide an overview of:

- the total regulatory opex proposed for 2012–16 and 2016–20
- key drivers of our opex performance over 2012–16
- our forecast opex for 2016–20.

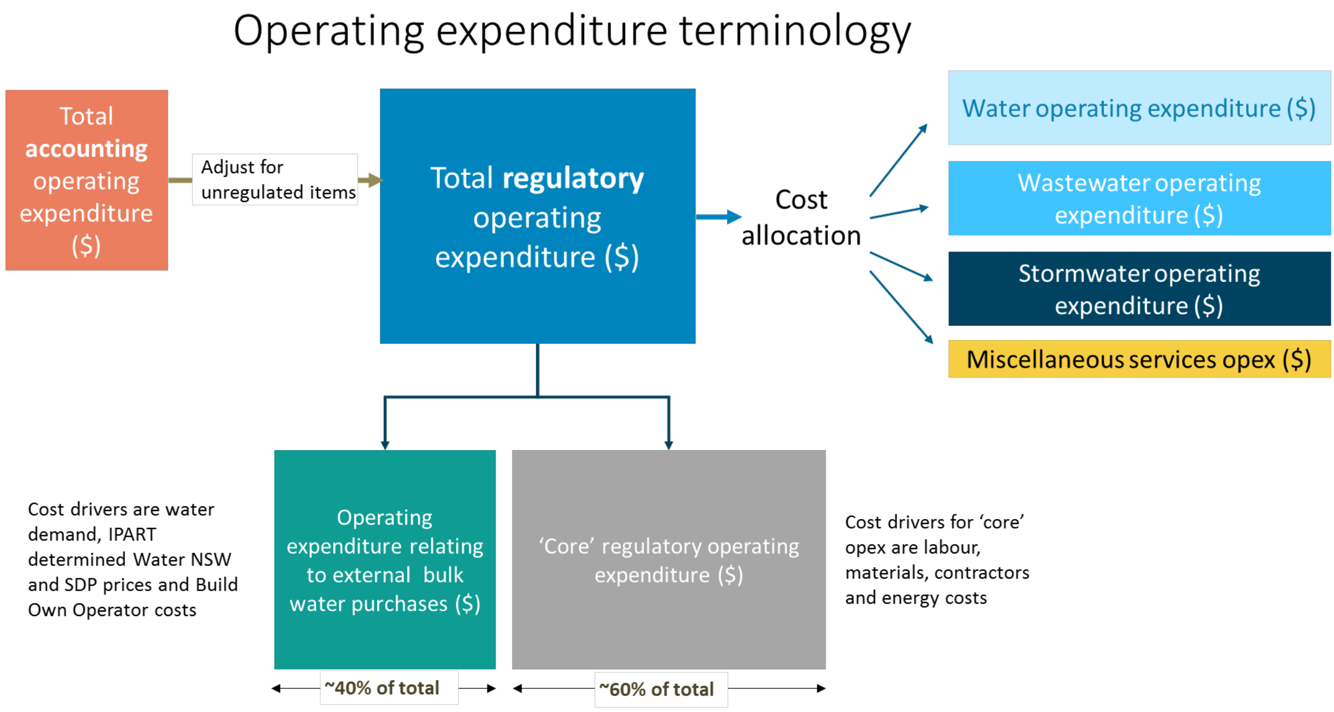
7.1 Our operating expenditure 2012–20

7.1.1 Key terms

For pricing purposes, our operating expenditure should be considered in terms of each product, for managing costs and improving efficiency, and in terms of the underlying cost components.

For clarity, the terminology used throughout this chapter to describe the various types of operating expenditure (opex) is shown in Figure 7-1.

Figure 7-1– Operating expenditure terminology and components



We use our total regulatory operating expenditure (opex) as part of the building blocks approach to calculate our revenue requirement for each of our services which is then used by IPART to calculate prices. Total regulatory operating expenditure equals total accounting operating expenditure less a small amount for unregulated items. After adjustments, total regulatory operating expenditure is allocated to water, wastewater, stormwater and miscellaneous services.

Our total regulatory operating expenditure comprises 'core' (60%) and 'non-core' (40%) regulatory opex. Non-core regulatory opex relates to bulk water purchases from WaterNSW, Sydney Desalination Plant (SDP) and privately owned and operated water filtration plants. Non-core regulatory opex is largely outside our direct control. Hence, we focus mostly on core regulatory opex, as this is where we can have the most influence, and drive efficiencies.

Core opex and core regulatory opex may be read interchangeably, unless otherwise specified.

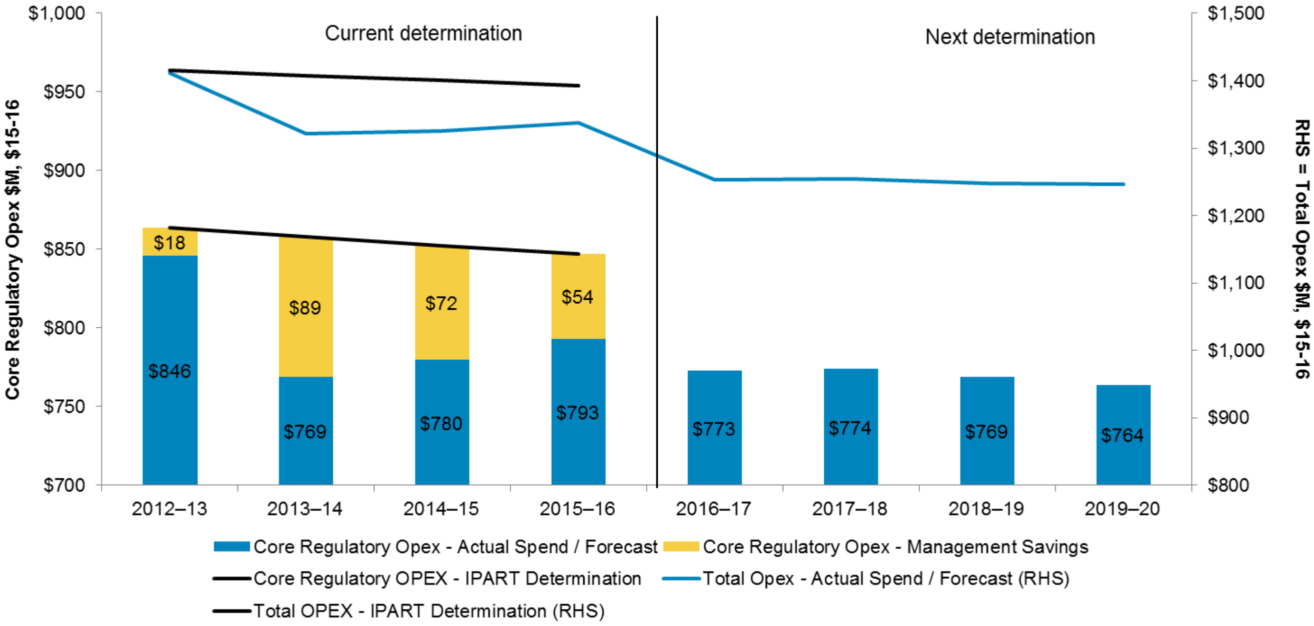
7.1.2 Our performance 2012–20

We expect our total regulatory operating expenditure in the current period to be $5.4 billion ($2015–16), which is $223 million (or 4%) less than IPART allowed in 2012. We have achieved these savings while increasing customer satisfaction and continuing high levels of compliance against our Operating Licence and Environment Protection Licences (EPLs). Core opex is $234 million (or 6.9%) lower, while non-core opex (bulk water) is $11.5 million higher.

We forecast total operating expenditure for the 2016–20 period will be $5 billion, $393 million lower than what we expect to spend in the current period. About $3.1 billion ($2015–16) will be core operating expenditure and the remaining $1.9 billion will be non-core opex (bulk water costs).

Our total and core operating expenditure for 2012–20 is shown in Figure 7-2.

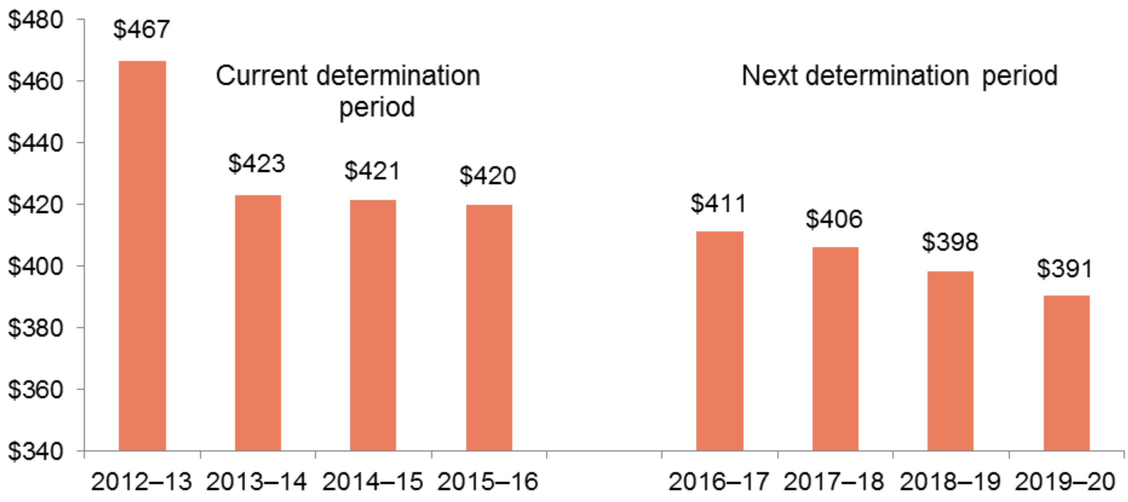
Figure 7-2 – 2012–20 Total and core operating expenditure ($2015–16 million)



Actual cost per property was $467 in 2012–13 and is expected to fall to $391 in 2019–20 – a reduction of 16% from the start of the current period to the end of the next. A proportion of our costs are fixed in nature and some of this cost per property reduction is driven by the increase in the number of properties served. Nevertheless we remained committed to ensuring that efficiencies achieved to-date continue, enabling us to service a customer base that is growing by 1.3% a year, without increasing costs.

See Figure 7-3 for the comparison between 2012–16 and our proposed opex per property for 2016–20.

Figure 7-3 – Operating costs per property 2012–20 ($2015–16)



7.2 Operating expenditure performance 2012–16

We expect our total regulatory operating expenditure in the current period to be $5.4 billion ($2015–16), which is $223 million (or 4%) less than IPART allowed in 2012. We made these savings while increasing customer satisfaction and continuing high levels of compliance against our Operating Licence and EPLs. Compared with IPART's allowance, our core opex is $234 million (or 6.9%) lower, while non-core opex (bulk water) is $11.5 million higher.

Table 7-1 shows annual total and core regulatory operating expenditure allowances against actual (and forecast) amounts we expect to achieve during 2012–16.

Table 7-1 – Total and core operating expenditure ($2015–16 '000)

	2012–13 Actual	2013–14 Actual	2014–15 Forecast	2015–16 Forecast	Total
IPART determination					
Total regulatory opex	1,416,029	1,407,648	1,401,491	1,393,020	5,618,187
Bulk water	552,075	549,705	549,707	545,221	2,196,708
Core regulatory opex	863,954	857,943	851,783	847,799	3,421,479
Our expenditure (total regulatory opex)					
Actuals and forecast	1,410,531	1,321,460	1,326,239	1,336,985	5,395,216
Variation from determination	5,497	86,188	75,251	56,035	222,971
Percentage variation	0.4%	6.1%	5.4%	4.0%	4.0%
Our expenditure (core regulatory opex)					
Actuals and forecast – core opex	846,013	767,963	779,988	793,086	3,187,051
Variation from determination	17,941	89,980	71,795	54,713	234,429
Percentage variation	2.1%	10.5%	8.4%	6.5%	6.9%

As shown in Table 7-2, energy, materials, contracts and outsourcing account for over $200 million of the savings in core opex. These categories are tested in the market regularly, through contractors' rates and procurement activities including competitive tender processes. We believe these actions allow us to deliver these services efficiently.

Table 7-2 – Total regulatory operating expenditure variances 2012–16 ($2015–16 ‘000)

Total regulatory opex allowance	**5,618,187**	**Comments on variance**
Less variances in:		
Bulk water	(11,457)	Over-expenditure due to increased demand, higher SDP energy prices and wet weather events generating poor raw water quality.
Core opex		
Energy	120,985	Better energy procurement, favourable market conditions, energy efficiency initiatives and carbon tax repeal ($35.6 million)
Contracts, including data management	52,779	Efficiency initiatives including improved procurement practices
Labour	49,367	Management reforms and efficiency initiatives
Other savings	45,981	Transport and various administrative areas
Materials	32,303	Efficiency and procurement initiatives on chemicals and preventative maintenance program, plus outsourced contract changes that have moved some costs from ‘materials to ‘contract’
Mechanical and electrical outsourcing	7,478	Net savings across labour, contractors, materials and transport generated from mechanical and electrical maintenance outsourcing
Exceptional item – redundancy	(31,737)	Labour reductions and maintenance outsourcing
Exceptional item – asset provisioning	(42,728)	Opex expense primarily driven by accounting for constructive obligation provisions for asset remediation (eg safety and asbestos)
Total opex outturn ($,000 2015–16)	**5,395,216**	

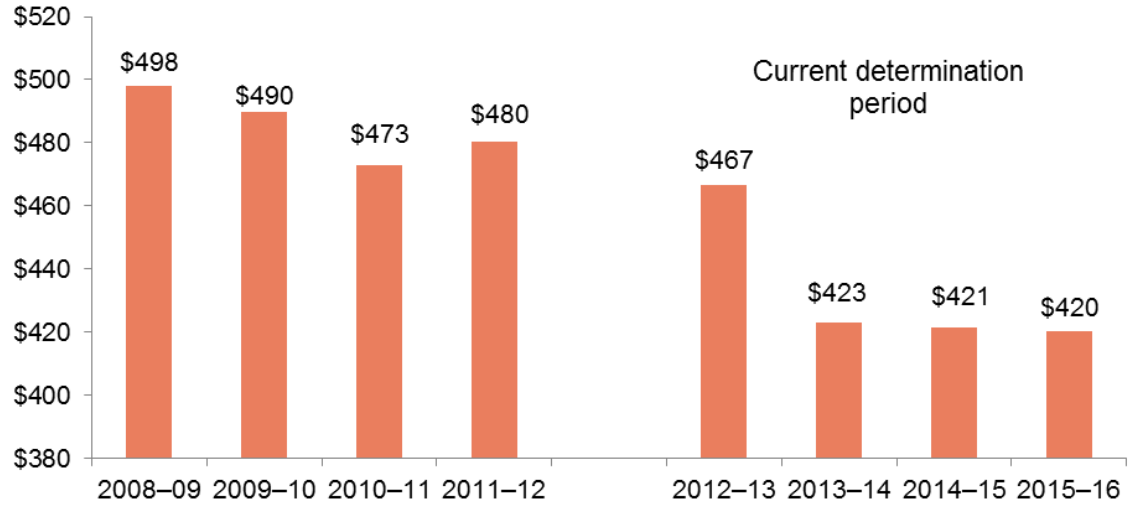
Note: Positive variance values are where expenditure was lower than the allowance.

Information on the component parts of these variances and their reasons are provided later in this chapter.

7.2.1 Impact of efficiencies on operating cost per property

The impact of operating cost savings in this period is shown in the measure 'core operating cost per property'[59] (see Figure 7-4).

Figure 7-4 – Operating costs per property 2008–16 ($2015–16)



7.2.2 Bulk water cost variances

$11.5 million over the $2.2 billion allowance for bulk water costs
We incurred slightly higher than expected costs due to buying more water from WaterNSW, higher SDP electricity expenses and increased BOO filtration costs due to wet weather generating poor raw water quality.

Bulk water costs relate to:

- WaterNSW, which supplies most of the raw water we treat and deliver to customers
- Sydney Desalination Plant Pty Limited (SDP), which has a specific set of charging arrangements, based on its operating status and volumes purchased
- Four privately owned 'Build, Own, Operate' (BOO) water filtration plants, from which we purchase water filtration services under agreements established in the 1990s.

The variation in costs is presented in Table 7-3 and discussed in more detail below.

[59] Operating costs for this measure equals total accounting operating expenditure less the costs of bulk water and contracted water filtration costs.

Table 7-3 – Bulk water costs for 2012–16 ($2015–16 '000)

	2012–13	2013–14	2014–15	2015–16	Total
IPART allowance	552,075	549,705	549,707	545,221	2,196,708
Actuals and forecasts	564,518	553,497	546,251	543,899	2,208,165
Variation from determination	(12,443)	(3,792)	3,456	1,322	(11,457)
Percentage variation	(2.3%)	(0.7%)	0.6%	0.2%	(0.5%)
Variation by business areas $'000 2015–16					
WaterNSW Bulk water	(3,526)	(2,146)	151	122	(5,399)
Desalination (SDP Pty Limited)	(4,388)	926	122	(1,148)	(4,488)
BOO water filtration costs	(4,530)	(2,572)	3,183	2,347	(1,571)
Variation from determination	(12,443)	(3,792)	3,456	1,322	(11,457)

Differences in each bulk water cost item are explained below.

WaterNSW bulk water costs $5.4 million higher than forecast due to:

- higher demand for water, increasing costs by $10.7 million
- $4.4 million savings in operating expenditure from repeal of the carbon tax
- $1 million saving for minor escalation difference.

SDP costs $4.5 million higher than forecast due to:

- higher fixed network energy prices (access and capacity charges) charged by their energy supplier. Under the supply contract with SDP these costs are passed through to Sydney Water
- 'transition to shutdown' payment of $1.6 million made in July 2012 for the SDP ceasing production in June 2012.

BOO water filtration costs $1.6 million higher than forecast due to:

- higher demand for raw water, increasing costs by $14.2 million
- higher treatment costs ($13.7 million) from poorer raw water quality caused by wet weather events increasing levels of turbidity, natural colour and organic matter

- $4.6 million savings in maintenance costs at the Avon pumping station and Upper Avon transmission line high voltage system
- $16.5 million savings from lower escalation of contract indices including availability, chemicals, power and labour and procurement savings
- $3.7 million savings from exercising an option in the Illawarra and Woronora agreements to fix interest rates
- a $1.4 million saving from the repeal of the carbon tax.

7.2.3 Core opex savings

Improving how we do business

This section outlines changes and initiatives which have contributed to cost savings in core opex.

Business reform

In July 2011, the Board appointed a new Managing Director and Executive team. The primary objective was to implement significant management reform and build a more efficient organisation.

The reform was to ensure savings within the current and future determination periods, by establishing a corporate framework that enabled us to build a world-leading organisation with a continuous improvement culture. The reform focused on three main themes:

- Delivery of more effective asset management with improvements in maintenance service and productivity.
- Focused asset design and delivery strategies leading to lower asset costs, improved cross-divisional processes and reduced duplication.
- More efficient and focused corporate services from a leaner, higher-skilled and more commercially-focused workforce, partnering in the areas of information technology, procurement and property management.

As part of the reform process, a Corporate Business Improvement team was set up to manage improvement projects identified by the Executive. This ensures a critical review and consistent prioritisation of all improvement initiatives. Access to funds is controlled through a formal governance process and is only available for one-off initiatives with an approved and measurable benefit chain.

A new leadership framework

Effective leadership at all levels within the organisation is the critical driver of the culture change. The Leadership Framework has been progressively rolled out since 2012 and has created significant benefits including:

- clear accountabilities and improved task allocation
- flatter management structure within the organisation
- improved employee-manager relationships.

We will build on the foundation already established to broaden, deepen and accelerate leadership development at all levels in the organisation.

A more rigorous budgeting, delegation and approval process

We set up a more rigorous budgeting, delegation and approval process to ensure control and accountability for operating expenditure throughout Sydney Water. We created:

- a budget process with cross-divisional expenditure reviews for our whole value chain, identifying duplicate or overlapping expenditure
- operating budgets set with only 'mission-critical' expenditure and not with contingent amounts. All other proposed spend is subject to risk-based prioritisation through a prioritisation review by the Executive team.

The Executive drives continuous reviews of business activities and performance through the Corporate Business Improvement team and other processes to ensure that we lower costs while achieving service requirements.

Streamlined corporate strategy

In 2014, we launched a new corporate strategy to build a world-leading organisation. This underpins all of our future-focused activities. A key component outlined in Chapter 3 is an increased customer focus. To ensure we deliver strategic initiatives, we set up a transformation program.

Operational expenditure savings – cross-category impact of Mechanical and Electrical Delivery outsourcing

We saved $7.5 million on outsourcing mechanical and electrical maintenance function – cross category savings
This led to immediate cost savings across transport, materials and labour.

We saved $7.5 million by outsourcing the Mechanical and Electrical (MED) maintenance function of our business.

Industry benchmarking and independent reviews of our operations and maintenance functions identified that there was a significant difference in our mechanical and electrical maintenance labour costs and practices compared with those across the water sector. In March 2012, we invited proposals from the market for this work, instead of using in-house labour. Following a competitive tender process, we contracted Thiess Services in December 2012 to do all reactive and planned mechanical and electrical maintenance services for our operational facilities.

One of the other major benefits of the MED outsourcing was the opportunity to strategically change the Service Delivery business by providing flexibility in the front line technician's role (Modern

Mobile Workforce MMWF Program) as shown in Boxout 7-1. Gary Sturgess[60], a leading Australian microeconomist has cited the MED outsourcing as an example of a public organisation engaging in best practice use of contestability.

Boxout 7-1 – Successful integration of MED outsourcing contract

Following a transitional period, the new mechanical and electrical works and services contract started on 1 July 2013. The contract has price limits to provide confidence that Thiess will achieve the targeted efficiencies and net operating cost savings. This contract integrates all the facility maintenance activities previously carried out under a separate contract by another supplier, generating further efficiencies and operating cost savings.

Through successful integration and management, we forecast this contract will create extra savings of $4.2 million a year from 2016−17, compared with the original forecast, through:

- improving labour productivity by 20%
- reducing material/sub-contractor costs
- saving on accommodation and logistics
- reducing facilities maintenance costs.

Operational expenditure savings – labour

We saved $49.4 million in labour efficiencies
These savings were generated by the corporation-wide reform programs

Through our reform program, we have realigned our workforce, reducing FTEs by 246 over 2012–16. Table 7-4 shows the profile of a total of the reductions.

Table 7-4 – FTE Numbers as at June year

	As at June 2012	2012−13 June 2013	2013−14 June 2014	2014−15 June 2015	2015−16 June 2016
Expected FTEs in 2012 forecast		2,882	2,822	2,774	2,743
Actual and forecast June	2,776	2,681	2,476	2,492	2,497
Variation from 2012 forecast		201	346	282	246

Note: Variation includes 136 reduction from MED outsource for 2013–14 onwards

[60] G.L. Sturgess, *Contestability in Public Services: An Alternative to Outsourcing*, ANZSOG Research Monograph, Melbourne, April 2015.

A new Service Delivery division

In 2014, we created the Service Delivery division by amalgamating the Maintenance and Operations divisions and outsourcing all mechanical and electrical maintenance. We transitioned the Civil Delivery function (maintaining water and wastewater networks) to a purchaser–provider model. We also set up the 'meet and beat the market' program with internal productivity targets set at levels comparable with the market. The workforce responded well to this, driving further savings. We saw immediate efficiencies from the merger, eliminating duplication and reducing labour costs by 3%.

Focusing on liveable cities

We created a focused Liveable Cities Solutions division by bringing together the former Infrastructure Delivery and the Liveable Cities divisions to manage system planning though to program delivery. This will improve processes in the asset management value chain and facilitate integrated planning.

We have achieved efficiencies, covering operating and capital project expenditures:

- Separating strategy from delivery functions to clarify accountabilities and developing a flexible workforce.
- Implementing a best-practice project management contracting model, by combining internal staff with a joint venture of John Holland and Lend Lease. This model enables delivery functions to complement, not duplicate, capability in the private sector.
- Reviewing our processes to better align with Sydney's urban development drove significant process changes. Adopting a risk-based approach has resulted in over 50% of low risk development applications being processed more quickly. Other changes drove better customer experience with our approval times down 33% and still improving. Operational efficiencies of 17% have also resulted from the implemented changes.
- In 2014–15 the overall delivery function was further refined by insourcing the Infrastructure Program Management Office within Sydney Water, strengthening the focus on core business. The initiative resulted in a net capex saving of $2.1 million a year by reducing contractor capex costs by some $4 million a year.

Improved corporate services support

We have improved corporate services support through a smaller, more highly-skilled and commercially-focused workforce. The changes are described below.

- **Information Technology –** IT is a critical enabler to improving customer value. We created an Information Technology Division with a newly-appointed Chief Information Officer reporting directly to the Managing Director.

  We are delivering solutions that anticipate the future and deliver customer value by sharing responsibility for outcomes, simplifying engagement, streamlining IT processes and tools.
- **Procurement –** The procurement reform aims to achieve an advanced level of procurement maturity within three years by:

- creating a centre-led, category management model that partners with the whole organisation and sets the corporation-wide approach to procurement. This function sets policies, designs and implements leading practices and ensures the right enablers are in place. It also measures performance.
- providing systems to improve our capability to analyse expenditure data in a timely and effective way. It also provides better visibility of trends to improve decision-making and track benefits.
- Executive procurement team to oversee continuous improvement to ensure best value for money, particularly in procuring the most important goods and services, with investment in the knowledge and skills of staff who are active within the procurement process and contract management.

The total expected benefit over the three years to 2016–17 is $45 million in cost reductions and a further $45 million of avoided costs (both in opex and capex).

- **Property management** – We outsourced lease and licence management covering over 750 leases and licences, to provide an income stream of around $12 million a year. This ensured the function was managed by an experienced professional service provider with access to the latest database technologies and portfolio risk management techniques.

  We have a large property disposal program aimed at recycling land that is no longer needed for our operations. As as providing income to be shared by Sydney Water and our customers, the program lowers the work, health, safety and environmental risks associated with retaining un-rehabilitated land. The disposal program is contingent on changes in the regulatory treatment of land sales income, which are outlined in Chapter 11.

Operational expenditure savings – materials

We saved $32.3 million on purchasing materials
Improvements included changing the chemicals used, in response to price signals (which were balanced with the performance differences) and through better procurement.

Materials (chemicals) – savings $8.8 million

We created procurement and volume optimisation efficiencies of $13.6 million. This includes $6 million from a negotiated lower price for ferrous chloride, and the decision to move from ferric chloride to ferrous chloride dosing in a number of plants. These savings were partly offset by extra costs of $4.8 million due to poor raw water quality from a series of wet weather events. These events caused increased levels of turbidity, natural colour, organic matters, metals (iron, aluminium and manganese) and fluctuating pH levels in raw water at our water filtration plants.

Materials (excluding chemicals) – savings $23.5 million

We saved $6.3 million on major periodic maintenance programs, and $17.2 million from changes in categorisation (from 'materials' to 'contractors') after introducing the Thiess contract for mechanical and electrical services.

Operational expenditure savings – energy

We saved $121 million on energy
We achieved significant savings in energy costs through better procurement practices and improving energy efficiency, supported by favourable market conditions. This was helped by the repeal of the carbon tax, which generated savings of $35.6 million. We passed the carbon tax repeal savings back to customers through a rebate.

Energy savings from external events – $56.5 million

We have saved on energy through changed wholesale market conditions and regulated pricing outcomes.

Retail rate saving – $26.5 million

The 2012–16 IPART determination forecast for electricity was in line with what economic forecasters and industry experts estimated would be needed. These forecasts predicted CPI increases along with increases due to re-negotiation of state coal contracts by generators and an increase in gas-fired generation. However, market rate savings have been realised through significantly lower wholesale prices.

Network rates saving – $30 million

Significant reductions in network rates to those forecast for the 2012–16 period drove this saving. Our IPART price submission used published base rates for the 2009–10 financial year. These were escalated for future years, based on the Australian Energy Regulator's (AER) determinations for Energy Australia (now Ausgrid) and Integral Energy (now Endeavour Energy) – the two network areas we operate in. Although network prices continued to rise in the period from 2009–10, the escalation rate was lower than expected from the AER determinations.

Energy savings due to management actions – $29.9 million

We have also saved on energy through more effective energy management and improved strategic procurement:

- Volume variance – we saved $11.4 million from good performance of our renewable energy generation assets and our energy efficiency program achieving energy savings in treatment and network operations.
- Rate variance – we saved $18.5 million which can be split into:
  - Retail rate saving – $10.5 million.
    Our electricity contract allows us to progressively purchase our electricity rather than lock-in a fixed annual volume at a single time. We were able to take advantage of falling market prices where we purchased load over a period, following the price curve downward. This strategy lowered retail risk premiums normally applied for quote duration and load shape, as we have pre-approval for timely purchase decisions and manage our load profile risk. Compared with observable market prices, we estimate our approach has saved around $10.5 million over the price period.

- Carbon pricing saving – $4.2 million.
  A carbon price applied to the first two years of the price path, from July 2012 to June 2014. The impact of carbon pricing for the 2012–16 determination period was based on the Federal Government forecast of $23 a tonne in 2012–13 and a full fuel cycle (NSW) emissions factor. Our electricity procurement approach lowered our exposure to the full impact of the carbon price and reduced our carbon price exposure by $4.2 million between July 2012 and June 2014. For the period from July 2014 to June 2016, our contract pricing did not include any premium for carbon.
- Environmental rates saving – $3.8 million.
  We have been able to make savings in this area by actively self-managing environmental certificates under our contract.

Carbon tax repeal

We saved $35.6 million through the carbon tax repeal, effective from 1 July 2014. Sydney Water is providing rebates to customers to compensate them for including carbon tax costs in prices in 2014–15 and 2015–16.

Operational expenditure savings – contracts

We saved $52.8 million on contracts
We have improved efficiency and performance through appropriate and well-designed outsourcing and improved procurement practices.

Net savings – $52.8 million

We forecast service contractor costs in 2014–15 to be $283.6 million accounting for about 36% of Sydney Water's 2014–15 operating costs.

Using contractors can provide greater flexibility to scale capacity to meet business requirements and to source specialist skills as needed. It also enables us to understand the market and how we compare with it. For example, we can test efficiency and costs in the market by procuring services by competitive tender and we can benchmark our own costs and capability accordingly (for example in maintenance).

If the MED outsourcing contract is excluded and despite a reduction in staff numbers, we forecast a saving of $42.1 million in contractor costs in the current period.

The major variances in service contractor costs by primary function as analysed in the regulatory cost model can be attributed to:

Maintenance – Civil Delivery works, savings $23 million

We have reduced contractor costs by $33.3 million by reviewing work plans, making risk-based maintenance reductions and improving procurement. These savings are offset by the extra operational costs we incurred from servicing arrangements for growth areas ($7.7 million) and an unbudgeted regulatory Wet Weather Overflow Abatement project ($2.6 million).

Broadly, the contracted work supporting the Water Network Maintenance Programs (reticulation water mains, critical water mains, pumping stations and reservoirs) has delivered costs and outcomes close to the last IPART workplan target. However, a higher volume of road restoration, driven by more reactive workload has increased restoration costs, resulting in spend $5.4 million over the IPART allowance. This has been partially offset by rate savings from a new procurement arrangement which is delivering more competitive rates from councils, Roads and Maritime Services and contractors (see Boxout 7-2).

Maintenance of wastewater mains and pumping stations has have benefitted from procurement savings and reduced program activity in the areas of closed-circuit television (CCTV) and vent shaft maintenance.

Boxout 7-2 – Memorandum of understanding with local councils

We led 43 local councils to establish a landmark memorandum of understanding (MoU) for road restoration works. The aim was to improve the road restoration program with improved customer service. The MoU commits councils and Sydney Water to agreed timeframes, quality specifications and ongoing management practices for road and footpath restoration. The road restoration program has improved road restoration vendor relationships and helped implement a progressive strategy to drive procurement arrangements towards more commercially competitive rates, with timely attendance to our road repairs.

Operations – Customer Services, savings $13.6 million

Within the Operations function, we forecast that we will save $13.6 million in property-related costs – with savings of $4.1 million in the meter reading contract and $2.5 million in the rationalisation of the energy management analysis and reporting contract.

Administration and overheads, savings $5.4 million

Within this area are costs related to strategy, governance, finance and regulation, human resources, information technology, corporate services and business improvement.

- **Information technology – Managed Services, savings $14.2 million**

  We now use the NSW Government ICT Services Scheme to procure IT applications and services and have increased use of in-house staff, building skills and compentenices following the IT Reform.

- **Information Technology – Data Management, savings $10.6 million**

  Savings within Information Technology amount to $9.7 million due to improved contract negotiations across major software agreements. Other areas include saving $1.4 million by moving field and plant staff to a more flexible wireless network.

- **Corporate Services, increased $4.6 million (offset by reduced staff costs)**

  The major element of this increase has been the agreement to improve property lease management by outsourcing industry experts. This led to a contractor cost increased of

$3 million over the current determination period. From an overall cost perspective, this increase can be set against the savings made in reducing in-house labour, plus increased revenue from improved lease and licence management.

- **Business Improvement, increased $14.8 million**

  The 2011 Reform established a Corporate Business Improvement team to manage efficiency projects.

  Examples:

  - Capital to Procurement Value Chain Enhancement, which examined our capital to procurement process from start to finish.
  - Civil Delivery Innovative Methods Investigation, which worked with maintenance staff and selected industry specialists in a partnership to assess innovative working methods
  - A standardised approach to conducting, sharing and using benchmark data to achieve top strategic objectives
  - Lean Six Sigma, which we developed with the Australian Graduate School of Management, to ensure we have a skilled project manager base, trained in using Lean Six Sigma process improvement tools.

  Access to funds is controlled through a formal governance process and funds are only available for one-off initiatives with an approved and measurable benefit chain.

Details of the benefits from programs in which Business Improvement team has been involved are shown in Boxout 7-3 and Boxout 7-4.

Boxout 7-3 – Modern Mobile Workforce (MMWF) Program delivers at three levels

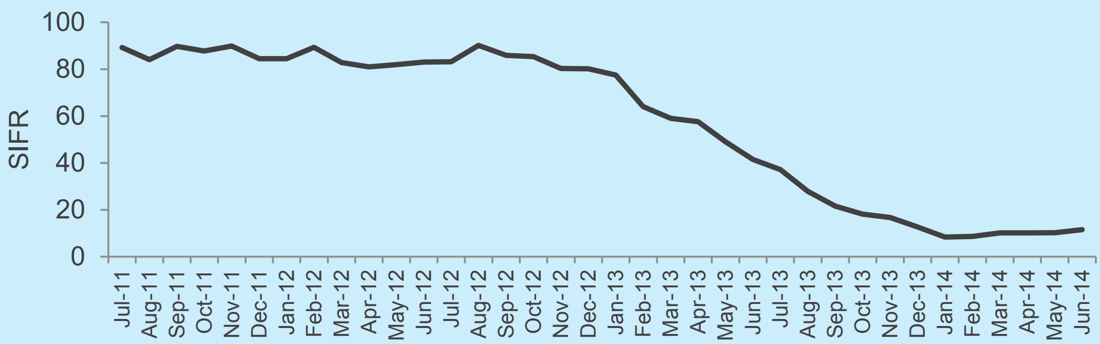
The MMWF program has been the main internal efficiency program within civil delivery that has delivered:

- Productivity improvements – cost savings of 12.9% and a productivity improvement of 17% to date. The drivers were:
    - introducing of a new 'Network Technician' role
    - revised roster patterns
    - business unit restructure aligning planned and reactive work types
    - better scheduling and despatching of work, including using GPS technology.

  Staff numbers have reduced through natural attrition.
- Safety performance – as shown in Figure 7-5, we have achieved significant safety improvements through:
    - fitness for work assessments and individual improvement plans for staff at risk of injury
    - increased supervisory and managerial commitment to ensuring safety
    - inclusive program of risk assessment review and communication involving all staff and unions
    - behaviour-based safety program with peer safety observations.

  This program has greatly improved safety outcomes while supporting efficiency gains.

Figure 7-5 – Civil Delivery significant injury frequency rate



- **Customer satisfaction** – Customer satisfaction with the performance of our work crews has risen from the high base of 8.3 at the end of 2012 to the current level of 8.9 out of 10. We have achieved this by improving the communication skills and practices of field crews and a program around 'keeping the customer informed'.

Boxout 7-4 – Re-aligning our urban development process

Since 2012–13, we have refocused our urban growth service from a compliance-based system to a quality-based platform. The business has implemented customer-focused initiatives to reduce both the cost of and times for processing development applications, better meeting market expectations during a period of accelerating growth.

Our involvement in development applications has been streamlined from an average of 99 days to 66 days. We made this 33% improvement by doing the following for 50% of applications deemed as negligible and low risk. We established:

- deemed to comply drawings to reduce time spent in the design process.
- risk-based segmentation of development types, enabling a complying application process.

These applications now receive a Section 73 certificate within five days.

Through these initiatives, and process reviews, we lowered development assessment and processing resources by 17% from $11.5 million to $9.5 million ($2015–16). This represents a further 3% saving on the efficiency measures already included in the IPART determination.

To enhance customer focus, we established a partnering model with the development community. Relationship managers work with developers who are delivering major transformative projects in both greenfield and infill areas. Our profile has also been elevated with active involvement in the Urban Development Industry Association (UDIA – the peak industry body) and working closely with other agencies and stakeholders to review the residential land development process.

We have made these improvements during a period of market growth, where the volume of developer-delivered assets, overseen by Sydney Water, increased by 60% from $129 million to $207 million a year.

Operational expenditure savings – other

We also realised other savings of $46 million

We achieved significant savings due to reforms across a number of other corporate functions including in transport, general insurance, marketing and other administration. Major savings are detailed below.

Transport savings – $12.7 million

We have saved on transport costs by having fewer vehicle numbers and acquiring more cost-effective vehicles, particularly from the Civil Delivery Modern Mobile Workforce initiative. We also saved from improved use of pool vehicles. The total number of vehicles we use has fallen from 1,354 in July 2011 to 1,014 in December 2014.

General insurance savings – $6.3 million

We have a blended general insurance program that insures through the Treasury Managed Fund and in the commercial insurance market as needed, and self-insuring against exposure to the legacy risk of dust diseases.

Insurance savings for our own assets reflect reduced claims and reinsurance costs, despite an overall increase in total declared asset value. Also, the motor fleet continues to reduce in size which, when combined with improved driver behaviour, has helped reduce claims and insurance premiums for motor vehicles. There have also been significantly fewer dust diseases claims.

Marketing and administration savings – $20 million

We saved $9.4 million in marketing spend, driven by less expenditure on Waterwise Rules and water restriction advertising. At the time of the last determination, some drought restrictions had not been lifted.

We saved $10.6 million in administration costs. The corporate-wide reforms provided opportunities to lower administration costs with savings forecast in most areas including printing and stationery ($4.6 million), postage ($1.3 million) and general expenses ($2.7 million).

Operational expenditure savings – exceptional items

Exceptional item – Redundancy $31.7 million over allowance	Exceptional item – Asset provisioning $42.7 million over allowance
• Increase because of business reforms • Linked to labour savings and maintainence contracting	• Additional opex from asset remediation, rectifying electrical cabling and inspecting and removing asbestos. • Asset write-back from sewer collapse.

Redundancy expense – $31.7 million increase.

As part of the major reforms noted in Section 7.2.3, we spent significantly more on one-off redundancy costs than our target in the two years 2012 to 2014. IPART allowed for about $6 million a year in redundancy expenses to fund ongoing reforms.

Asset provisioning – $42.7 million increase

We charge an expense when raising a provision for restoration costs where we have a legal or constructive obligation under accounting standard AASB137 to do the restoration. Our forecast expenditure to 2015–16 includes:

- $21 million to rectify redundant electrical cabling. In 2012–13, following an electrical shock to a worker, we committed remedial work to make redundant electrical cables safe. A report by expert consultants confirmed that unused cable conductors pose a significant safety risk. Accordingly, we committed to remedial works to remove or make safe redundant cables at all sites.
- We will spend $15 million on inspecting and removing asbestos and other hazardous materials from buildings and work locations.

- We will write back $5 million in assets from a sewer collapse in 2013. The work was initiated as a sewer lining capital project. As a result of the lining works, a section of the sewer collapsed. The repair has now been classified as an abnormal amount and expensed consistent with AASB 116, Property Plant and Equipment.

7.3 Forecast operating expenditure 2016–17 to 2019–20

This section presents:

- an overview of our forecast operating expenditure in the next period
- a summary of key assumptions and our forecasting approach
- details on our bulk water cost forecast
- details on our core operating expenditure forecast by labour, contracts and materials.

7.3.1 Overview

We forecast total operating expenditure for the 2016–20 period will be $5 billion, $393 million lower than what we expect to spend in the current period. About $3.1 billion ($2015–16) is core operating expenditure and the remaining $1.9 billion is non-core opex (bulk water costs).

7.3.2 Operating expenditure by product

Table 7-5 shows operating expenditure by product for the next determination period, compared with the last year of the current period (2015–16). This forecast including an allocation of corporate costs.

Table 7-5 – Forecast total operating expenditure 2016–20 by product ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20	Total
Water	233.1	229.7	230.8	230.4	229.2	920.1
Wastewater	512.0	506.5	505.4	501.8	497.9	2,011.6
Finance lease – Blue Mts Tunnel	13.1	0.0	0.0	0.0	0.0	0.0
Stormwater	8.4	8.3	8.5	8.4	8.4	33.6
Recycled water.(S 16A schemes)	27.0	27.2	27.1	25.7	25.8	105.8
less: revenue Rosehill scheme	(4.1)	(3.3)	(1.7)	(1.7)	(1.7)	(8.4)
River management	3.6	3.9	4.1	4.4	4.4	16.8
Sub-total regulated	793.1	772.3	774.2	769.0	764.0	3,079.5
Bulk Water						
• WaterNSW	213.7	197.2	199.8	203.8	209.9	810.7
• SDP	197.8	194.0	190.9	187.8	185.2	757.9
• BOO	88.3	89.2	89.3	87.7	88.1	354.3
• Finance leases	44.1	0.0	0.0	0.0	0.0	0.0
Total	543.9	480.4	480.0	479.3	483.2	1,922.9
Total regulated	1,337.0	1,252.7	1,254.2	1,248.3	1,247.2	5,002.4
Total unregulated	12.4	14.2	14.3	14.3	14.3	57.1
Total	1,349.4	1,266.9	1,268.5	1,262.6	1,261.5	5,059.5

An overview of the forecast opex for each product is as follows:

- Water – the forecast reflects slightly lower bulk water costs, lower maintenance costs from improved asset management methods and contracts and lower corporate opex.
- Wastewater **–** a reduction in the 2016–17 year, due to a change in the treatment of finance leases (see Boxout 7-5) and lower maintenance costs due to improved asset management and contracts and lower corporate opex.

Boxout 7-5 – Future changes in the treatment of finance leases

Sydney Water has two contracts with finance lease components:

- the Blue Mountains Tunnel Sewage Transfer Agreement
- the Macarthur Water Filtration Agreement (WFA), amended and extended in 2010.

We are proposing that the two WFAs for Wynua and Prospect, also be treated as finance leases.

Under IPART's existing regulatory approach, finance lease payments for the Blue Mountains Tunnel Sewage Transfer Agreement and the Macarthur WFA were included in the ARR for 2012–16 and passed through as operating expenditure.

We propose that, from 1 July 2016, finance lease payments be included and recovered through the Regulatory Asset Base (RAB) (see chapters 5 and 11). If IPART accepted our proposal, it would only include contract payments in our operating expenditure.

7.3.3 Impact of forecast opex on operating expenditure per property

The annual operating expenditure in the next period will remain at a similar level to that in 2014–15 despite expected growth in customer numbers and overall water demand. We will also maintain service performance and environmental outcomes.

Actual cost per property was $467 in 2012–13 and is expected to fall to $391 in 2019–20 – a reduction of 16%, in real terms, from the start of the current period to the end of the next.

The forecast operating costs and the growth in the next period are reflected in the continued reduction in core operating cost per property (see Figure 7-3).

7.3.4 Our forecasting approach

Overview

Our operational expenditure forecasting approach includes elements of our annual rolling five-year budgeting approach, which must meet shareholder, business and regulatory requirements.

We are mindful that our planning is subject to the objectives and constraints contained within a statutory and regulatory framework. Given the importance of the price review, we start our process about two financial years before the determination.

Our operational expenditure forecasting process includes the following important elements:

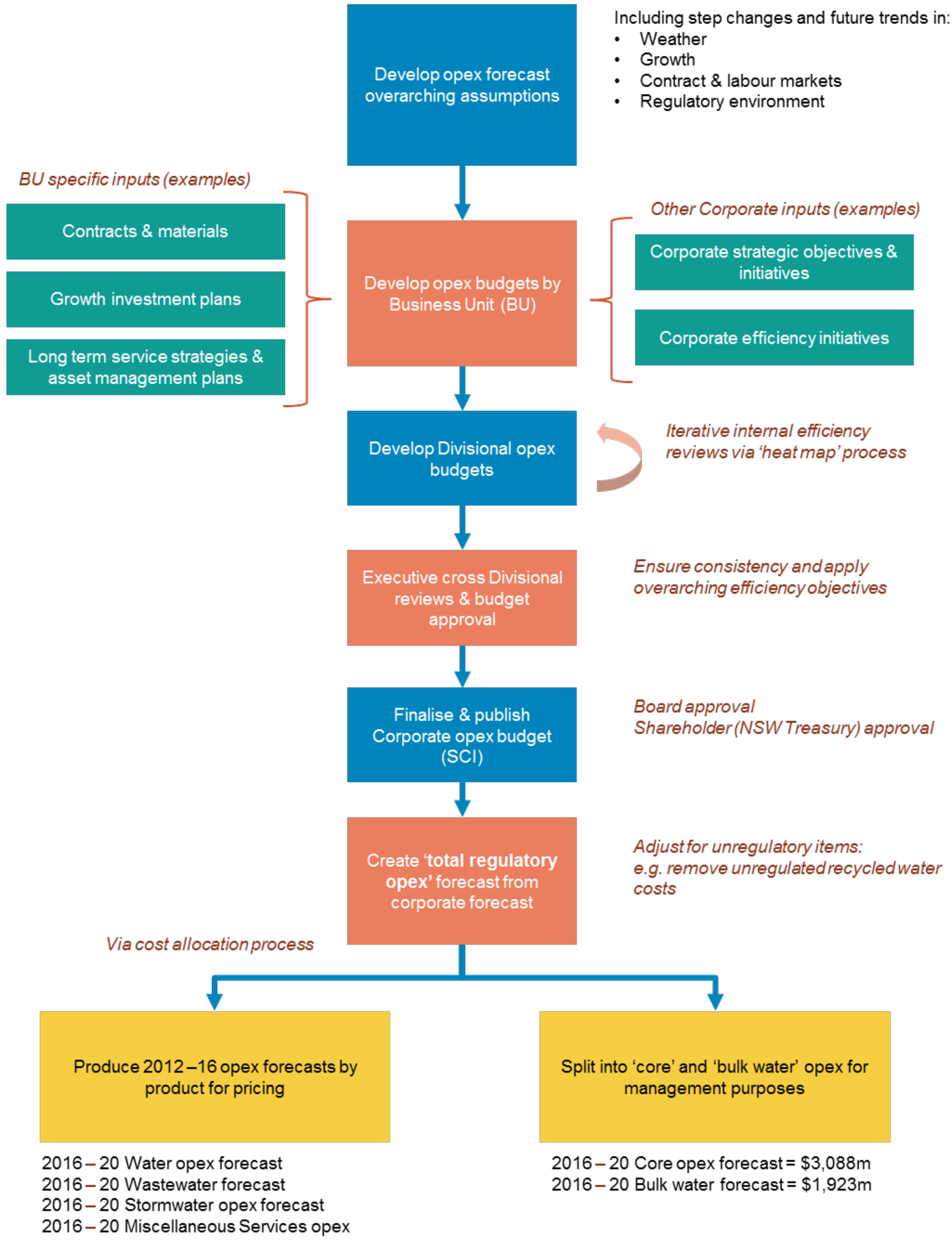
- That all business units use the same over-arching assumptions to guide them and all are aware of how they should consider corporate objectives. These include labour cost and weather assumptions and growth forecasts.
- We develop forecasts with reference to existing operational plans, including asset condition and maintenance plans, service delivery plans, capital investment plans and risk assessments.
- We challenge budgets for their efficiency and consistency at two separate points. The first is when divisional budgets are consolidated and the next is when the Executive does a cross-divisional review.
- After approval from the Executive team, the Board considers and approves forecasts, which are finally endorsed by the Shareholders and their representatives, NSW Treasury.
- We have specific processes for developing forecasts of regulatory operating expenditure. This recognised that some items are treated differently for accounting purposes. This ensures costs can be correctly allocated to products for pricing purposes.

The forecast reflects our judgment in relation to prudent and efficient management of a range of external regulatory, economic and other market risks. In developing the forecast we have assumed:

- there will be no changes to regulatory requirements or increases in mandatory performance standards that have a material impact on operating expenses
- we will meet the service standards in our Operating Licence and there will be no change in standards
- Sydney will experience average weather conditions, that is neither drought or very wet conditions, as these affect maintenance costs
- contract market conditions remain stable and if not, that we can manage higher costs with better procurement or re-prioritising activities.

Our process is described in Figure 7-6.

Figure 7-6 – Operating expenditure forecast process overview



Description of forecasting steps

Business unit forecasting

Business units do a bottom-up forecast of operating expenditure based on their expected activities over the forecast period, taking into account the over-arching guidance. The forecasts are explicitly required to be P_{50} estimates. A P_{50} estimate is used where there is equal probability of being under or over the forecast. Our Service Delivery division also must consider maintenance, and emergency and customer responses in the budget. More details are included below.

Divisional budgets and Executive cross-divisional review

We consolidate business unit budgets at a divisional level. We identify and prioritise efficiency opportunities using a risk framework. This is the ‘heat map’ process. Divisional budgets are reduced at this point and submitted to the Executive.

The Executive does cross-divisional expenditure reviews that consider our whole value chain with a view to identifying duplicate or overlapping expenditure. This identifies further efficiency opportunities. The resulting budget is then integrated into the Statement of Corporate Intent (SCI) and is reviewed and approved by the Board and then NSW Treasury.

Developing total ‘regulatory’ opex

Regulatory operating expenditure differs slightly from accounting operating expenditure. To ensure that unregulated service costs are not recovered from regulated customers, we ‘ring-fence’ the costs and revenues of unregulated services. In practice, this leads to a reduction in the costs used to create regulated prices. Unregulated services include unregulated recycled water activities, plus other unregulated commercial or contestable activities.

The costs to be removed for each of these are calculated in different ways.

We calculate unregulated recycled water costs based on analysis of the recycled water process and mapping of activities. This allows relevant input costs for recycled water processing, such as labour, maintenance, electricity and chemicals to be allocated. Only direct costs are captured and there is no allocation of common costs to recycled water activities (regulated or unregulated). This is because recycled water activities are an expansion of the wastewater treatment process and marginal incremental costs are captured.

The cost model is set up to assume that other unregulated activities are profit-neutral. The costs of these are assumed to be equal to expected unregulated revenue. The cost model allocates only direct costs, which we assume to be equal to unregulated revenue.

The only exception to this is that no cost is allocated to collecting external rent revenue. Most rental income is related to the leasing of space for telecommunications reception equipment of which there are negligible operating costs. It should be noted that IPART allowed 50% of rental revenue as unregulated revenue in its 2008 and 2012 determinations.

Unregulated costs are about $14 million a year over the period 2016–20.

Forecasting opex by service (including treatment of common costs)

Forecasts for opex are made for water, wastewater, stormwater and recycled water services. Managers assign cost centres and (if necessary) account contributions to the products using the regulatory cost model (RCM). Wherever possible, the RCM assigns the directly attributable costs to the designated service. This method aligns to the reporting needs of IPART's Annual Information Return (AIR).

Not all costs are directly attributable but we have an approach for allocating shared or common costs to services. Costs that cannot be directly attributed to a service, or are shared among more than one service, are separately tracked in the cost model. These shared or common costs are mainly planning, administration, financial management, IT, human resources and property costs. The cost model allocates these costs to the core services based upon their percentage of direct costs.

Forecasting approach for maintenance and operations

In the 2015–16 financial year, maintenance and operations expenditure represents about 60% of our core operating expenditure and 35% of the total expenditure. Given the high proportion of costs covered, this section provides further information on the specific aspects of the forecasts. As part of our reform program, our maintenance and operations functions were combined into a single Service Delivery division early in the current period, and this led to lower costs as well as operational improvements.

Specific cost drivers

Operations and maintenance costs are driven by the:

- scope and volume of planned work to be delivered over the period
- volumes of faults and other emergency response tasks in the period
- maintenance delivery approach, which is influenced by procurement processes and labour and contract market conditions.

Costs are also affected by external events such as weather and changes to service standards. These can lead to changes in plant operation regimes and materials costs (eg chemicals). We consider these in detail when we do the Service Delivery forecast. The following focuses on the maintenance and repair elements.

Scope and volume of maintenance and repair work

The amount of maintenance effort required depends upon a range of factors. When we develop our asset management plans, we consider a combination of:

- asset condition
- operating environment
- service standards
- risk appetite
- consequence of failure

- life-cycle costs
- customer expectations.

Given this, the approach to managing various classes of assets differs, some may need to be inspected and maintained more frequently, while for others it may be considered efficient to 'run to fail'[61]. See Table 7-6 for examples of the approaches applied to different asset types.

Table 7-6 – Examples of asset management approaches

Asset category	Asset management approach
Critical water and wastewater mains	Condition-based approach based on inspection data compiled over a period of years.
Other water and wastewater mains	Managed as 'run to fail' where consequence of failure is lower
Wastewater treatment plants	Some components allowed to 'run to fail'

The information in asset management plans is integral to setting maintenance, repair, inspection and replacement volume forecasts. These volume forecasts are then used as an input to the expenditure forecast.

As an extension to this process, we use asset management plans when considering wider service strategies for geographic areas. This is still developing, but in future it means that asset replacement, maintenance and inspection cycles and approaches can consider the wider needs of an area.

In forecasting the amount of reactive work required, we have assumed average weather conditions and an average level of reactive work to respond to leaks, and failures and the use of average volumes of chemicals. Sustained dry weather will increase the number of pipe breaks and blockages, whereas very wet weather increases water treatment needs, leading to higher chemical costs.

The new international asset management standard, ISO 55000 offers further opportunities to improve our asset management approach as it is a risk-based, whole life-cycle asset management framework.

Maintenance delivery forecasting approach

For 2016–20, we have assumed a stable contract market and a labour rate which is constant in real terms. Although the customer and demand growth expected over the period creates more maintenance work, we assume that this will be managed through delivery efficiencies. These include further procurement scope optimisation and leveraging competitive pressure both internally (through productivity tracking) and externally (through the panel of providers).

[61] 'Run to fail' is a deliberate strategy where the cost, criticality and ease of repair of an asset or asset type is such that it is efficient to replace or repair it when it fails rather than beforehand. Considerations for 'run to fail' plans ensure availability of spares and appropriate response times to a failure.

It is clear that costs could be higher than forecast if the impact of growth on work volumes is more than expected.

7.3.5 Our operating expenditure forecast – in detail

This section provides more information on the forecast in terms of:

- bulk water costs and rationale for our forecast
- core operating expenditure and details on the major drivers of labour, materials (such as energy and chemicals) and contract services.

Market testing of costs

About 73% of our forecast regulatory operating expenditure is largely dependent on external factors or relate to services that have been tested in the market place. Bulk water costs (passed through from WaterNSW and SDP) are the largest cost component (31%) water filtration costs (9%) are the second largest.

The remaining 33% of costs outside our control are tested in the market regularly, through contractor's rates and procurement activities including competitive tender processes. With these actions, we believe these costs reflect the efficient cost of delivering services.

Of the 27% of costs within our control, comprising mainly labour and administration, we have only limited scope to drive further efficiencies while maintaining operating performance.

Bulk water cost forecast

Cost drivers are:

- water demand/forecast sales – expected to go up slightly over the period
- WaterNSW prices – expected to fall when a lower WACC is applied
- the status and cost of the Sydney Desalination Plant (SDP) and its costs in that mode of operation – only a fixed charge is expected to reflect water security shutdown mode throughout the period
- build own operate (BOO) water filtration costs initially lower due to changing accounting treatment then increases based on recovery of new capital expenditure.

Water demand and forecast sales

Total water use is expected to increase by 4% over the next price determination period. Our water demand and forecast sales are detailed in Chapter 12.

WaterNSW prices

We have assumed that IPART will set WaterNSW's prices on the basis of our forecast demand and its annual revenue requirement.

WaterNSW is forecasting lower prices due to a lower WACC, which is offset by cost increases. Higher costs reflect an expected increase in water demand from 528 GL for 2016–17 to 544 GL for 2019–20 and increased fixed charges, mainly driven by capital expenditure, in particular, the plan to build a tunnel from Burrawang to Avon Dam.

Sydney Desalination Plant (SDP)

We assume that SDP will continue in water security shutdown mode with no water production for the duration of the determination period. Our cost forecast only includes the fixed charge.

SDP fixed charges after the completion of the current determination period in 2016–17 have been forecast in line with the reducing RAB value of the plant with no allowance for any capital expenditure. We have forecast no usage charge for SDP. However, this may not be the case, as the plant will operate in line with the operating rules established by the *2010 Metropolitan Water Plan*. Under these rules, if total dam storage falls below 70% there is a contractual obligation to begin operating the plant. Sydney Water will pay for all water supplied by SDP in this event. See Chapter 10 for details of our proposed cost recovery mechanism if SDP is activated.

Build own operate water filtration plant costs

In forecasting costs for the four BOO water filtration plants, we assume we buy enough water to meet our forecast demand at contracted rates. We have also considered the following.

- The detrimental cost effect of raw water quality will be dissipated by July 2016.
- The cost of the financial lease elements of the four BOO water filtration plants will be removed from the operating expenditure from 2016–17.
- Some of our water filtration plants are not designed to meet *2011 Australian Drinking Water Guidelines* (ADWG) for filter turbidity and chlorination contact time requirements. The costs to upgrade the plants are likely to be funded as finance leases (see Chapter 8).

The forecast for bulk water operating expenditure is shown in Table 7-7.

Table 7-7 – Bulk water costs – WaterNSW, SDP and BOO ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20	Total
WaterNSW bulk water	197,215	199,795	203,775	209,928	810,712
Desalination (SDP Pty Ltd)	194,014	190,867	187,768	185,217	757,866
BOO water filtration costs	89,233	89,331	87,656	88,106	354,326
Total bulk water expenditure forecast	480,461	479,993	479,199	483,251	1,922,904

Core operating expenditure forecast

The core operating expenditure forecast is an outcome of our annual budgeting process. We identified $90 million of cumulative cost savings. Our forecast already assumes that all of these initiatives are successfully implemented. In forecasting operating expenditure, we have considered our operating environment and how it could affect costs.

Over the forecast period the major cost categories within core operating expenditure are as follows:

- Labour – 38.5%.
- Energy – 4.8%.
- Materials – 6.1%.
- Service contractors – 37.9%.

Labour

We have indexed labour rates to nominal dollars at 2.5% in line with expected inflation. This is in line with New South Wales government policy that limits wage increases to 2.5% plus quantifiable productivity improvements (that is, pay rates remain constant in real terms).

We have committed to working with the Australian Services Union to build a positive working relationship that includes genuine attempts to jointly improve organisational performance. This will contribute to the organisation achieving labour efficiencies over time.

We also have plans to improve how we track productivity in specific areas. This extends the 'meet and beat the market' approach we used for civil maintenance.

Energy

Wholesale electricity prices are low compared with prices in recent years, with volumes continuing to fall and domestic solar generation installations rising. Network prices are expected to fall in NSW due to the AER's recent determination on Ausgrid and Endeavour's allowed revenues, subject to the outcome of the appeal process. However, we do not know the impact yet. We take a bottom-up approach to electricity budgeting where we forecast volumes for all major sites and asset groups and then calculate the retail, environmental and network contribution to the forecast bill using the applicable price.

- Volume forecasting – the total volume of purchased electricity is expected to rise by less than 3% over the IPART period, with our energy efficiency and renewable generation programs cost-effectively, accounting for most load growth from new and amplified assets.
- Retail rate forecasting – we based our retail market price forecast on external electricity market advice that considered supply/demand, fuel (coal and gas) prices, new generation, carbon pricing, photovoltaic penetration and the macro-economic outlook. We forecast retail electricity prices to start from a relatively low base and rise in real terms over the period to 2020.
- Retail rate management – we manage our retail rates through a progressive purchasing contract. This allows us to minimise exposure to high forward prices by purchasing blocks of electricity when forward prices are below historical levels and considered to offer fair market value (based on external advice).
- Network price forecasts – our network price forecasts were based on external advice predicting Ausgrid and Endeavour network prices would fall in real terms for the first two years of the period and would remain flat thereafter. Following the AER's determination for Ausgrid and Endeavour Energy, network prices are expected to drop more sharply than we

have forecast over the price path. The exact impact is not yet known as the determinations provide a revenue path for each distributor but do not set how the networks allocate revenue (and ultimately prices) between customer classes. We also note, Networks NSW has appealed the AER's determination for Ausgrid and Endeavour Energy.

This approach to budgeting was first implemented for 2013–14 and has improved the accuracy and transparency of our electricity budgets.

We manage our environmental certificate costs by either purchasing certificates under our contract, or directly transferring certificates we create to the retailer in place of environmental charges. We meet the volume for all large scale generation credits from our renewable generators and have a natural hedge against any price rises in this market. We supply a proportion on small scale technology credits and energy saving certificates and buy the balance. Our forecasts assume no major changes to environmental schemes.

Materials (chemicals)

We use a range of chemicals in different parts of the water supply chain to disinfect, optimise pH and to remove particles, other chemicals, odours and tastes. Chemical prices can fluctuate due to local and global market forces, so we need prudent procurement arrangements.

The volume of chemicals needed depends upon plant operating regimes and weather conditions. For example, while poor raw water quality increased the need for some chemicals, we have assumed for the forecast that this impact subsides. We forecast chemical volumes at levels needed for average weather.

We will continue to be proactive in managing chemical costs. We will be developing a chemical procurement strategy which will review:

- ways to optimise chemical use
- the use of other chemicals where price differentials exist, as we have done recently by switching from ferric chloride to ferrous chloride
- joint chemical procurement with the privately-owned water filtration plants to achieve volume discounts.
- how to create greater competitive tension in a market where we are likely to have more limited supply options in the future.

Contractor services

In the current period we have made efficiency improvements in the contractor services area. We will drive these savings through procurement management with improved procurement planning, move to consolidated contracts and active contractor management, including:

- reductions in facilities maintenance spend with lower margins and increased efficiency within contract
- savings of $1.5 million in spoil disposal.

Other operating expenditure impacts in the forecast

Currently the cost of merchant interchange (credit card) fees is born by all customers, including disadvantaged customers. While there will be a small impact on some customers, we consider that it is more equitable and efficient if the cost of this specific choice is not paid for by all customers.

From 1 July 2016, we will charge customers a small fee to pay bills by credit card, following direction from NSW Treasury (in May 2012). The amount of the fee is set by NSW Treasury based on the normal cost of merchant interchange fees. It is currently set at 0.4% and will be reviewed periodically by NSW Treasury.

The fee charged is lower than that charged by most other utilities (typically 1%) and by most local councils (1%).

The fee will generate about $1.5 million a year, and we have deducted this amount from the forecast of regulatory operating expenditure.

8 Capital expenditure

Key messages

- Through our capital expenditure program, we maintain and build assets that that allow us to deliver high levels of customer satisfaction, meet our Operating Licence, environmental health and water quality requirements.
- Over the 2012–16 price path, we will successfully deliver services and improve customer satisfaction while spending $2.6 billion on capital expenditure – $247 million less than IPART's determination. This has not caused an increase to our operating expenditure.
- We have made these savings because of improvements in our asset management, investment planning and capital delivery processes. We have put significant effort into improving asset data, information and systems to support more risk-based planning.
- Our forecast capital investment for 2016–20 is $2.8 billion. The forecast is subject to some areas of uncertainty but we have considered these and will manage them prudently and in the interests of our customers.
- Our annual average capital expenditure for both the 2012–16 ($646 million) and 2016–20 ($691 million) periods is below the long-term average in capital expenditure ($720 million), excluding desalination.
- While delivering a real price decrease to our customers, our capital forecast allows us to provide services to new customers and maintain assets, service and environmental performance. It also allows us to invest in our business to enable us to meet future challenges efficiently.
- Our corporate-wide capital program and portfolio management framework will ensure that our future investments are aligned to our corporate strategy, our risk appetite and reflect insights from our enhanced customer engagement.
- We propose to invest $328 million in information technology over 2016–20. Over $160 million is to replace a 28-year old billing system. We require this to continue to do business. Due to the complexity and specialised nature of IT, any efficiency review of this forecast capex, should be done by a specialist IT reviewer.

In this chapter, we present detailed information on:

- our capital expenditure program from this current period, including investment driver impacts and variances to the capital expenditure allowance
- improvements we have made to capital expenditure forecasting approaches since 2012 and how we will continue to develop these in the future
- our capital expenditure forecast for the 2016–20 period, covering investment drivers, assumptions and the risks we will manage.

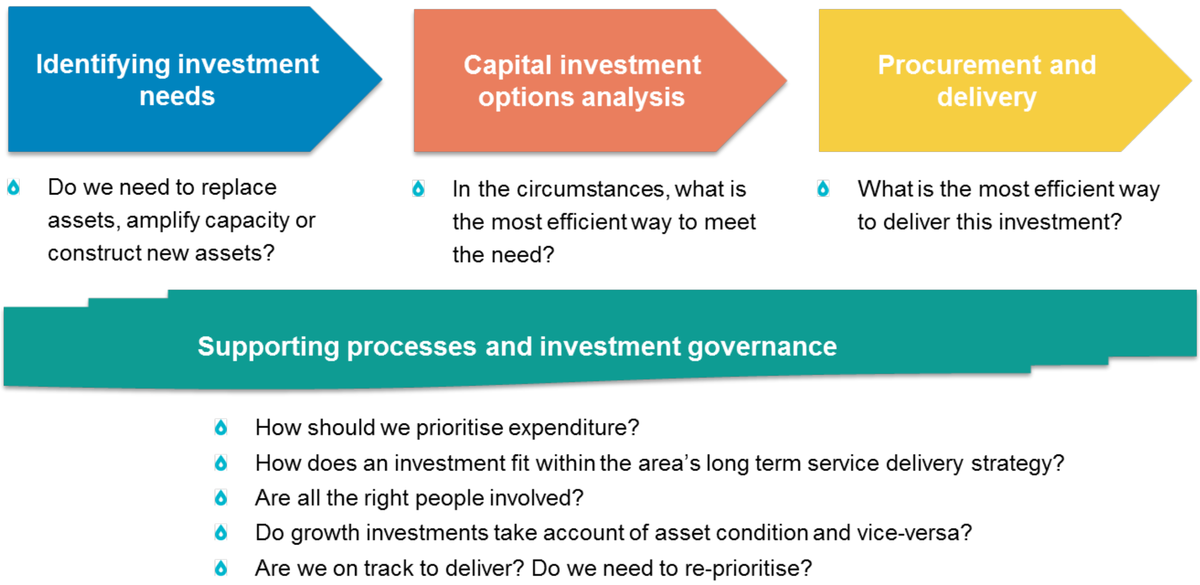
For clarity, we have separated all information for current (2012–16) and forecast (2016–20) IT capital expenditure in Section 8.11. By doing this we can facilitate a specific review of IT capital expenditure.

8.1 Improvements in investment planning and delivery

We are a capital intensive business with a large, growing asset base spread over a large area, servicing around 1.8 million properties. We seek to deliver services at the lowest-life-cycle cost and within acceptable levels of risk. We are committed to continuously improving asset management and investment delivery practices in an increasingly complex environment.

Figure 8-1 provides a simple overview of the key steps in our capital investment process.

Figure 8-1 – Key steps in capital investment

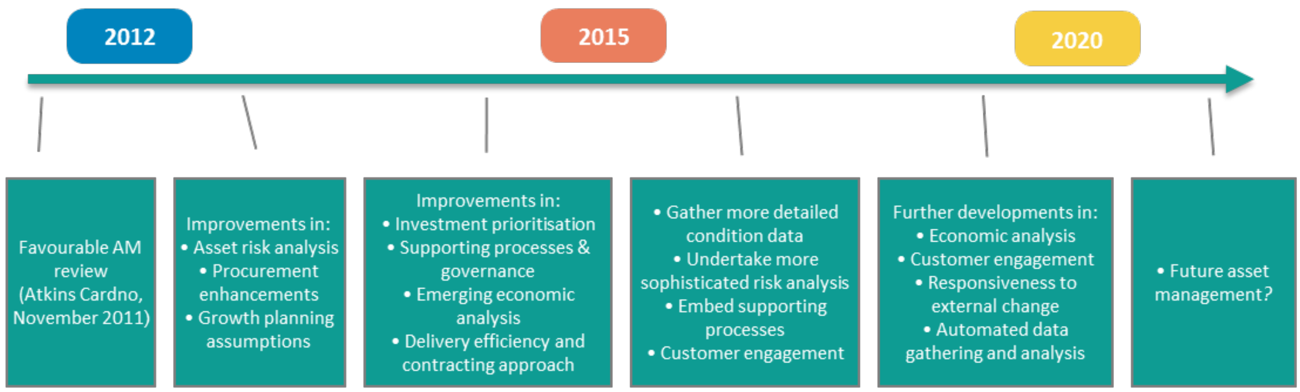


8.1.1 Overview of developments in the capital investment process

We received a favourable review of our capital investment and asset management processes by WS Atkins International and Cardno Pty ('Atkins Cardno') in November 2011. At the same time, we recognise the need to keep improving the efficiency of delivering services and environmental outcomes. We need to respond to a changing environment, which may become more complex and uncertain in the future. For example, there may be more extreme weather variability and demand growth patterns may differ from the past. To respond to these challenges, we will need more detailed and timely asset data, more sophisticated analysis and more in-depth understanding of impacts on our customers and services. In line with our strategic objective to make our business responsive to customers and resilient in the face of change, we intend to continue to invest in our processes, systems and skills.

Figure 8-2 highlights the improvements we have made in the current price period and improvements we have identified for the future.

Figure 8-2 – Recent improvements and expected future enhancements.



Changes to key steps in the process

Identifying investment needs

We are developing a more detailed understanding of the investment triggers for servicing growth, replacing assets, managing risk prudently and getting greater service from existing assets. We have put significant effort into improving asset data, information and systems to support more risk-based planning. In the absence of an up-to-date Metropolitan Development Plan (MDP) – last updated in 2010–11 – we have increased our use of other information sources. Key improvements in identifying investment needs are shown in Table 8-1.

Table 8-1 – Key improvements in identifying investment needs

Process summary and improvements since 2012	Investment process step	Planned improvements to 2020
Closer collaboration with private developers and planning authorities to refine growth servicing strategies	Population and demand forecasting	Increased cooperation with planning authorities to help guide planning and development processes and decisions – being involved before decisions are made.
Evidence-based revision of planning criteria used to assess system capacity and ability to service growth (eg water demand per customer has reduced significantly over the last ten years) Better understanding of asset base through more detailed condition assessments. Improved risk-based approaches to servicing growth and asset management.	Capital expenditure needs analysis	Continual improvements in planning criteria – adjusting our planning criteria based on measured usage. More frequent, detailed and accurate condition assessments covering a broader range of assets. Improved asset risk and criticality information. Improved information systems and data analysis capability to support decision-making.

Capital investment options analysis

We are improving how we choose the best option to meet an investment need, especially in relation to how these fit with other assets in an area and our longer term strategy for service delivery. System Integrated Planning (SIP) has introduced a focus on getting efficient outcomes across the system, rather than focusing on individual assets. Key improvements in our investment options analysis are shown in Table 8-2.

Table 8-2 – Key improvements in investment options analysis

Process summary and improvements since 2012	Investment process step	Planned improvements: now through 2020
Introduced system integrated planning to optimise outcomes across the entire water system.	Options analysis	Further development of SIP, with more robust and consistently applied processes.
New long-term facility investment plans (blueprints), based on better asset information.		Greater focus on SIP within the wastewater network and growth servicing decisions.
Emerging consideration of economic impacts in analysing some asset replacement options.		Blueprints completed and combined with system integrated planning to drive best value long-term outcomes across systems.

Procurement and delivery

Historically we have used an alliance approach to deliver major capital projects, working closely with private sector partners under shared incentives to work efficiently. While our alliance approach had been appropriate and efficient, it had to change in the light of our changing investment program and different market conditions. The alliance commercial framework was a barrier to driving further value, particularly as the type of work moves towards smaller, lower complexity, repeatable projects that are not best suited to an alliance model.

We changed the way we deliver investment, moving to a more flexible competitive approach using panels of pre-approved providers and including joint project management arrangements.

Key improvements in procurement and capital delivery are shown in Table 8-3.

Table 8-3 – Key improvements in procurement and capital delivery

Process summary and improvements since 2012	Investment process step	Planned improvements: now through 2020
Better packaging of work and scoping.	Procurement: Work packaging and scoping.	Further optimising work packaging, balancing scope and scale.
New collaborative contracting framework, including: • panels of pre-approved contractors for different types of work • integrated project management teams – a joint venture between us and specialist project management providers.	Contracting and delivery approaches.	Increased use of direct negotiation with contractors, with closer collaboration driving efficiency and improved risk control. Focus on becoming a better informed client – knowing what we want and what we expect the cost to be (eg through improved unit cost information).
A centralised Program Management Office (PMO) to manage cost, risk, reporting and continuous improvement.	Program delivery oversight.	Improving systems, processes and analysis which support capital program delivery.

This framework has been successful in delivering procurement efficiencies by reducing margin-on-margin and incentive payments. It is also improving outcomes through better capital allocation and greater flexibility in resourcing. The centralised Program Management Office (PMO) is reducing program management costs, delivering greater cost certainty and providing improved risk management.

Supporting processes and governance

We are disciplined in our expenditure and take account of risks, service outcomes and customer expectations. We have introduced an enterprise program and portfolio management (EPPM) framework including robust investment prioritisation and governance. This ensures investment is directed to projects that are efficient in the long term and deliver benefits to customers and the business.

The framework involves a new investment governance structure, program and portfolio management operating model and standardisation of end-to-end capital investment planning processes. We recently implemented the framework and used it to develop the 2016–20 capital investment forecast for this submission. We will continue to refine it and embed it in our business.

Our value management process will support this by providing a common framework for investment, ensuring that there is consistency and that the right capabilities are deployed in making decisions. Value management provides a consistent approach for using the combined skills, knowledge and experience of relevant stakeholders in challenging existing assumptions, fostering innovation and balancing project scope with risk. Key improvements in supporting processes and governance are shown in Table 8-4.

Table 8-4 – Key improvements in supporting processes and governance

Process summary and improvements since 2012	Investment process step	Planned improvements: now through 2020
Introducing a value management framework to provide a structured, systematic and analytical process for achieving best value in capital investment decisions.	Value management.	Continued development of value management, with more robust and consistently applied processes. Much more cross-divisional and vertical engagement on investment decisions and performance. More consideration of customer views.
New operating model, governance structure and forums project/program life-cycles focusing on: • benefits and strategic alignment • evidence-based decision making • enhanced reporting. Clear roles and accountabilities. Prioritisation of programs and portfolio in real-time.	Enterprise Program and Portfolio Management (EPPM)	Mature program and portfolio management embedded in culture. Benefits and delivery metrics tracked to inform decisions and prioritisation. Portfolio-based decisions. Enhance project and program management capability (staff trained in common management frameworks).

8.2 Summary of capital expenditure 2012–13 to 2015–16

In June 2012, IPART set us a regulated capital expenditure allowance of $2.8 billion ($2015–16) for 2016–20. We expect to invest $2.6 billion, $247 million less than the determination. This excludes unregulated capital expenditure, borrowings and $48 million of works funded under the NSW Government Housing Acceleration Fund (HAF) program.

The capital component of the 2012–16 IPART determination was delivered by IPART on an annual basis at a product level. To enable more meaningful analysis, we have calculated a more detailed allocation of the determination based on the recommendations from the 2011 Atkins Cardno efficiency review.We will save $247 million while improving customer performance, meeting Operating Licence, environmental health and water quality requirements. We will do this while avoiding cost increases for operations and maintenance. See Table 8-5 for capital expenditure by driver.

Table 8-5 – Capital expenditure by driver 2012–16 ($2015–16 million)

Driver	2012–13	2013–14	2014–15	2015–16	Total
Business efficiency	22	17	47	59	144
Government program	46	91	52	12	202
Growth	105	153	142	184	584
Mandatory standards	54	18	18	18	108
Existing standards	420	281	416	423	1,541
Total	**647**	**560**	**675**	**696**	**2,580**

The profile of the capital investment program is different to the IPART determination, with increased expenditure in the final two years due to:

- a decision to restrict IT expenditure, while we restructured our IT function early in the period
- deferral of some growth and renewal projects through improved planning
- major works at the Malabar Wastewater Treatment Plant being accelerated into the current price period.

In the current period, we will invest about 60% of capital ($1.5 billion) in renewing and ensuring reliability of assets. A further 23% ($584 million) is for delivering new infrastructure to provide services to new customers in greenfield and infill growth areas. The remaining 18% ($454 million) is being invested in delivering:

- government programs, primarily completing the delivery of wastewater services to eight villages under the Priority Sewerage Program (PSP)
- meeting new environmental performance standards
- business efficiency investments.

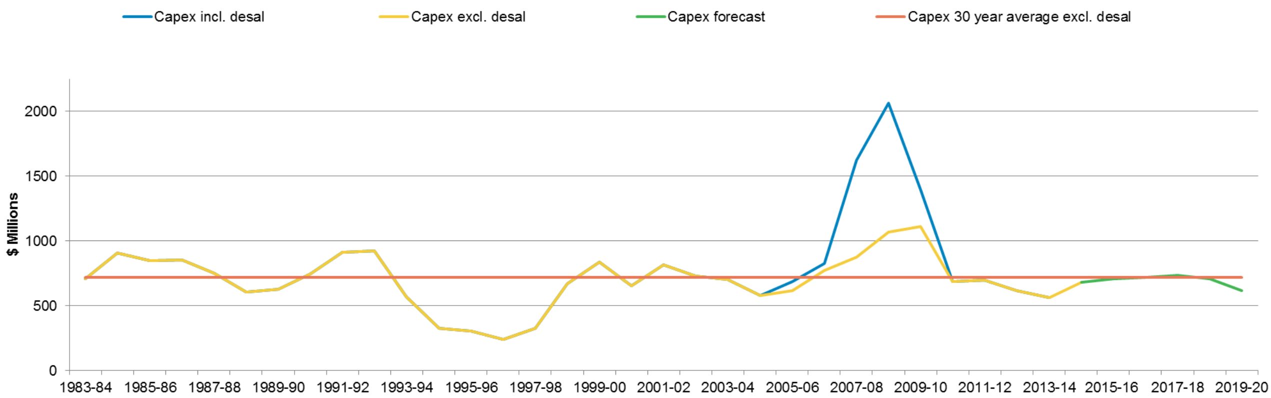
A detailed list of all major programs completed and outputs delivered year-on-year over the determination period is given in Appendix 6. Our forecast annual capital expenditure from 2016 to 2020 is described more fully later in this chapter.

8.2.1 Capital investment trends

It is important to consider longer term trends in our capital investment given the age of assets. This is because some of our assets can be over 100 years old, and because large proportions of the asset base were installed at similar times. For these types of assets, investment cycles can vary over tens of years. A four or even eight-year review of expenditure should be only be considered with an understanding of the longer term context.

Sydney Water's capital expenditure of $2.6 billion in the 2012–16 price period reflects an annual average of $646 million a year. This is below the 30-year historical average of $720 million a year (excluding the desalination plant and associated pipeline) as shown in Figure 8-3.

Figure 8-3 – Sydney Water's long-term capital expenditure ($2015–16 million)



In this thirty year view there are deviations from the long-term average, as might be expected. For example, there was a period in the mid-1990s when capital was less readily available and four large water filtration plants were privately funded.

A change in the nature of capital investment has meant that the capital program reduced from record levels in the previous price period to slightly below the historic average. There has been a shift in focus from delivering essential once in a generation projects to efficiently managing and maintaining existing infrastructure with better management of condition and risk.

In line with our 2012 submission, the capital program has been largely driven by the need to replace ageing assets and service growth as shown in Table 8-5.

8.3 Maintaining services (renewals and reliability)

Expenditure categorised as 'Existing standards' relates to maintaining service performance by replacing assets. Efficiently maintaining the performance and safety of existing infrastructure is the most significant area of capital expenditure in the current price period. The investment ensures that we can maintain service and system performance standards efficiently over the long term.

We have implemented a wide range of improvements in capital planning and delivery processes, maintaining performance and customer outcomes while delivering a $56 million saving against the IPART determination.

Table 8-6 shows the profile of Maintaining Services Expenditure over the period.

Table 8-6 – Maintaining services expenditure (renewal and reliability) ($2015–16 million)

Maintaining services	2012–13	2013–14	2014–15	2015–16	Total
Determination	423	415	410	348	1,597
Actual/forecast	420	281	416	423	1,541
Variance	**-3**	**-134**	**6**	**75**	**-56**

8.3.1 Maintaining water services

We will invest $488 million in renewing and refurbishing water mains, reservoirs, water pumping stations and water filtration plants, so that clean water can continue to be reliably supplied to our customers at the levels of quality, availability, pressure and taste which they expect.

Expenditure will be below the IPART allowance over the period, as shown in Table 8-7.

Table 8-7 – Maintaining water services expenditure (renewal and reliability) ($2015–16 million)

Maintaining water services	2012–13	2013–14	2014–15	2015–16	Total
Determination	166	170	155	169	659
Actual/forecast	157	91	112	127	488
Variance	**-9**	**-78**	**-43**	**-41**	**-171**

Key investment drivers in 2012–16:

- Operating Licence standards
- customer expectations of water quality, pressure and availability, including those in the Australian Drinking Water Guidelines (ADWG)
- asset condition, failure history, failure consequence and age.

Variance against the allowance:

We will spend $171 million less than the allowance, due to:

- deferring expenditure through improved planning and better targeting of renewals, particularly within water main renewal programs
- favourable weather, which has meant there were fewer main breaks and leaks.

Service performance indicators and actual performance

We have met all conditions in our Operating Licence for water continuity, water pressure and drinking water quality.

Major expenditure:

- $291 million to renew 250 km of water mains to avoid community disruption from main breaks
- $57 million to renew 20 water reservoirs to maintain water quality and reliability
- $33 million to renew 18 water pumping stations to ensure reliable water supply and adequate pressure.

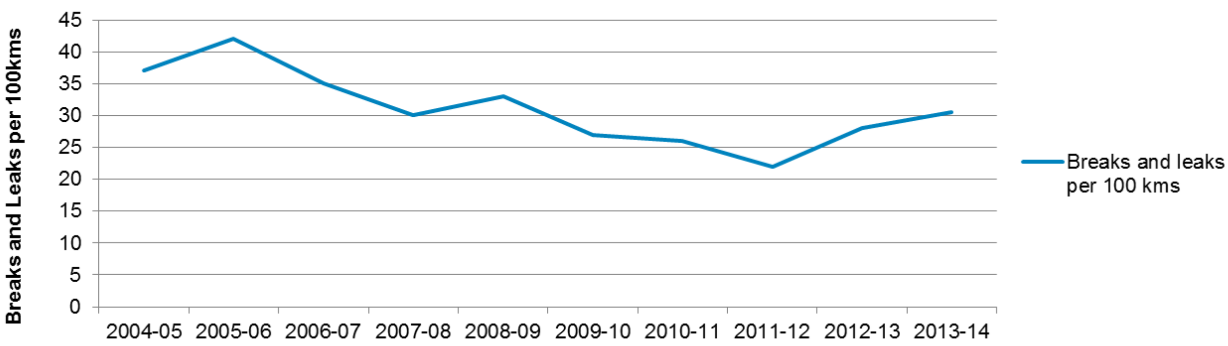
Maintaining water services – outcomes

We have maintained high levels of water quality over the current price period as shown in Appendix 3.

While it is not a regulated performance target, we monitor the number of water main breaks and leaks per 100 km as it is a useful indicator of the need to replace assets. As outlined in Figure 8-4, the long-term trend in this indicator improved from around 2005, driven by effective pressure management, leak detection programs and favorable weather conditions.

To deliver value to customers, we manage water mains according to least cost balance of renewal and maintenance costs, while maintaining an acceptable level of risk across the network.

Figure 8-4 – Water main breaks and leaks per 100 km



The number of breaks has increased in the last two years but remains within the efficient level of performance. Also, it would not be efficient for us to invest significant capital just to improve this indicator when we consider that our current performance of around 30 breaks/leaks per 100 km represents an appropriate balance between risk and cost. If monitoring was to show further deterioration, we would review the reasons before deciding whether and where investment was required.

Maintaining water services – deliverables

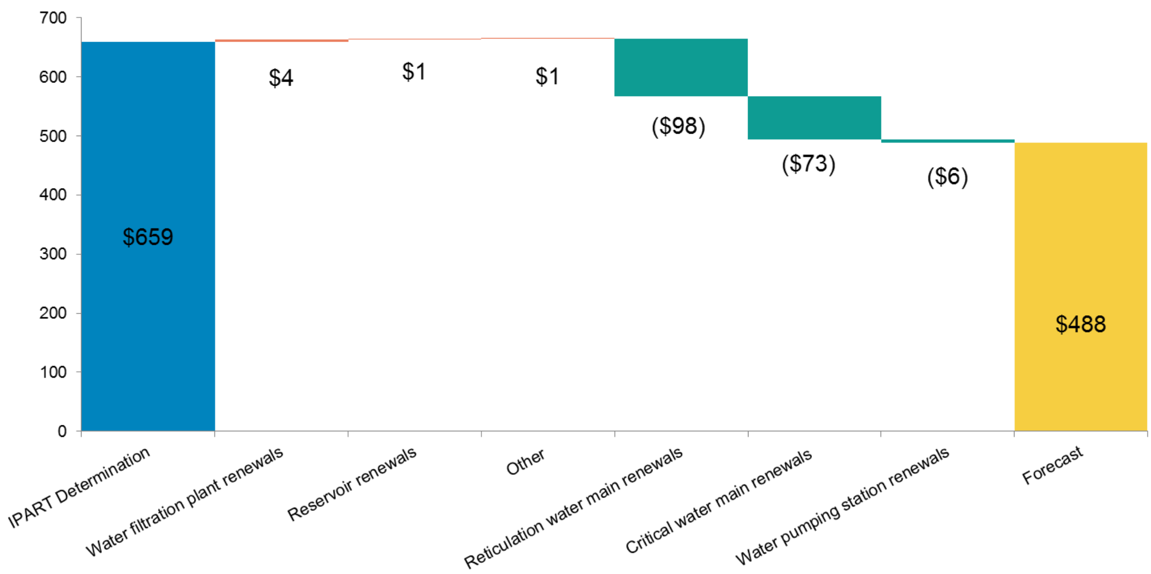
During 2016–20 we will deliver the following programs:

- $140 million to proactively manage 5,000 km of high-risk water mains to avoid catastrophic failures and major customer impacts. Projects include renewing 50 km of large-diameter trunk water mains
- $151 million to manage 16,000 km of reticulation water mains to ensure reliable water supply at the lowest life-cycle cost. Outputs include renewing 195 km of small-diameter water mains
- $57 million to maintain 250 reservoirs and associated equipment to ensure water quality and reliability at the lowest life-cycle cost. Outputs include 12 re-roofing and 8 internal lining projects
- $33 million to renew 150 water pumping stations, ensuring reliable supply
- $20 million for renewals at the five Sydney Water owned and operated water filtration plants. This was to maintain compliance with the ADWG and for continuity of water supply.

Maintaining water services – variances

By the end of the period, we expect to have spent $171 million less than IPART allowed in 2012. The major variances are outlined in Figure 8-5.

Figure 8-5 – Maintaining water services, major variances to the IPART determination ($2015–16 million)



The savings have been primarily driven by an improved planning approach, which resulted in better targeting assets and facilitated more innovative solutions for meeting service performance outcomes.

Savings of $98 million on reticulation water mains are mainly due to efficiencies from better targeting of work and revised financial analysis of renewal decisions (see Boxout 8-1).

Boxout 8-1 – Improved job assessment method for reticulation main replacement

> Reticulation water mains are renewed based on financial drivers. An improved job assessment method has been introduced within the current price period, which includes a detailed Net Present Value (NPV) analysis of each job. As a result, we now package this work at a more granular level than previously and we can be more confident that each individual replacement project is required. This ensures resources are focused on the most cost-effective replacements, balancing mains renewal with the cost of future maintenance and repairing breaks.

Savings of $73 million on trunk water mains are due to better targeting of renewals and improved risk-based planning. This means we do less like-for-like replacement. Instead we:

- decommissioned mains, using available capacity in adjacent mains/zones. For example, a 2 km trunk main at Penrith was replaced with a link main saving about $4 million
- downsized mains based on revised planning criteria, such as considering reduced demand. For example, we were able to slip line a 2 km trunk main at Carlingford instead of replacing it, as the system could accommodate the reduction in capacity. This saved about $4 million
- consolidated mains through a risk-based review of required system capacity. For example, two adjacent trunk mains in Paddington were replaced with a single larger main, resulting in a saving of about $6.8 million
- re-routed mains for easier and cheaper renewal. For example, a 2.3 km main connecting to the Bankstown reservoir was re-routed, saving about $5 million.

About 8.5 km of deferred renewals also contributed to the lower spend. We deferred several large and complex jobs that were planned, in order to re-assess their need, in line with the system integrated planning approach. We achieved delivery efficiencies through the new project planning and delivery model have also contributed to the reduced expenditure.

We reduced the maximum pressure in large areas of the water network which result in fewer main breaks, reducing both renewals and repairs. We also achieved a 10% reduction in the unit cost of water main renewals by improving delivery efficiency.

Expenditure on reservoirs is in line with IPART's determination. Savings were achieved through decommissioning three reservoirs planned for renewal by using contingency within adjacent supply zones. However, these savings have been offset by additional renewals identified through condition assessments.

Expenditure on water pumping stations is $6 million below the determination through using capacity and contingency across the entire water network and decommissioning four pumping stations instead of replacing them.

Expenditure on water filtration plants is $4 million above the determination due to scope increases, such as unplanned urgent fire protection work.

8.3.2 Maintaining wastewater services

Maintaining wastewater services requires us to renew and refurbish wastewater treatment plants, wastewater mains and wastewater pumping stations.

We expect to invest $784 million over the price period to ensure we maintain wastewater services at required standards, providing significant health, environmental and other community benefits.

Expenditure will be above the IPART allowance over the period, as shown in Table 8-8.

Table 8-8 – Maintaining wastewater expenditure (renewal and reliability) ($2015–16 million)

Product	2012–13	2013–14	2014–15	2015–16	Total
Determination	189	185	197	129	701
Actual/forecast	207	128	244	204	784
Variance	**18**	**-57**	**47**	**75**	**83**

Summary of investment drivers and outcomes

Key investment drivers in 2012–16:

- Investment was driven by compliance with Operating Licence standards for uncontrolled sewage overflows (which relate to dry weather overflows to private properties only) and Environment Protection Licence (EPL) requirements (including average five-year wastewater main choke rate and treatment discharge limits).
- Asset condition, failure history, risk assessment and financial analysis are considered in individual project investment decisions to ensure service outcomes are efficiently achieved. Improved treatment plant and pumping station asset data became available during this period.

Variance against the allowance:

- We expect to spend $83 million more than the allowance of $701 million. This is because our improved risk-based planning approach for wastewater network renewals identified more high-priority treatment plant and pumping station renewals.

Service performance indicators and actual performance:

- 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*.
- There have been positive impacts on community aesthetics by improving waterways and beaches, ensuring they are clean and safe for the community to enjoy.

Major expenditure:

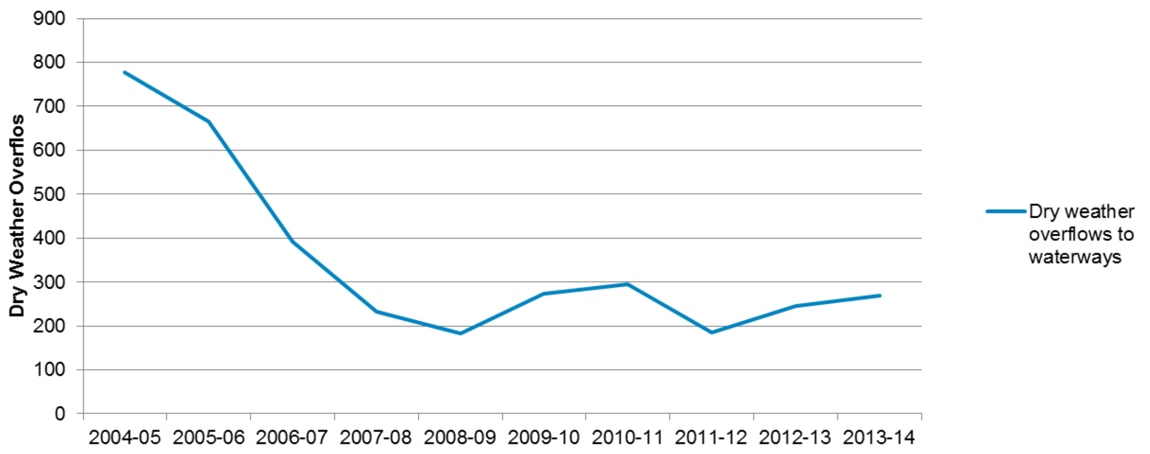
- $183 million to renew large diameter wastewater mains to achieve lowest life-cycle cost and manage the risk of catastrophic structural failures with high community impacts.
- $392 million to maintain reliability of 26 wastewater treatment and water recycling plants to protect the environment and ensure we meet legislative obligations at the lowest life-cycle cost.
- $97 million expenditure to manage 670 wastewater pumping stations to avoid dry weather overflows at the least life-cycle cost.

Maintaining wastewater services – outcomes

We are on track to achieve the targeted wastewater service outcomes over the current price period. We have maintained our performance against requirements of EPLs issued under the *Protection of the Environment Operations Act 1997,* with no significant increase in penalties for wastewater incidents in the period. We have complied with Operating Licence standards for uncontrolled sewage overflows (see Appendix 3). We have achieved target outcomes for wastewater treatment and water recycling plants, with stable performance against EPL standards, such as load, concentration and flow limits, with some variation due to wet weather events.

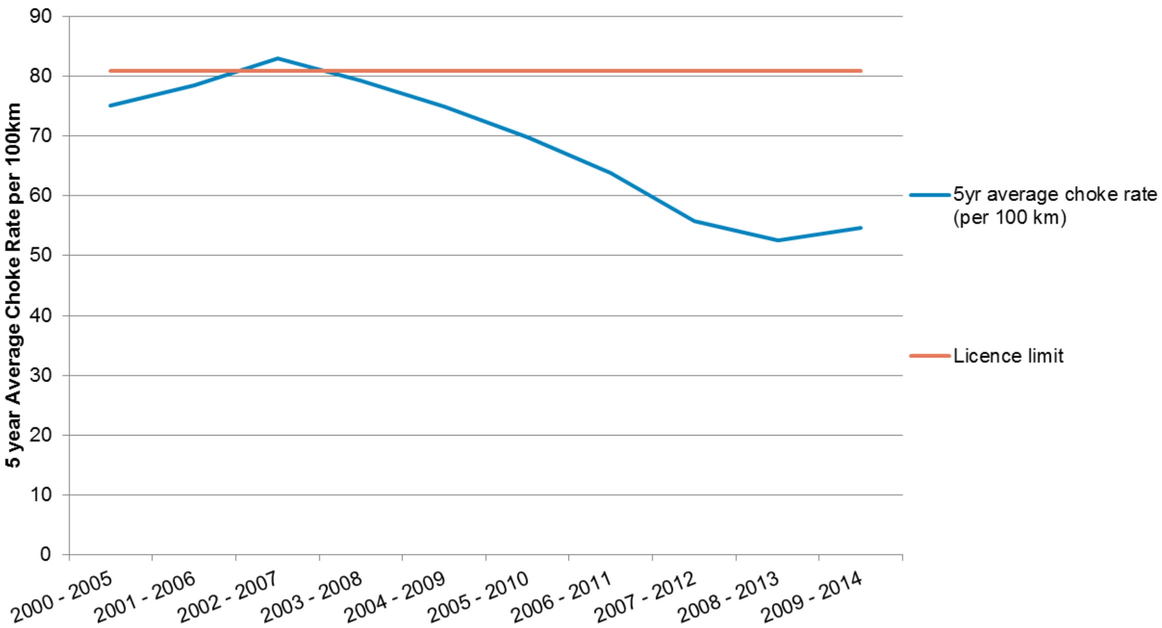
We have also maintained a stable number of dry weather overflows to waterways (Figure 8-6).

Figure 8-6 – Dry weather overflows to waterways



We have also continued to outperform EPL requirements for chokes (Figure 8-7).

Figure 8-7– Choke rate per 100 km



Another outcome of wastewater renewals expenditure is that waterways and beaches are cleaner and safer for recreational activities, with the significant community benefits that this implies. As an indicator of performance, Beachwatch data reported by the NSW Office of Environment and Heritage (OEH) shows that beach water quality in Sydney has improved dramatically over the last two decades. The OEH also notes that the management of wastewater and stormwater has made a clear contribution to this.[62]

Maintaining wastewater services – deliverables

Key deliverables and investment highlights of this portfolio:

- $183 million to proactively manage the 'high consequence failure' risk within 2,700 km of trunk wastewater mains. This is to avoid catastrophic structural failures that could cause extensive environmental damage and high repair costs. Outputs include renewing 36 km of large wastewater mains.
- $48 million to proactively manage wastewater reticulation mains to avoid environmental damage and community impacts. Outputs include renewing 84 km of small-diameter wastewater mains.
- $392 million to maintain reliability of 26 wastewater treatment and water recycling plants. This includes major renewals at Malabar WWTP ($92 million), Cronulla WWTP ($24 million) and North Head WWTP and Northern Suburbs Ocean Outfall System ($43 million).

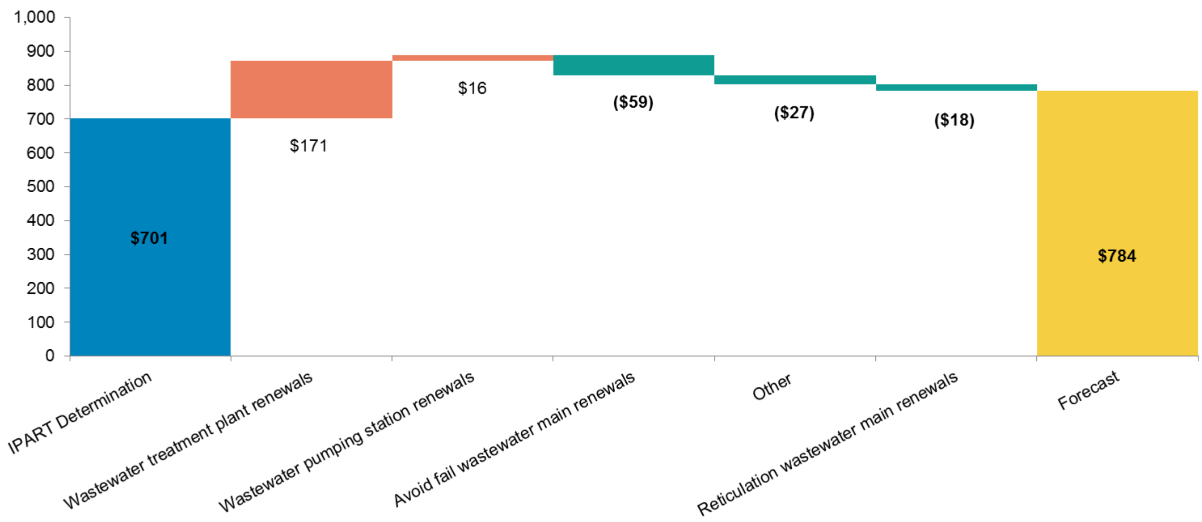
[62] Data and reports available from OEH, for example at www.environment.nsw.gov.au/beach/histdata.htm

- $97 million to manage 670 wastewater pumping stations to maintain performance and avoid dry weather overflows at the least life-cycle cost. These include renewals at Balmain ($8 million) and Quakers Hill ($17 million) facilities.

Maintaining wastewater services – variances

Overall, expenditure is $83 million above the determination. Major variances by project and program are outlined in Figure 8-8.

Figure 8-8 – Maintaining wastewater services major variances to the IPART Determination ($2015–16 million)



- We expect to spend $171 million more than the IPART determination on wastewater treatment plants:
    - We will spend $82 million more than the allowance due to more high-priority renewal and reliability projects identified through detailed condition assessments and safety audits.
    - We will spend $47 million more than the allowance on Malabar Wastewater Treatment Plant Process and Reliability Improvement Project.
    - We spent $24 million more than the allowance on Cronulla Wastewater Treatment Plant odour control, due to project delays and carry-over of works from the previous price determination period.
    - We deferred a $14 million renewal at Castle Hill Wastewater Treatment Plant, as the growth and nutrient limit drivers have not materialised.
- We saved $59 million on 'Avoid fail' (high consequence failure) wastewater mains becaue our improved risk–based approach enabled us to better target renewals. We also achieved efficient renewal deferrals by applying a magnesium hydroxide coating[63]. We deferred

[63] The magnesium hydroxide provides a sacrificial coating that inhibits internal corrosion of concrete wastewater mains.

about $20 million in pressure main renewals, pending the outcomes of new technologies and techniques which more accurately assess remaining asset life.

- We saved $18 million on our dry weather overflow abatement program due to improved delivery efficiency achieved through a revised approach to contracting arrangements.
- We spent $19 million more on wastewater pumping stations due to an expanded program to include vacuum sewerage systems and a major unplanned renewal of the Balmain wastewater pumping station, to prevent imminent failure. We also carried over some works from the previous price period, which also increased expenditure this period.

A listing of wastewater renewal and reliability works completed and in progress over each year of the period is provided in Appendix 6.

8.3.3 Maintaining stormwater services

We invested $46 million to renew and refurbish stormwater assets including open channels, culverts and pipes. This reduces flooding risk (and associated economic and community impacts) and increases public safety.

The $46 million over the current price period is shown in Table 8-9.

Table 8-9 – Maintaining stormwater services (renewal and reliability) ($2015–16 million)

Product	2012–13	2013–14	2014–15	2015–16	Total
Determination	8	9	4	2	24
Actual/forecast	4	7	17	17	46
Variance	**-4**	**-2**	**13**	**15**	**22**

Summary of investment drivers and performance

Key investment drivers in 2012–16:

- Investment is largely driven by community safety and the *Sydney Water Act 1994* minimum requirements to maintain hydraulic capacity of the stormwater network.
- Asset condition and risk assessment are key considerations in investment decisions.

Variance against the allowance:

- Due to increased renewals we will spend $22 million more than the allowance of $24 million. This is a result of undertaking emergency works at Dobroyd Canal, complex renewals of contaminated sites at Alexendra Canal and Astrolabe Park, and complex works in the Sydney CBD that were accelerated because of the CBD South East Light Rail project.

Major expenditure:

- $12 million to to replace two large culverts under Astrolabe Park which were in very poor condition and at risk of collapsing.
- $8 million to renew and 'naturalise' over 1 km of open channel along the Cooks River embankment to reduce failure risks and improve community aesthetics. Community feedback has been positive.
- $4.5 million to renew stormwater assets in Sydney CBD to improve reliability and accessibility.
- $10 million to purchase land at Second Ponds Creek.

Maintaining stormwater services – outcomes

We have maintained the hydraulic capacity of the stormwater network and are collaborating with local councils to address flooding risks for the community.

8.3.4 Maintaining corporate infrastructure

We are investing $223 million to renew a wide range of corporate assets that support business functions, including information technology, buildings, facilities and equipment. This ensures that business activities can be conducted reliably, efficiently and safely. We cover IT capex in more detail in Section 8.11.

The profile of expenditure over the price period is shown in Table 8-10.

Table 8-10 – Maintaining corporate infrastructure – ($2015–16 million)

Product	2012–13	2013–14	2014–15	2015–16	Total
Determination	60	51	54	48	213
Actual/forecast	51	54	44	74	223
Total	**-9**	**3**	**-10**	**26**	**10**

Key investment drivers in 2012–16:

- We base investment decisions on a diverse range of factors including obsolescence, financial assessments, asset condition and risk profiles.

Variance against the allowance:

- Over the period, we will spend $10 million more than the allowance of $213 million. The variance is across a range of assets.

Major expenditure:

- $33 million to renew water meters.
- $37 million on upgrades to workplace accommodation at plants and depots.
- $114 million in renewing information technology infrastructure.

Key deliverables include:

- $33 million to renew water meters for accurate customer billing to comply with the *National Measurement Act*. This saves $6 million as a result of intentional deferrals through increasing the operational life of 20 mm to 50 mm water meters, based on accuracy testing.
- $37 million on workplace accommodation upgrades at plants and depots to minimise maintenance costs, comply with modern building codes, ensure staff safety and promote workforce collaboration. This is $4 million over the determination primarily as a result of constructing risks being realised.
- $29 million in maintaining and renewing buildings, facilities, heritage sites and minor plant and equipment. This is $5 million below the IPART determination for a range of reasons, including the decommissioning of assets.
- $114 million in renewing information technology infrastructure (see Section 8.11).

8.4 Servicing growth

We are investing $584 million to deliver new infrastructure to service growth within greenfield and infill developments. New and redeveloped sites will have timely access to water and wastewater services.

The profile of growth investment is shown in Table 8-11.

Table 8-11 – Growth capital expenditure ($2015–16 million)

Growth Program	2012–13	2013–14	2014–15	2015–16	Total
Determination	152	181	181	169	683
Actual/forecast	105	153	142	184	584
Total	**-47**	**-27**	**-39**	**14**	**-99**

Note: Expenditure of $584 million excludes works funded under the NSW Government Housing Acceleration Fund Program.[64]

[64] The growth expenditure excludes works funded under the NSW Government Housing Acceleration Fund. An additional $48 million of growth works is being delivered and funded under the HAF 1 and 2 programs. Total growth capital expenditure including HAF funded works is therefore $633 million.

Key investment drivers in 2012–16

- Investment is driven by higher demand for water and wastewater services – this has been higher than forecast and in different locations.
- Following the global financial crisis, housing market activity increased markedly from around in 2012–13. Over 90,000 new connections are expected over the current price period. About two thirds of these are infill development and about one third is in greenfield developments. greenfield developments can often occur in different locations to where we expect at the time of the determination. This can lead to increased costs to service if they are not near existing infrastructure.

Variance against the allowance

- We will spend $99 million less than the allowance of $683 million. This is due to an improved risk-based planning approach, including maximising the use of existing capacity. There were extra costs from private sector infrastructure delivery, as those providers provided the reticulation mains to service new developments and also serviced growth outside our Growth Servicing Plan.

Service performance indicators and actual performance

Developer demand has been met and there is capacity to service the growth.

Major expenditure:

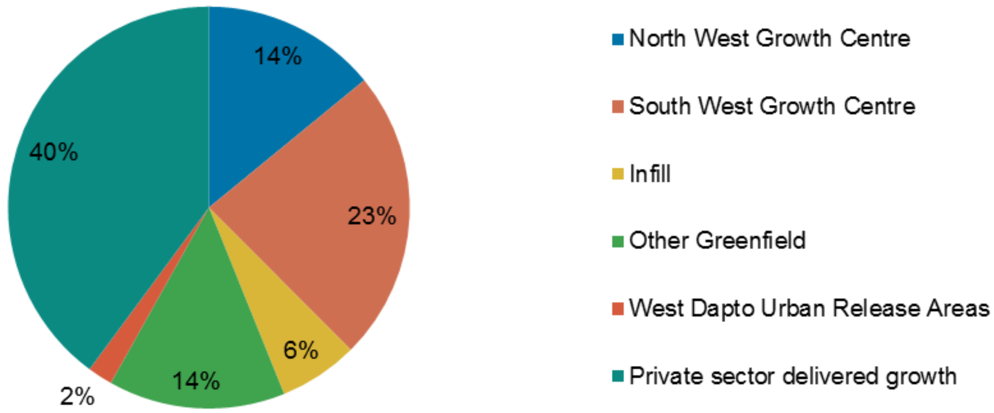
- $314 million for greenfield development.
- $37 million for infill development.
- $233 million for infrastructure delivered by the private sector and paid for by Sydney Water.

Servicing growth – deliverables

Figure 8-9 shows the proportion of growth expenditure by location (excluding HAF-funded projects). Sydney Water delivered 60% of this, largely in the North West and South West growth centres.

The private sector delivered infrastructure outside locations covered by our Growth Servicing Plan. This is about 40% of the growth expenditure. Sydney Water delivered the remaining growth expenditure, of which infill development makes up only 6% of growth expenditure, although it includes more than half of new connections.

Figure 8-9 – Growth capital expenditure by area in 2012–16 ($2015–16 million)



8.4.1 Our approach to delivering growth infrastructure

We have an efficient approach to servicing growth, based on being 'plan-ready'. We plan early, but only deliver infrastructure when it is needed. We maintain capability to respond to a dynamic and flexible growth market. We publish a Growth Servicing Plan (GSP) each year to ensure the market can make informed investment decisions.

We deliver growth capacity, in line with development timeframes obtained from the Department of Planning and Environment's MDP 2010–11, and advice from developers and evidence of demand.

Requirements that are out of sequence with the GSP are delivered by private developers according to our standards and procurement guidelines. Developers are reimbursed reasonable and efficient costs once infrastructure has been commissioned and handed over to Sydney Water and only as lots are connected to the system.

8.4.2 Growth investment outcomes and deliverables

We are currently providing capacity to meet a higher level of demand for new water, wastewater and stormwater services than was forecast in IPART's 2012 Determination. Over 90,000 new connections are expected over the current price period.

We stage the delivery of major infrastructure to most efficiently meet current and future demand. Infrastructure delivered within the current price period includes:

- North West Growth Centre (NWGC) – $82 million:
    - $59 million to complete NWGC Package 2 to provide water and wastewater services to 7,000 new lots
    - $6 million to commence NWGC Package 3 and amplification of Riverstone Wastewater Treatment Plant to provide capacity to service 31,000 new lots
    - $13 million to provide stormwater drainage capacity for new developments.

- South West Growth Centre (SWGC) – $137 million including:
    - $120 million to complete infrastructure, proving additional capacity for 3,700 lots with water services and 18,700 lots with wastewater services
    - $16 million to begin delivering infrastructure to provide 3,200 new lots with water services and 4,400 new lots with wastewater services.
- West Dapto Urban Release Area – $12 million to begin delivering infrastructure to service 5,600 new lots.
- Other greenfield areas – $83 million to deliver infrastructure for a range of developments including Menangle Park, St Marys, Rouse Hill and Picton.
- Infill growth – $26 million to service about 66,000 new dwellings connecting to the water and wastewater network across the current price period.
- Green Square – $11 million dollars (excluding HAF grant funding) to respond to a government requirement to deliver the Green Square town centre stormwater amplification.
- Private sector delivered growth – $233 million initiated and delivered by the private sector to provide services to new developments.

Servicing growth – variances

Major variances against the IPART determination are shown in Figure 8-10.

Figure 8-10 – Major growth variances to IPART determination ($2015–16 million)

Sydney Water has saved about $169 million in delivering infrastructure, mostly due to improved planning assumptions which have allowed us to downsize and defer projects by using capacity within existing infrastructure. Planning improvements include:

- an evidence-based revision of criteria used to assess system capacity and determine new infrastructure requirements. These include reduced average and peak water use assumptions
- a refined risk-based approach to servicing growth, such as planning to operate closer to the Operating Licence water pressure standard
- staged infrastructure
- operational improvements within existing assets to increase capacity
- more efficient infrastructure solutions, including low infiltration wastewater mains and new construction technologies.

Major variances against the IPART target by growth area are explained below:

- NWGC – $95 million less than the determination:
    - NWGC Package 2 delivered $82 million saving due to the greater use of existing infrastructure and adopting new technologies, such as low infiltration wastewater mains. The determination included early and high-level planning estimates and different servicing solutions were adopted as planning progressed.
    - Deferral of NWCG Package 3 and Riverstone amplification projects by three years, resulting in $17 million deferred from the current price period. Achieved through the greater use of existing infrastructure as a result of planning improvements and increasing the capacity of the Riverstone WWTP through operational enhancements.
- NWGC – $15 million less than the determination as a result of:
    - completing Spring Farm trunk water main, first release precincts, Edmondson Park wastewater amplification and a other major projects $49 million under budget
    - commencing a range of projects, which are tracking $7 million below budget
    - Offsetting savings by $40 million in the Second Release Precincts to service 8,600 lots more than forecast, due to stronger developer demand.
- West Dapto Urban Release Area – $14 million saving as a result of slower growth and project scope reduction by using leak tight wastewater mains.
- Infill growth: $64 million saving as a result of:
    - defering or downsizing infrastructure through increased use of existing assets
    - implementing non-capital solutions, such as rezoning of water systems
    - cancelling or deferring projects due to the associated developments not progressing.

- Other greenfield – $8 million above budget due to:
    - growth accelerating with unexpected development in Wilton, Shellharbour and Emerald Hills
    - offsetting increased expenditure through greater use of existing infrastructure to service the extra growth, such as using a pressure booster station to avoid the need for a new reservoir at Wilton.
- Private sector delivered growth – there has been an acceleration of $70 million in infrastructure initiated and delivered by developers and paid for by Sydney Water. The forecast had assumed subdued private sector development after the global financial crisis.

Due to changes in the NSW Government's approach to land release, large-scale developments are progressing in different areas than allowed for in the 2012 Determination. Many of these are new greenfield sites outside of Sydney's growth centres and these are typically more expensive to service than infill development. These growth trends highlight the inherent uncertainty in predicting the demand for new water, wastewater and stormwater infrastructure.

8.5 Delivering enhancements (mandatory standards)

We are investing $108 million to deliver new projects to meet existing wet weather overflow abatement targets in our EPLs.

Mandatory standards expenditure is shown in Table 8-12.

Table 8-12 – Mandatory standards expenditure ($2015–16 million)

Product	2012–13	2013–14	2014–15	2015–16	Total
Determination	80	82	20	31	213
Actual/forecast	54	18	18	18	108
Variance	**-26**	**-64**	**-2**	**-13**	**-104**

Key investment drivers in 2012–16:

Investment is driven by externally mandated targets:

- The EPA set a program of works for wet weather overflow abatement (WWOA) to reduce wet weather discharges to customers' properties and waterways.

Variance against the allowance:

- We will spend $104 million less than the allowance of $213 million. Reasons include removing the need for capital by implementing operational solutions and deferring expenditure to confirm the customer and regulatory drivers.

Service performance indicators and actual performance:

- We have worked towards delivering on this program of works.

Mandatory standards – deliverables

Key deliverables include:

- $90 million on the WWOA program to ensure we comply with EPA requirements to reduce wet weather discharges to customer properties and waterways
- We have achieved environmental and customer outcomes through a range of projects including the Northern Beaches storage tank, Quakers Hill Wastewater Treatment Plant and a reactive program of work on customer discharges. A tranche of seven new projects (Hotspots III) has commenced.

Mandatory standards – variances

We expect to save $104 million due to:

- delivering the Wet Weather Overflow Abatement Program with a $74 million saving through:
    - accelerating work to before the start of the current price period
    - implementing operating solutions to fix overflows at the southern beaches, avoiding $10 million in capital costs
    - offsetting savings is increased expenditure on seven new pollution reduction projects (Hotspots III) in response to EPA requirements. There was also a four-fold increase in work to reduce overflows as a consequence of the very wet conditions in 2011–12.
- We also saved $49 million by deferring the Vaucluse/Diamond Bay Wastewater Project while we further consider customer and regulatory drivers, and determined potential benefits and costs.

8.6 Government programs

We are investing $202 million to deliver reticulated wastewater systems to unsewered villages.

We will invest $202 million in the price period as shown in Table 8-13.

Table 8-13 – Government programs expenditure ($2015–16 million)

Product	2012–13	2013–14	2014–15	2015–16	Total
Determination	73	70	45	22	209
Actual/forecast	46	91	52	12	202
Variance	**-27**	**22**	**7**	**-9**	**-7**

Key investment drivers in 2012–16:

- Investment is driven by government mandated requirements. Our *Operating Licence 2010–2015* required us to deliver the PSP to provide reticulated wastewater systems to eight villages.

Variance against the allowance:

- We will spend $7 million less than the allowance of $209 million. Reasons include removing the need for capital, by implementing operational solutions and deferring expenditure to confirm the customer and regulatory drivers.

Service performance indicators and actual performance:

- We met our Operating Licence targets. See Appendix 3.

Government programs – outcomes

We spent $199 million on the PSP to provide new reticulated wastewater systems to eight unsewered villages. All schemes will meet Operating Licence requirements.

Savings over 2012–16

We saved $9 million on the PSP. Updated planning assumptions and more efficient delivery approaches allowed us to deliver these new wastewater services to the eight villages at a lower cost than we had forecast.

8.7 Business efficiency

We are investing $144 million in business efficiency. We cover IT capex in more detail in Section 8.11.

We will invest $144 million in business efficiency as shown in Table 8-14.

Table 8-14 – Business efficiency – ($2015–16 million)

Business efficiency	2012–13	2013–14	2014–15	2015–16	Total
Determination	38	32	28	27	125
Actual/forecast	22	17	47	59	144
Total	**-16**	**-15**	**19**	**31**	**19**

Business efficiency investment – deliverables

This includes:

- $16 million expenditure under a property rationalisation and disposal program to identify and prepare surplus land for sale. This program frees land for development and will provide a gross revenue of $280 million.
- $11 million expenditure on the Energy Efficiency Program to optimise energy efficiency and cogeneration across the wastewater network.
- $6 million on a new Corrosion and Odour Prevention Strategy.
- $98 million in information technology investment as outlined in Section 8.11.

8.8 Breakdown of capex by product for 2012–16

A breakdown of capital expenditure by product is shown in Table 8-15 below.

Table 8-15 – Capital expenditure by product 2012–16 ($2015–16 million)

Product	Determination	Forecast/ Actual	Variance	% difference
Water	964	707	-257	-27%
Wastewater	1,501	1,462	-39	-3%
Corporate	333	339	5	2%
Stormwater	28	71	42	150%
Regulated Recycled	0	1	1	-
Total	**2,827**	**2,580***	**-247**	

Note: that this excludes $48 million of HAF-funded projects

8.9 Summary of efficiency in relation to deliverables

Appendix 6 outlines the new infrastructure constructed throughout compared to output measures set in the 2012 Determination. We have delivered less infrastructure than expected. This has been achieved by improving how we make investment decisions and deliver work. We have included many examples throughout this chapter and can provide more on request. We intend to continue improving investment processes.

8.10 Forecast capital expenditure 2016–20

The forecast capital investment program for 2016–20 is $2.8 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 below the historic average capital investment trend in Figure 8-3.

8.10.1 Key assumptions and risks relating to the forecast

In prioritising the capital program, we aim to balance service levels, risk and cost. This investment program reflects our view of efficient long-term service provision and prudent management of asset, safety and environmental risks. In developing a balanced forecast, we have made the following assumptions:

- We will meet service standards in the Operating Licence and EPLs.
- These and other regulatory requirements will not change in a way which has a material impact on expenditure, other than for specific situations set out later in this section.
- Sydney will experience average weather conditions, that is, neither drought or very wet conditions which both adversely impact costs.
- Contract market conditions remain stable and if not, we will manage cost increases with better procurement or re-prioritising activities.
- That while growth in the short-term is certain (and is being observed now) the very high levels of growth may not continue for the whole period – this has been accounted for in our approach to forecasting growth expenditure.

As with all forecasting, there are areas of uncertainty. More significant risks to this forecast are related to the Environment Protection Agency (EPA). We considered the investment impacts of the possible changes in EPLs and have included expenditure for those we think are appropriate.

It is also possible that extreme weather events could impact costs but this is highly uncertain, and so specific capital expenditure has not been included.

8.10.2 Capital program overview by investment driver

Table 8-16 shows the profile of proposed expenditure across the investment drivers.

Table 8-16 – Capital investment by driver ($2015–16 million)

Driver	2016–17	2017–18	2018–19	2019–20	Total
Business efficiency	53	43	27	26	149
Government program	0	2	0	1	3
Growth	206	242	159	76	684
Mandatory standards	29	35	50	44	158
Existing standards	418	410	472	470	1,770
Total	**707**	**733**	**708**	**617**	**2,764**

We are proposing capital investment of $2.8 billion over 2016–20. About 89% of the investment is for maintaining existing standards and servicing growth.

We forecast that expenditure will be lower in the last two years, largely due to our risk-based approach to forecasting growth investment. We will be ready to respond to growth if required, but we do not want to add the impact to customer prices at this point. We have also included the potential impact of more targeted environmental regulation, which could allow us to deliver equivalent outcomes more efficiently.

The highlights for each investment driver are as follows:

- Maintaining existing standards (Renewals and reliability) – $1,770 million:
    - We will use updated information and analysis to push assets harder where appropriate.
    - Water and wastewater renewals will focus more on facilities than network assets, with different cost profiles, risks and delivery requirements.
    - IT renewal expenditure will increase as critical assets reach the end of their service lives (including our 28 year-old mainframe billing system).
    - We will increase expenditure later in the period to renew Quakers Hill Wastewater Treatment Plant.
- Servicing growth – $684 million:
    - We plan to provide capacity to serve 27,000 new properties a year.
    - About 43% of the forecast growth investment is expected to be in the North West and South West growth centres, which are greenfield areas.

- Lower expenditure from 2017–18 is due us adopting a 'plan ready' strategy so that we can meet growth if it eventuates.
- Mandatory standards (Government programs) – $3 million:
  - We expect much lower expenditure as projects under the PSP are completed.
  - We assume there will be no new requirements within the next price period.
- Mandatory standards (new and revised EPA requirements) – $158 million:
  - We anticipate new EPA standards, mainly related to environment protection licences and pollution reduction plans.
  - Increased investment is required to reduce wastewater discharges to waterways and manage wet weather overflows.
- Business efficiency – $149 million:
  - Investment in systems and capabilities will allow us to be efficient and resilient in the face of future uncertainty and to engage with customers more meaningfully.
  - This is mainly required for IT projects which build business capability.

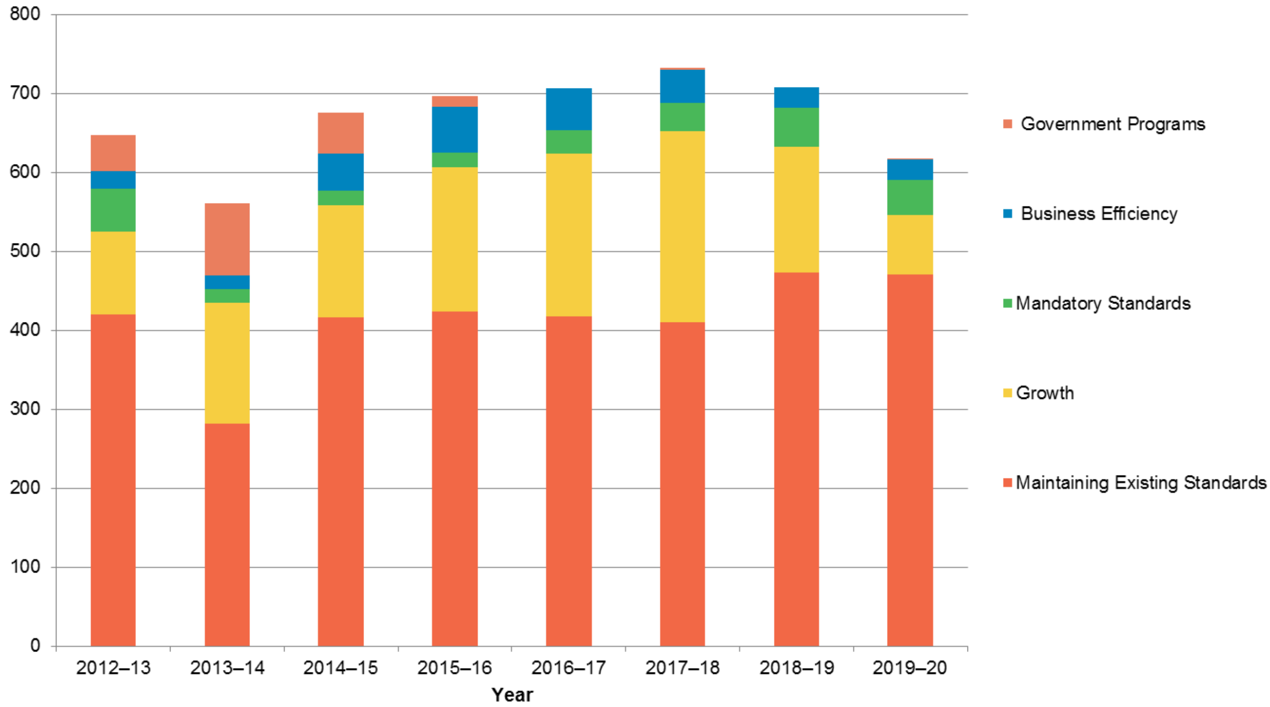
Specific forecasting approaches and the key driver and assumptions we have made are covered in other sections of this chapter.

8.10.3 Comparing our forecast with the current period

The forecast expenditure is similar to that of the current period. We will spend more on growth and maintaining standards than in the current period.

Figure 8-11 shows forecast capital expenditure by driver from 2012 to 2020, where 2014–15 onwards are forecasts.

Figure 8-11 – Capital investment by driver ($2015–16 million)



8.10.4 Maintaining existing standards

About $1,770 million (64%) of the proposed program relates to asset renewals and reliability investments to maintain asset health and service performance and to manage risk.

Approach to forecasting

The renewal and reliability programs which relate to the 'maintaining existing standards' driver are based on top-down analysis, which is supported by a bottom-up view which identifies candidate projects based on need.

The top-down view broadly shows how much of an asset group should be replaced to maintain average condition at an acceptable level. The individual replacement need is usually based on asset condition. We assess asset condition using an adapted international standard grading. We plan renewals when condition is assessed as 'poor' or 'very poor'.

Critical pipeline assets are considered in a different way, because condition can vary greatly along the length of a pipeline meaning that specialist assessment is normally needed. We have increased our understanding of critical water main assets in recent years (see Boxout 8-2).

Boxout 8-2 – Critical water main strategy – a targeted approach reduces expenditure

Sydney Water has developed and refined a quantitative risk model for our critical water main strategy. The strategy includes a range of capital, operating and policy/procedural activities, such as:

- asset renewal
- condition assessment
- data collection
- valve inspection
- third party damage minimisation
- shutdown contingency plans and spares.

We can make more informed decisions about critical water main management, by comparing risk costs with the value of relevant risk mitigation activities.

While pipeline condition information is an important part of the risk assessment, we recognised that knowledge gaps existed about pressurised large diameter water mains. In 2011, we set up a five-year collaborative research project, 'Advanced Condition Assessment and Failure Prediction'. The objective was to find better ways of assessing how, when and where critical water mains are likely to burst.

The research provided a better understanding of the factors contributing to pipe failure, failure mechanisms and condition assessment tools. Alongside advances in condition assessment techniques, we now have a much better understanding of critical water main condition and have better targeted renewal programs and reduced expenditure.

We will reduce our annual critical water main capital expenditure from about $40 million in the current 2012–16 IPART period to about $30 million in the next period.

As part of our system integrated planning approach, critical water main renewal decisions also consider whether the main is still needed, or if its size should change.

Non-critical sewer and water mains are normally replaced when a repeat failure criteria is exceeded. However, a financial evaluation is done in each case to determine whether repairs (opex) or replacement (capex) is the most efficient long-term option.

We continue to develop a more in-depth understanding of asset condition, through inspection programs and analysis of the impact of service environments and failure modes. This has allowed us to reduce total renewal lengths, as there is greater assurance in the estimated remaining life of pipes.

All asset renewal programs go through our investment governance process and must have an approved business case. A renewal will not proceed if it is not cost effective. Business cases for investment programs are covered by this forecast will therefore be available for review, if needed later in 2015. More information on our forecasting approaches for this driver is available in our asset management plans and decision frameworks.

Our improving asset management framework, systems and processes are also covered in Chapter 7. This forecast reflects aspects of these improvements, especially where we have enhanced our ability to balance asset risk and service delivery against the impact of an ageing asset base across many asset classes.

Maintaining water services

Key investment drivers and expected activity

We will invest $504 million over the period in renewing water mains, reservoirs, water pumping stations and water filtration plants. This is driven by our understanding of asset condition, service performance and risk. For example, in the case of critical water mains, we will spend less in the next period, as we have a better understanding of failure drivers and risk. We expect to replace a higher proportion of facilities assets in the coming period.

We will increase the resilience of the network by building interconnections and redundancy.

Our forecast assumes that service standards do not change.

Table 8-17 shows our forecast investment for maintaining water services.

Table 8-17 – Forecast capital investment for maintaining water services by asset class ($2015–16 million)

Maintaining water services by asset class	2016–17	2017–18	2018–19	2019–20	Total
Reticulation water mains	34	34	34	34	134
Trunk water mains	29	29	29	29	116
Reservoirs	25	24	24	24	97
Water pumping stations	15	17	13	13	58
Water filtration plants	6	6	6	6	25
Other renewals	22	15	18	19	74
Total	**131**	**125**	**124**	**124**	**504**

Planned process improvements

Over this coming period we will:

- improve asset information and analysis, including more frequent and reliable condition assessments. For example, will assess the condition of 300 km of mains
- continue to refine the system integrated plans
- complete facility 'blueprints' for water treatment facilities, which include long-term investment plans based on asset condition, process capability and future drivers.

The following section considers investment to maintain water services in terms of network renewals and facility renewals.

Water distribution network

Expenditure is to renew water distribution assets to ensure compliance with Operating Licence conditions and provide customers with the water continuity and pressure standards they expect. Investments are also proposed to increase the operational resilience of the water network by building interconnections and redundancy for higher risk systems. Major investments include the following:

- Water reticulation mains ($134 million) – to renew 180 km of pipeline. This will maintain the current level of unplanned water service interruption, achieve lowest life-cycle cost and contribute to meeting system leakage targets.
- Critical water mains ($116 million) – to renew 47 km of main and 120 large valves. This will maintain the current level of unplanned water service interruptions and reduce social impacts (such as flooding and traffic disruption).
- Reservoirs ($97 million) – for roof renewal or extensive repairs on 33 reservoirs and 18 rechlorination plants. This will reduce current safety risks and maintain the structural integrity of these reservoirs. Expenditure on rechlorination plants is to ensure their continued reliability to achieve water quality targets.
- Water pumping stations ($58 million) – to renew 18 pumping stations and upgrade 17 high voltage electrical systems at pumping stations. This will reduce safety risks for operators and reduce the risk of operational failure.
- Customer water meters ($41 million) – a targeted program to renew customer water meters identified as reaching the end of their economic service life.
- System reliability assets ($18 million) – to increase reliability and operation flexibility between four separate water distribution systems, serving a combined population of 900,000.
- Share of works ($12 million) – to move water distribution pipes affected by road and rail infrastructure projects.
- Other minor water asset projects ($2 million).

Water filtration plants

We need to deliver renewals at our water filtration plants ($25 million). This investment will reduce the risk of operational failure and maintain compliance with ADWG.

In addition to the renewal works at filtration plants we own, we are planning substantial investment on the privately-owned Prospect and Macarthur water filtration plants over the next price period. This work is to comply with filter turbidity and chlorination contact time requirements under the ADWG. The upgrades are planned to be delivered as an extension of the finance lease arrangements under each agreement (see Appendix 10).

Maintaining wastewater services

Key investment drivers and expected activity:

As shown in Table 8-18, we will invest $890 million over the period renewing wastewater infrastructure including wastewater treatment plants, wastewater mains and pumping stations. Activity is driven by asset condition, service performance and risk.

Our analysis shows the need for significant investment for:

- trunk wastewater mains – where we seek to avoid failure due to high consequences
- renewing components of wastewater treatment plants where the risk of environmental damage from asset failure is becoming high.

We have assumed consistent regulatory requirements.

Table 8-18 – Forecast capital investment for maintaining waste water services ($2015–16 million)

Maintaining wastewater services	2016–17	2017–18	2018–19	2019–20	Total
Avoid fail wastewater mains	53	52	54	56	215
Wastewater reticulation mains	12	12	12	12	47
Wastewater pumping station renewals	17	18	18	17	69
Wastewater treatment plant renewals	87	91	146	152	476
Other renewals	25	23	17	18	83
Total	**193**	**196**	**246**	**255**	**890**

Planned process improvements

Over this coming period we will:

- increase our understanding of new wastewater treatment technologies, which may allow us to meet the outcomes more efficiently in the future
- improve asset information and analysis and continue to refine the system integrated plans and complete facility 'blueprints' for wastewater treatment facilities.

The following section considers investment to maintain wastewater services in terms of network renewals and facility renewals.

Wastewater distribution network

Major proposed investment:

- $215 million to renew 34 km of large gravity critical wastewater mains, 4 km of pressure main and rehabilitate 6.4 km of the Northern Suburbs Ocean Outfall Sewer (NSOOS).
- $69 million to renew 58 wastewater pumping stations, six vacuum sewerage systems and five high voltage pumping stations.
- $47 million for lining 112 km of wastewater reticulation mains to reduce public health risks associated with wastewater discharges.
- $18 million to renew obsolete telemetry and control equipment (known as IICATS), which is used to run our water and wastewater network.
- $17 million to renew network odour control and chemical dosing units, reducing corrosion rates in wastewater networks and deferring future rehabilitation costs.
- $12 million Network Data Improvement Project to improve data quality for network operational assets, to improve business efficiency and mitigate risks.
- $5 million in minor wastewater asset projects.

Wastewater treatment facilities

Investment in wastewater treatment facilities will ensure that effluent discharges meet EPL requirements. Major proposed investment:

- $290 million for wastewater treatment plant (WWTP) renewal projects. This will reduce the likelihood of non-compliant environmental discharges.
- $173 million to replace assets within Quakers Hill WWTP, which are reaching the end of their service life.
- $30 million for renewing telemetry and control equipment (SCADA) in wastewater treatment plants, maintaining our ability to monitor and control wastewater treatment processes when current equipment becomes obsolete.
- $13 million for completing the remainder of the major renewal project at Malabar WWTP.

See Boxout 8-3 for how we are driving efficiency through system integrated planning.

Boxout 8-3 – Case study of system integrated planning driving efficiency

Historically, the planning for wastewater treatment plants was done on a plant-by-plant basis, partly due to the way their performance was regulated. This meant that we had not assessed opportunities to provide services more efficiently, using load balancing and by consolidating treatment.

We completed a system integrated planning review across three treatment plants which serve adjacent catchments, discharge to South Creek and share a single bubble environment protection licence. We reviewed Riverstone WWTP (being amplified to serve growth), Quakers Hill WWTP (requiring a major renewal) and St Marys WWTP (renewal and growth) and:

- considered maintaining separate facilities versus consolidating biosolids and/or liquid stream treatment
- used detailed condition assessments, process capability modelling, and growth and capacity forecasts
- completed bottom-up cost estimates, using an independent quantity surveyor, bill of material quantities and supplier equipment costs
- considered strategic risks and opportunities for each option in the long term.

We concluded that we could save $40 million over 30 years by consolidating biosolids treatment for St Marys and Quakers Hill while continuing to treat the liquid stream at all three facilities. This approach also had a lower risk profile, less community impacts and better energy efficiency.

Maintaining stormwater services

Key investment drivers and expected activity:

We will invest $103 million over the period on stormwater infrastructure, such as open channels and stormwater conduits.

We will progress flood risk mitigation work, particularly in some growth areas which have significant flooding risks. We are also investing in waterway health projects in partnership with local councils.

We have assumed the regulatory requirements will not change, apart from the clarification in our new Operating Licence (Section 1.3 in the licence) that Sydney Water may provide new stormwater systems and services.

The annual investment profile by program is shown in Table 8-19.

Table 8-19 – Forecast capital investment for maintaining stormwater services ($2015–16 million)

Maintaining stormwater services	2016–17	2017–18	2018–19	2019–20	Total
Renewals	19	15	24	13	71
Waterway health	3	3	7	5	18
Flood risk mitigation	1	2	4	6	13
Total	**23**	**20**	**36**	**24**	**103**

We are investing about $50 million more in stormwater assets, compared with the current period. About 120 km of stormwater assets were constructed before 1910. Assuming a nominal 100 year life, it is reasonable to expect that more renewal may now be required. However, our forecast investment is based on inspection with the age profile only acting as an indicator.

The increase in renewals is due to poor condition of assets, which are reaching the end of their service lives and infill development that is occurring in some areas which is increasing flood risk.

Planned process improvements

In the next period, we will work on improved flood modelling and improve asset data, including our rolling program of comprehensive condition and risk assessments. We also plan to trial new technology, including drones to conduct more efficient condition assessments.

Stormwater investments

Major proposed investments include:

- $71 million to:
    - renew 7 km of open channels, culverts and pipes
    - reline 2 km of pipes
    - renew 5 km of fencing
    - conduct 150 km of condition assessment.
- $18 million to improve health of waterways and aesthetics across three rivers
- $13 million on flood risk mitigation, to reduce flooding and facilitate growth across infill areas.

Maintaining corporate infrastructure

Key investment drivers and expected activity

We will invest $274 million to renew a wide range of corporate assets that support business functions including information technology, buildings, facilities and equipment. This is to ensure that business activities can be conducted reliably, efficiently and safely.

Investment decisions are based on a diverse range of factors including obsolescence, financial assessments, and asset condition and risk profiles.

The annual investment profile is shown in Table 8-20.

Table 8-20 – Forecast capital investment for maintaining corporate infrastructure ($2015–16 million)

Maintaining corporate services	2016–17	2017–18	2018–19	2019–20	Total
Information technology	57	57	57	57	230
Property and workplace accommodation	10	9	6	6	31
Other minor equipment	3	3	3	3	13
Total	**70**	**69**	**67**	**67**	**274**

Major proposed investments include:

- $230 million to renew information technology infrastructure, as outlined in the separate section on IT (Section 8.11)
- $31 million to renew workplace accommodation and other property and land to maintain workforce efficiency and workplace health and safety
- $13 million for other minor plant, field and laboratory equipment.

8.10.5 Servicing growth

Key investment drivers and expected activity

We will invest $684 million over the next period to ensure new customers have access to water and wastewater services as new homes and businesses are built. The main driver is accelerating growth in various locations – some greenfield, some infill.

Annual growth may exceed 30,000 new dwellings a year – the highest level for fifteen years. The uncertainty about the amount of growth and its location has increased since 2011.

Forecast expenditure is lower in later years of the period as we have a ‘plan ready’ strategy and will be ready to service if this growth does eventuate. This means we bear the risk if this growth takes place.

We have assumed:

- that new planning assumptions for water and wastewater demand remain valid and there will be no ‘bounce back’ in customers’ water use, following the adoption of Water Wise Rules in 2009

- there will be stable regulation – changes to nutrient discharge levels in particular could drive large investments in 'step change' treatment plant capacity.

The annual investment profile is shown in Table 8-21. This represents 25% of our total capital expenditure over the next price period. More growth is expected in infill areas but most of the cost is likely to be in greenfield areas, due to higher servicing costs for newly developing areas.

Table 8-21 – Forecast capital investment for growth ($2015–16 million)

Growth	2016–17	2017–18	2018–19	2019–20	Total
Northwest Growth Centre	34	87	60	2	183
Southwest Growth Centre	49	22	18	26	114
West Dapto Urban Release Area	5	14	4	0	23
Broader Western Sydney Employment Area	0	0	1	0	1
Other greenfield	31	30	9	1	71
Infill	30	44	16	5	95
Private sector delivered growth	58	44	52	42	196
Total	**206**	**242**	**159**	**76**	**684**

Planned process improvements

We plan the following improvements to the capital investment process:

- Closer collaboration with developers and government to improve forecasting and influence development planning.
- More refined risk-based planning approach leveraging real time data and using better demand and growth forecasts in refined the system integrated plans.
- As a result of the annual developer survey where we seek to better understand developers' needs, we streamlined our process for managing new developments. This reduces our turnaround times significantly (estimated around 45% less). This saves develoopers and Sydney Water both time and money. These efficiencies have been included in the 2016–17 to 2019–20 capital program.

Growth uncertainty

Sydney Water has less certainty and control over growth than in the past, when growth projections were set out in the MDP. 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, as shown in Figure 8-12. While this trend is expected to continue in the short-term, there is greater uncertainty in about development activity and future land release programs in the medium-term.

Figure 8-12 – Historical actual growth and dwelling approvals and forward projections.

Reflecting this risk, we have assumed a conservatively low growth forecast, reflecting annual growth of 1.3%. This is about 27,000 new dwellings each year through to 2019–20. This represents funding for areas that are currently zoned for residential purposes by the NSW Department of Planning and Environment.

The figure of 27,000 properties a year is more than growth in connections in the AIR due to the lag-time between providing capacity and actual connections.

NSW Metropolitan Development Plan 2010–11

Sydney Water’s program for delivery is guided by the NSW Government’s annual development forecasts from the MDP for the short and medium-term, and longer term forecasts from the *Metropolitan Strategy*. However, the last MDP was released in 2010–11, so we continue to consult with the Department of Planning and Environment but also now engage more with local councils and developers to obtain up to date development forecasts.

In December 2014, the NSW Department of Planning and Environment released the *Metropolitan Strategy* for the greater Sydney region. The plan foreshadowed the release of sub-regional plans and infill and greenfield areas that will be under investigation for future development. New areas could be released for development and we will adapt our growth servicing plan if necessary.

Sydney Water's Growth Servicing Plan

The growth investment program is focused on 'just-in-time' delivery of infrastructure. However, it also includes projects with large trunk and treatment works that deliver capacity for growth beyond the 2016–20 period, where we have found that it is efficient to do so.

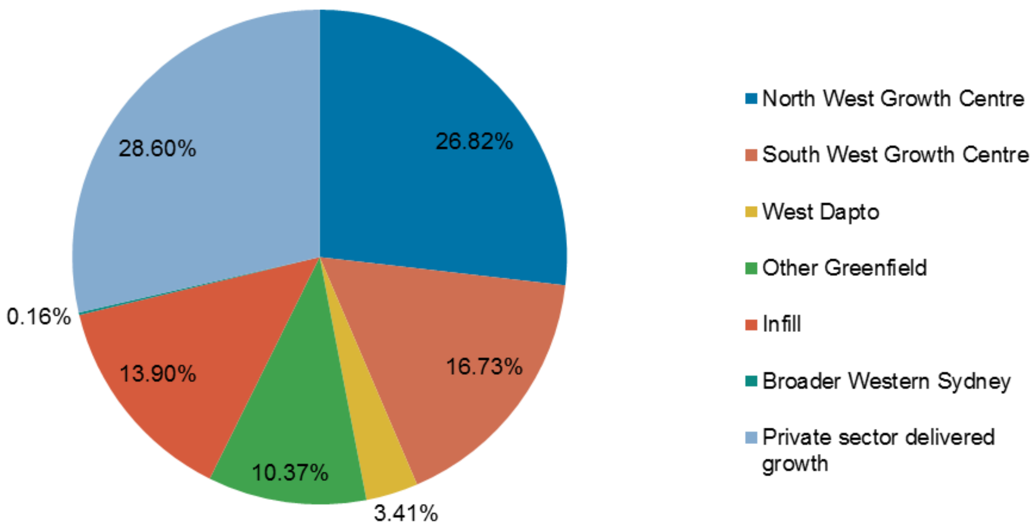
Our Growth Servicing Plan (GSP) sets out when and where we plan to deliver water-related services for growth (new housing and employment lands) over a five-year period. The GSP for 2014–15 to 2018–19 includes the servicing status for sites that have been announced for development (and in some cases rezoned) including:

- greenfield precincts in the North West and South West growth centres
- urban activation precincts
- North West Rail Link precincts
- developments released under the NSW Government's Precinct Acceleration Protocol
- developments that have progressed through the NSW Government's Gateway Rezoning Process as a result of the Potential Home Sites Program.

Some of these sites were released under the NSW Government's programs for accelerated land release provided that they would be at no cost to government. Servicing these developments is subject to our commercial principles for out-of-sequence developments.

Around 60% of proposed growth expenditure is forecast for works in the greenfield growth areas, largely the North West and South West Growth Centres as shown in Figure 8-13.

Figure 8-13 – Proposed 2016–20 growth capital expenditure by area ($2015–16 million)



For greenfield projects that we have assessed as having a lower likelihood of delivery in the next price period, we have adopted a 'plan ready' strategy. Planning for these areas will be completed in the first half of the next price determination period, while capital investment to deliver new infrastructure has been deferred beyond 2019–20. This will reduce the bill impact on customers during the next price determination period. Should development demand eventuate earlier in these uncertain growth areas, we will deliver the infrastructure and accept the financing cost.

In terms of servicing infill growth, our investment forecasts are based on maximising the use of spare capacity in existing systems.

Lower growth servicing costs still expected

In the current period we re-assessed the demand on our network, identifying extra available capacity. We were able to use this available capacity to service growth and we deferred major new treatment plants through just-in-time staging. In the forecast period this will still be possible, as shown in Boxout 8-4.

Boxout 8-4 - Using spare capacity to service growth

> The preferred servicing option for second release precincts in the South West Growth Centre is to use spare capacity in the adjoining Liverpool Wastewater Catchment and Liverpool WWTP. This will avoid the early construction of major trunk wastewater carriers and a new WWTP. This approach also ensures that network assets built to transfer flows in the short-term will continue to be used in the long term when we transfer these flows to yet to be built treatment plants.

Urban growth delivery by developers

While we deliver some infrastructure, some construction is delivered by developers, in line with Sydney Water's standards and procurement guidelines and paid for by Sydney Water. This allows wastewater services for urban growth infrastructure (including trunk, lead-in and reticulation mains) to be built faster as this growth is generally 'out-of-sequence' and could be less efficient to resource internally.

Provided that the developments are in line with our GSP, we reimburse developers for the reasonable and efficient costs of infrastructure once it has been commissioned and handed over. Where development is accelerated and is out-of-sequence with the GSP, we pay instalments on the purchase, in line with the rate of new connections. In this way, developers carry the risk in relation to the actual rate of growth.

Expenditure for this is included in our forecast under the Developer Operations Program ($196 million).

8.10.6 Mandatory standards

The program includes $158 million to meet new and revised environmental regulation requirements.

Overview of mandatory standards investment

Key investment drivers and approach:

Most activity will be driven by:

- possible changes in the approach to regulating Wet Weather Overflow Abatement (WWOA)
- a likely new EPA requirement to reduce nutrient discharges at Winmalee WWTP.

This forecast is based upon our view of the appropriate environmental requirements, but we have considered a range of investment options to meet different regulatory outcomes. As the decision depends upon another agency, the required investment could be very different.

Scope of activity:

Capital expenditure of $158 million includes:

- working to meet different WWOA standards, for example moving emergency relief discharge points
- upgrading Winmalee WWTP to meet lower nutrient discharge limits

The annual investment profile is shown in Table 8-22.

Table 8-22 – Forecast mandatory standards expenditure ($2015–16 million)

Mandatory standards	2016–17	2017–18	2018–19	2019–20	Total
WWOA	28	33	38	29	127
Winmalee WWTP	1	1	10	14	26
Other	1	1	1	1	5
Total	**29**	**35**	**49**	**44**	**158**

Better environmental outcomes are possible if regulation is more targeted

Sydney Water strongly supports appropriate regulation of environmental impacts and increasingly wants to move towards an approach that is outcome-based rather than deterministic. For example, we consider that environmental regulation could better target 'river health' outcomes which take account of the wider system factors like resilience. Done well, this would achieve equivalent environmental outcomes more efficiently, as it would allow better targeting of expenditure. It is our view that some of our deterministic environmental targets do not lead to the best cost-effective environmental, or community outcomes.

Over the past three years we have taken a central role in developing models that facilitate a more holistic understanding of the impacts on river systems. These models have been developed in consultation with stakeholders and could be the basis for a more targeted approach.

Our EPLs are currently being reviewed. The EPA is looking to better align any changes in licence requirements with price determination periods. However there are two projects that must have work delivered within the next price period, with significant uncertainties about the licence conditions that may be imposed. This could in turn lead to major variations from our forecast capex provided to IPART.

Managing wet weather overflows

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 little environmental benefit. While significant gains have been made over the past 15 years, under the current approach there are examples where the targets are being met but 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 its risks and consequences. If accepted by the EPA, this will allow us to target investment on risk and consequence rather than meeting deterministic targets. The change will allow Sydney Water to achieve environmental and community outcomes more cost-effectively. See Chapter 2.

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 EPL 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 is preparing to issue a pollution reduction program (PRP) which could lower the allowed discharge levels.

A possible outcome is that the EPA lowers discharge limits to a comparatively low level. Our analysis suggests that meeting the new target at this very stringent level would:

- drive expenditure of around $150 million with some risk as it would likely require us to implement very new technology
- not be justified in terms of the expected impact on the health of 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 cost-benefit analysis for the potential discharge options for Winmalee WWTP our decision on the most cost-effective environmental outcome. We note IPART has recently indicated it may disallow expenditure driven by EPLs if it believes the additional expenditure to be inefficient.

Priority Sewerage Program

About $3 million is required to complete the remaining Stage 2 PSP schemes currently in construction. There are no further PSP schemes planned.

8.10.7 Business efficiency investments

Overview of business efficiency investment forecast
Key investment drivers and approach: $149 million on a range of corporate projects to facilitate improved business efficiency.

Our forecast investment in business efficiency is shown in Table 8-23.

Table 8-23 – Business efficiency investments ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20	Total
Information technology	25	25	25	25	98
Corrosion and Odour Strategy	22	11	0	0	33
Property	3	1	1	1	6
Energy efficiency	4	6	1	1	12
Total proposed investment	**53**	**43**	**27**	**26**	**149**

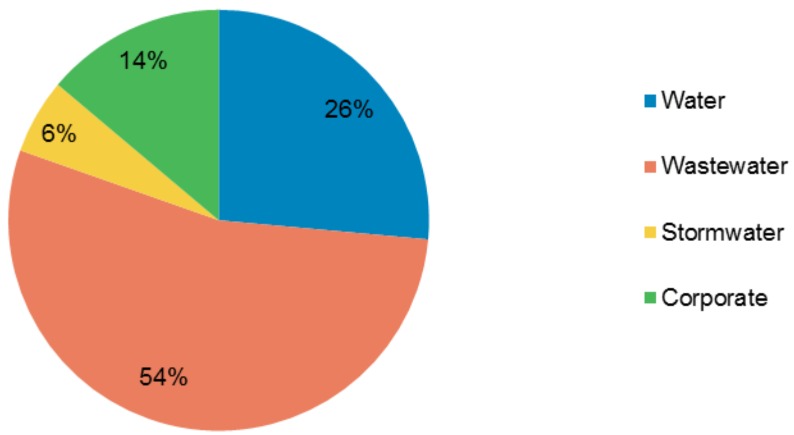
Business efficiency investments include:

- $6 million for property – to rehabilitate land that is no longer needed for operations and will be sold, and to meet heritage and hazardous material management regulatory requirements.
- $33 million for corrosion and odour prevention works across eight wastewater networks.
- $12 million for the energy efficiency program.
- $98 million for IT is outlined in Section 8.11.

8.10.8 Capital program overview by product

Figure 8-14 shows the proportion of forecast capex by product.

Figure 8-14 – Capital investment by product ($2015–16 million)



Proposed annual capital expenditure by product is shown in Table 8-24.

Table 8-24 – Proposed capital investment by product ($2015–16 million)

Product	2016–17	2017–18	2018–19	2019–20	Total
Water	195	189	185	161	731
Wastewater	363	405	387	337	1,491
Stormwater	49	42	42	25	159
Corporate	99	96	94	94	383
Total	**707**	**733**	**708**	**617**	**2,764**

8.11 Information technology capital expenditure

Key messages

- By investing in IT systems and infrastructure, we aim to improve service levels, agility and productivity – and importantly, enhance customers' experiences.
- In response to IPART's feedback in 2012, we comprehensively reviewed our IT function.
- We restructured the function and investment processes, appointing a Chief Information Officer at Executive level to lead the creation of a business-focused IT strategy and '4+4 year' roadmap.
- We expect to spend $202 million on IT capital expenditure over 2012–16, 2% more than IPART's allowance of $198 million.
- Our IT capital expenditure was lower than the target earlier in the period, while we made these structural changes and reviewed existing and proposed projects.
- In the period 2016–20, our IT capital investment forecast of $328 million is set out in our '4+4 year' roadmap.
- We recognise the risks in significant IT investments, and our process will benefit from our own experience and industry case studies. We will choose 'off-the-shelf' products, reduce customisation, consider integration issues early and progress in 'modular' steps.
- Our forecast investments form part of a longer term IT strategy which will aim to deliver significant benefits later in the period and beyond 2020. These include:
    - replacing our 28 year-old billing system to ensure business continuity and delivery of enhanced customer service
    - investing in new core business systems, which will be essential to the delivery of our objectives to improve efficiency and customer responsiveness in a changing environment.
- The benefits will be realised in the periods following 2020.
- Due to the complexity and specialised nature of IT, any efficiency review of this forecast capex, should be done by a specialist IT reviewer as shown in Boxout 8-5.

Boxout 8-5 – Efficiency review of IT capex

Our IT capital expenditure program includes replacing our 28 year-old billing system. It also includes system investments, which will play a central role in our plans to become more efficient, responsive to customers and agile in a changing environment. It is an investment in our future and the various elements of the forecast are at different stages of planning. To reduce the risks of this investment, we are taking a modular approach to this project.

If IPART chooses to review our IT program, we propose that IPART appoint an efficiency reviewer with suitable experience in, and knowledge of:

- the integration of multiple IT systems across different platforms and an understanding of how a business should respond when this becomes unsustainable
- prudent IT procurement processes for businesses making ‘once in a generation’ IT investments which set them up for the long term
- enterprise resource planning systems and their implementation in businesses like ours.

8.11.1 A new IT investment planning approach

During the last price determination process, IPART’s efficiency reviewers criticised our decision process and unclear strategy for IT investments.

As a result, Sydney Water committed to improve IT planning capability, to better prioritise IT projects based on business benefit and risk mitigation and ensure investment remained below $198 million ($2015–16)[65]. We also acknowledged the need to explore options to minimise delaying the investment required to replace our mainframe billing system (ACCESS).

In 2012, we created a new IT division and appointed a Chief Information Officer, reporting directly to the Managing Director. This enabled a restructure of the IT function and facilitated the following:

- We reviewed existing and proposed projects to redirect funding towards replacing our billing system. We deliberately reduced IT capital expenditure in the first two years of the current period to allow us to consider priorities in more detail.
- We designed and published a new 4+4 year IT Strategy (the roadmap) which directly links IT investment to the corporate strategy. The roadmap ensures IT expenditure delivers the right level of services more efficiently, so we can better respond to customer needs in a changing operating environment. In an uncertain future, we need systems which are agile and enable our people to respond to customers’ needs.
- We adopted the NSW Government IT standing contracts for efficient IT procurement.
- We consolidated disparate business cases and contracts, supporting site services and data centre operations, into aggregated renewal programs, enabling the removal of budget contingency to drive efficiencies.

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[65] Atkins & Cardno, *Detailed Review of Sydney Water Corporation’s Operating and Capital Expenditure*, 2011

8.11.2 Our IT capital expenditure in 2012–16

By taking the time to develop a long-term view (4+4 roadmap), we have been able to ensure we have a robust framework to govern the prudence, priority and efficiency of IT enabled projects. We have done this while commencing the Towards 2020 program to replace our mainframe billing system.

We will invest $202 million over the current price period, 2% more than IPART's allowance for the period.

The expenditure profile over the period is shown in Table 8-25.

Table 8-25 – Information technology expenditure 2012–16 ($2015–16 million)

	2012–13	2013–14	2014–15	2015–16	Total
Determination	50	45	48	55	198
Actual/forecast	32	40	48	82	202
Total	**(18)**	**(5)**	**0**	**27**	**4**

This expenditure is focused on renewing our IT assets (60%) and delivering enhanced services and business efficiency (40%) aligned to our 4+4 year roadmap.

Table 8-26 details the key deliverables and forecast investments (greater than $1 million) totalling $180.8 million ($2015–16).

Table 8-26 – Information technology expenditure by activity 2012–16 ($2015–16 million)

Program, project or activity	Total expenditure	Description
Towards 2020	$34.8	Program of work to replace our mainframe billing system. Within the current period, we have focused on projects that lower risk and inform the delivery of a full business case, including developing a foundation system that will form the core of the final production system.
Data Centre refresh	$20.9	Aggregated program of work to renew data centre technologies (servers, storage, data network).
Field Services Management	$15.6	Program of work (SIRIUS) to renew our legacy field services management platform that enables day-to-day operational work in support of customers.
End user performance/ site services	$15.6	Aggregated program of work to renew site or user technologies (desktops, laptops, data network, phones).

Enterprise Asset Management	$10.3	Aggregated program of works to maintain and upgrade our core asset management system.
Integrated contact centre and self-service	$11.4	Aggregated program of work to upgrade and enhance customer engagement channels, including our call centre technologies and delivering an online trade portal.
Small projects – minor enhancements	$9.6	Minor enhancements to existing applications where each project is less than $100,000.
Integration platform renewal	$7.7	Migrating business critical integration services from three legacy platforms to a new sustainable solution.
Finance	$7.0	Critical upgrade to our core finance system and preparation for consolidation onto a unified Enterprise Resource Planning (ERP) system.
Document management	$6.9	Aggregated program of works to enhance document management and records compliance across the business.
Business intelligence and analytics	$6.6	Aggregated program of works to maintain and enhance business intelligence capabilities and reporting across the business.
Application sustainability	$4.3	Minor version upgrades to various business applications, where each project is less than $500,000.
Information security	$4.1	Replace and enhance security systems and technologies supporting core operational services.
Contracting partners	$3.6	Program of works to support alliance partners to access to our systems to support customers.
Master data sources	$3.4	Establishing company-wide master data services to facilitate the delivery of a unified Enterprise Resource Planning (ERP) suite.
Sydney Water website	$3.3	Final stage of the delivery of a new and enhanced customer-centric website.
Human capital management (HCM)	$3.3	Delivery of enhanced HCM capabilities by enabling these through a unified ERP.
Enterprise Program, Project Management (EPPM)	$3.2	Critical upgrade to our core project management suite of tools and initial work on establishing a full EPPM capability.

Collaboration (O365)	$3.2	Establishing a company-wide collaboration service with the adoption of Office 365.
Procurement	$3.1	Delivering enhanced procurement systems by enabling these through a unified ERP.
Health and safety management	$2.9	Enhance our health and safety management systems, with a view to enabling these through a unified ERP.

Our new approach takes a longer term view on IT investment. Some of these projects lay the foundations for later investments.

8.11.3 Forecast capital expenditure 2016–20

- We are forecasting IT capital investment of $328 million.
- 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.
- The remainder supports our strategic goals to become more efficient and responsive to customers. It includes consolidating and simplifying business applications onto a sustainable, commercial, off-the-shelf Enterprise Resource Planning (ERP) suite to enable better planning and decisions.
- Delivering accurate data and enhanced customer services through systems of differentiation.

Current systems are becoming obsolete

Our billing system is 28 year-old and its replacement is business-critical, to lower the risk of failure and deliver enhanced customer services. There are many examples of energy utilities that had significant commercial and customer problems due to billing systems. We have also learnt from our own experiences (see Boxout 8-6).

Boxout 8-6 - Learning from our past and other industries

In 2000, we attempted to replace our billing system. However, the integration complexity coupled with the lack of a mature commercial off-the-shelf solutions contributed to cancelling the Customer Information and Billing System (CIBS) program. While initiatives since then have allowed us to continue to operate this system, we feel it is prudent to look at options for replacement.

There are many examples worldwide of water and other utility businesses that have suffered due to billing system inadequacies or failures. For example:

- LA Department of Water and Power, which has around US$0.25 billion of billing arrears due to poor implementation of a new billing system
- Jack Green in NSW, which was removed from the energy market when it breached market prudential requirements, partly due to unbilled revenue.

We have many other legacy systems, which were often developed separately and then linked together after roll-out. The result is that they are overly complex, expensive to maintain and inefficient. As the different systems are incompatible (ie they do not 'speak the same language'), the continued integration costs are expensive. This mixture of systems creates increasing risk to Sydney Water and our customers as it reduces the quality of operational and financial information. It is unsustainable for us to continue to pay for complex system integration when each individual system is upgraded or changed.

We decided that we should start replacing our billing system, and as part of that, develop a harmonised ERP solution. Such 'once in a generation' IT investments must be well-considered, given the implementation and cost risks. If implemented well, they are the cornerstone of efficient service and operational success in the future.

Learning from the past – a prudent approach to manage risk

Our approach to making and implementing IT investment decisions has changed to include:

- leveraging the NSW Government's centralised procurement arrangements for information technology goods and services
- buying off-the-shelf solutions and seeking to align our business with processes supported by systems and not the other way around. For example, for our initial ERP implementation we will be aligning to the standard NSW Government's standard business processes
- staging of investment, for example our current contract to provide an off-the-shelf billing system module.

In developing our roadmap we have taken a longer term view but have also changed the way we think about IT – categorising investment into the three areas described below.

1. **Systems of record**

   These systems support common business capabilities (finance, human capital management, payroll, procurement and enterprise asset management) that all businesses require to operate effectively. We intend to consolidate these business capabilities onto a unified ERP and adopt standard processes. We intend to commence this consolidation during the final year of the current period, with the focus for Stage One being finance, human capital management, payroll and procurement.

2. **Systems of differentiation**

   These systems support business capabilities that support our strategy to have the customer at the centre. These business capabilities (including our website, field service management and integrated contact centre) often leverage systems of record to deliver enhanced customer service through accurate and timely information.

3. **Foundation technology**

   These systems are common to many organisations and include the base technologies like computers, servers, security and phones. Under our roadmap we have aggregated these activities into related programs of work to facilitate whole of business prudent decisions and efficient delivery.

Drivers for IT investment 2016–20

While our current systems have served us well, they are overly complex, expensive to maintain and limit our ability to:

- enhance customer service
- deliver efficiencies
- effectively manage information.

Over the next five years, we will need to do major renewals of our:

- field mobility system
- geographical information system
- human capital systems
- billing system.

We will also need to upgrade our asset management and financial systems. We were also planning new IT system for procurement and contracts. Driven by the need to replace the billing system, there is opportunity to remove integration complexity and cost by installing a new ERP and avoiding renewals of individual bespoke systems.

Ageing business-critical systems also create increasing risks to Sydney Water and our customers. It is prudent to consider the point at which these risks become unacceptable and to plan for the right response.

Our billing system

Our billing system is 28 year-old and we must replace it to lower the risk of failure and to deliver enhanced customer services. It relies on multiple 'best of breed' satellite systems that we have developed over many years and integrated through complex and bespoke solutions. The billing system replacement is required for us to continue to do business and will not directly create any efficiencies.

Given that a billing system is so crucial to our operations, we have already begun the Towards 2020 program to plan for and manage its timely replacement with a contemporary customer information system (CIS).

Consolidating our IT systems

To gain insight into the options, risks and associated costs to replace the billing system with a contemporary CIS we have implemented several planning studies and reviews.

The planning studies concluded that if we did nothing to simplify the complex suite of satellite systems the estimated total cost would be $162 million ($2015–16).

To reduce the total cost and significantly lower the risk of installing a contemporary CIS, we have developed an integrated '4+4 year' roadmap to focus IT investment decisions and phasing of delivery.

In this wider context, a 'like-for-like' standalone replacement would not be the most efficient investment, especially as our operational and other customer activities are becoming more digitised.

We have also considered the capability of our other current business systems and have found that these do not (and cannot efficiently be adapted to) meet the future needs of our business.

What we will need in the future

As we evolve into a more customer-focused organisation which delivers efficiently in the face of a more uncertain environment we will need:

- reliable and unified systems of record that enable us to make sound decisions
- more real-time information and reporting about faults, asset condition and customer needs through systems of differentiation
- more sophisticated information and engagement channels to understand what our customers prefer
- systems that allow us to understand and consider risk trade-offs in investment and operations
- systems that support our more mobile workforce with access to live information to make better decisions.

An integrated solution

We think that such capabilities can be developed in conjunction with a unified ERP system. This will connect all parts of our business by replacing a range of inefficient or inconsistent systems.

To deliver these capabilities, and protect the business from risk, we have decided to:

- replace our billing system in the period to 2020, at a forecast cost of around $158 million. This includes $35 million of work in the current period to inform the development of a full business case and reduce risks, and $123 million in 2016–20 for implementation
- consolidate our business systems onto a unified ERP suite, at a forecast cost of around $107 million, which includes $29 million of planned work in 2015–16
- replace elements and deliver new capabilities associated with spatial information and customer contact and self-service systems in the period to 2020, at a forecast cost of around $58 million
- maintain our foundation technologies, including desktops, servers and security at a forecast cost of $33 million
- maintain our smaller suite of non-ERP applications with minor enhancements and compliance functions at a forecast cost of $35 million.

Making sure we invest efficiently

Throughout the delivery of the 4+4 year roadmap, we will test each nominated investment at the appropriate time through the development of business cases that:

- test the prudence of the investment
- identifies the most efficient solution and method of delivery
- quantifies benefits, including where unacceptable risks are being managed.

We will manage the governance of the eight-year investment plan through EPPM framework. This has already driven efficient delivery and benefits through:

- capping the overall level of IT investment to $328 million ($2015–16) over the four years to deliver outcomes that have an estimated delivery cost of $375 million
- establishing a business led ERP Process Excellence team (PEx) spanning all systems of record
- removing all contingency from proposed investments in foundation technology
- entering into a strategic partnership with SAP Australia to build a foundation CIS, based on standard best practice that will form the core of the full production system
- committing to leveraging the NSW Standard Business Processes wherever possible across the other ERP capabilities.

Our cost estimate to deliver the program is $375 million. However, we are only seeking funding for $328 million, to drive efficient expenditure. Sydney Water will carry the risk of the $47 million funding gap. Table 8-27 outlines the level of investment required to deliver the 4+4 roadmap against the $328 million internal efficiency expenditure cap.

Table 8-27 – 4+4 Information technology investment by business enablement category ($2015–16 million)

Category	Cost estimate	Budget within a $328 million cap
Compliance	4	3
Systems of record	113	95
Systems of differentiation	91	74
Foundation systems	44	33
Towards 2020	123	123
Total	**375**	**328**

Table 8-28 outlines the proposed investment targeted against renewals versus business efficiency.

Table 8-28 – Information technology investment 2016–20 ($2015–16 million)

	2016–17	2017–18	2018–19	2019–20	Total
Renewals	57	57	57	57	230*
Business efficiency	25	25	25	25	98*
Total	**82**	**82**	**82**	**82**	**328**

* Totals do not exactly match numbers for each year because of rounding issues.

In line with our governance processes, we are yet to approve the business cases for the stage one of the ERP consolidation (finance, human capital management, payroll and procurement) and the Towards 2020 Program. We expect these business cases for the ERP to quantify sustainable long-term savings that will be delivered in the form of lower opex, lower prices for customers and better services.

9 Weighted average cost of capital

Key messages

- Sydney Water is proposing a real post-tax weighted average cost of capital (WACC) of 4.6%. This is 1% lower than the WACC set in our current price path.
- A lower WACC over 2016–20 contributes to a reduced annual revenue requirement (ARR) which allows us to pass on savings to customers.
- We generally accept IPART's methodology for setting the WACC, but raise two issues by exception – on the equity beta and the appropriate balance of long-term and short-term debt.

The weighted average cost of capital (or WACC) is the minimum financial return an investor requires from an investment given its risk. It is the sum of weighted average returns expected from the two types of capital – equity and debt. In the context of regulated utilities, the WACC is set by the regulator to balance the interests of the utility, its stakeholders and consumers. Typically, regulators use the regulatory WACC within the 'building block model' to set the amount of revenue a regulated firm needs to cover its efficient capital costs. For Sydney Water, this is part of the total revenue known as the annual revenue requirement (ARR).

The WACC should be set at a level that ensures an efficient business can generate a sufficient return to service its ongoing debt requirements and provide returns for shareholders. This allows it to remain viable over the longer term and sustain the ongoing investment in infrastructure required to deliver the desired level of services to customers. Having an appropriately-set regulated WACC for Sydney Water is therefore in the long-term interests of customers.

An abstract version of the building block model and the way the WACC is applied within that model is shown in Boxout 9-1.

Boxout 9-1 – Regulatory building block model

Operating costs (including bulk water and treatment costs)
+
Tax
+
Regulatory depreciation (return of assets)
+
Return on assets (capital) = Regulatory asset base (RAB)*WACC
=
Annual Revenue Requirement (ARR)

To support our WACC estimate of 4.6%, this chapter outlines:

- IPART's methodology for calculating the regulatory WACC
- our arguments for using an equity beta of 0.7, and a short- and long-term mix of debt based on a 40:60 split
- the parameters used to determine our WACC estimate.

9.1 IPART's method for estimating the regulatory WACC

In December 2013, IPART published a new methodology and process for estimating the WACC. This involved a more sophisticated approach, for example in the way it estimated specific parameters (the short-term market risk premium) and its use of an uncertainty index to determine whether a lower- or upper-bound estimate should be used within a range. It is also more transparent, with IPART now publishing WACC updates twice a year. And it was more robust, placing more emphasis than before on long-term estimates of market parameters. In making these improvements, we believe IPART has somewhat mitigated the potential impact of short-term fluctuations in the market, such as those that occurred with the Global Financial Crisis (GFC) in 2008.

The regulatory WACC is estimated using a number of market-and evidence-based parameters. Boxout 9-2 shows the base formula and the parameters used to calculate the regulatory WACC.

Boxout 9-2 – Base method for calculating WACC

The real post-tax WACC is calculated as follows:

$$= \left\{\frac{\left[1+\left(Kd\frac{D}{V}+Ke\frac{E}{V}\right)\right]}{1+i}\right\} - 1 \quad \text{.................} \quad (1)$$

where,

k_d = nominal cost of debt

k_e = nominal cost of equity

D = value of debt capital

E = value of equity capital

V = total capital value of the firm = $D + E$

D/V = leverage

i = Expected inflation

In equation (1), the nominal cost of debt is estimated based on:

$$k_d = r_f + DRP + IC \qquad (2)$$

where,

r_f = risk-free rate

DRP = debt risk premium

IC = debt issuance/raising costs

$DRP + IC$ = debt margin

In equation (1), the nominal cost of equity is calculated as follows:

$$k_e = r_f + \beta \times MRP \qquad (3)$$

where,

r_f = risk-free rate

β = equity beta

MRP = market risk premium

9.1.1 New approach for estimating the cost of debt

Effective from 1 July 2014, IPART proposed a new approach for estimating the cost of debt, based on credit spreads[66] for Australian nonfinancial corporations (NFCs) published by the Reserve Bank of Australia (RBA). In IPART's final report on the Review of WACC Methodology, IPART indicated its preference for adopting the RBA's series of credit spreads in the WACC estimation when they become available. The RBA started publishing this data in December 2013.

[66] The RBA uses the term, 'credit spreads'. IPART and other regulators use the term, 'debt margin'. The two terms are synonymous.

This decision helps align the cost of debt in the regulatory WACC with market rates. This was evident in comparing the WACC estimates before and after implementing the new approach.

9.1.2 New approach to forecasting the WACC inflation adjustment

The real WACC value is highly sensitive to the forecast inflation rate used for the nominal to real adjustment. Systemic under or over estimation of the inflation forecast distorts the WACC recovered by Sydney Water and leads to expected windfall losses or gains.

Upon considering a number of approaches, IPART decided in March 2015 on an approach based on a 10-year geometric average of the one-year RBA inflation forecast and the middle of the RBA's target band of inflation, which is 2.5% for the remaining nine years.

We believe this decision is a significant improvement on the method IPART previously used to forecast inflation, reducing the risk of systemically over-forecasting inflation and under-compensating regulated firms.

9.2 Resolving issues associated with the equity beta and the debt portfolio

In the review of the WACC methodology, and the subsequent reviews of the cost of debt and inflation forecasting, IPART addressed most of the key issues of difference between it and the regulated utilities in NSW. This means our method for forecasting the WACC is similar to IPART's, and that the potential for different WACC estimates from methodological differences is likely to be relatively small.

However, there are two important parameters which we believe warrant further consideration:

- the equity beta which was not subject to a comprehensive review in the 2012–13 review of the WACC methodology
- estimating the cost of debt, where we disagree with IPART's position on the appropriate weighting of short- and long-term debt.

We believe it is timely for IPART to consider these issues during this determination.

9.2.1 Estimating the equity beta for the cost of equity

The equity beta is a key measure of the risk of an investment. In the WACC formula, the equity beta ensures higher return to investors investing in risky assets.

Businesses face two types of risk – systematic (market) risk and non-systematic (business-specific) risk:

- Systematic risk is the variation in revenue and profitability due to variations in general economic parameters such as economic growth, employment and inflation. Under the Capital Asset Pricing Model (CAPM), the premium that an equity holder receives above the risk-free rate of return depends on the degree of systematic risk measured by the equity beta.

- Non-systematic risk is a risk associated with a particular investment that can be eliminated (in theory) by investing in a diversified investment portfolio. As this is not captured under the CAPM, if this risk is relevant, it should be factored into the business' cash flows.

However, a key issue for IPART's determination is how both types of risk are included in revenue and prices. While systematic risk is taken account of in the WACC through the equity beta, non-systematic risk which is a significant component of the total risk for regulated business is often left unaccounted for. A clear example of a significant non-systematic risk is the demand risk (forecast vs actual) for Sydney Water during the regulatory period. However, the demand volatility adjustment mechanism introduced by IPART at the 2012 Determination has such a high threshold that it is unlikely it would ever be implemented.

Instead, IPART should look to address non-systematic risk as part of its 2016–20 determination, through appropriate adjustments to the cash flow. These adjustments can be *ex-ante* allowances (using probabilistic assessments, such as for the Shoalhaven transfers) or *ex-post* allowances (direct pass-through, such as for SDP costs). We provide our views on this issue in Chapter 10.

The equity beta is a key parameter in estimating the cost of equity in the WACC. An increase in the equity beta by 0.1 increases the WACC by about 0.3. It is important that the most reliable estimate of the equity beta should be used in estimating the regulatory WACC, in order to ensure that regulated utility is adequately compensated for the systematic risk of its investments.

IPART has adopted a value of 0.7 in its recent, half-yearly WACC updates for the water businesses in general. IPART used a range of 0.6 to 0.8 in the 2012 Determination. Sydney Water believes it is appropriate to review the equity beta estimate, given changes in both the global and Australian economies since the GFC. We have commissioned HoustonKemp Economists to provide independent advice on matters relating to the equity beta.

9.2.2 Advice from HoustonKemp

HoustonKemp replicated and extended the analysis undertaken previously by Strategic Finance Group (SFG) on behalf of IPART in 2011,[67] using comparable water utilities in the UK and North America. It undertook a number of equity beta calculations including:

- long-term equity betas for individual water utilities, using both weekly and monthly returns
- long-term equal- and value-weighted portfolios, using both weekly and monthly returns
- five year and two year[68] equal and value weighted portfolios using weekly returns.

HoustonKemp believes there is no 'correct' method for calculating the equity beta for a benchmark regulated water utility. All statistically-robust estimates should be considered in developing a

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[67] Strategic Finance Group (SFG), *Cost of Capital for parameters for Sydney Desalination Plant*, August 2011

[68] HoustonKemp notes that observations made using two year data is unsuitable for the analysis, due to high level of standard error.

plausible equity beta range. This range should include the following lower and upper bound limits, which HoustonKemp estimated as:

- a lower bound of 0.59, consistent with the median of the individual water utilities using monthly data and slightly below the long-term equal-weighted portfolio using monthly data (0.60)
- an upper bound of 0.88, consistent with the five-year equal weighted portfolio and slightly above the mean of the individual water utilities using weekly data (0.87).

HoustonKemp strongly support the 0.6 to 0.8 equity beta range previously found by IPART[69], but recommends that IPART adopt an equity beta at the top of the plausible range. This is because:

- it would be consistent with IPART's last decision for Sydney Water that set the WACC at the top of the plausible range
- the CAPM underestimates the required return on low beta assets. NERA suggests[70] that an equity beta value closer to a central value of 1 should be adopted when applying the CAPM. It follows that where the plausible range is between 0.59 and 0.88 (or 0.6 and 0.9) then adopting an estimate at the top of the range will substantially reduce the risk of underestimating the required return on equity
- regulators in the United States (US) consistently allow returns on equity for water utilities that are above what the CAPM would generally estimate, which suggests regulators recognise the CAPM underestimates the cost of equity.

HoustonKemp's expert report shows that SFG's study was sound, and that there is no new strong evidence to support lowering the equity beta. Also, HoustonKemp's own analysis shows stronger support for the current or a slightly higher range. Further, the recent credit rating upgrade by Moody's demonstrates the importance of consistency in decision-making by the regulator.

For these reasons, we believe there is strong evidence to support an equity beta in the range 0.7 to 0.8. We use a beta value of 0.7 in our estimate of the WACC, consistent with IPART's recent approach, although we do consider this to be a lower bound estimate.

The full report by HoustonKemp is provided in Appendix 7.

9.2.3 Appropriate balance in the debt portfolio

In its revised WACC methodology, IPART assumes a debt portfolio weighted equally between long-term (LT) and short-term (ST) debt. We opposed this weighting in our submissions on the

[69] IPART, *Review of prices for Sydney Water Corporation's water, wastewater, stormwater drainage and other services – Final Report*, June 2012, p198.

[70] NERA, Empirical Performance of Sharpe-Lintner and Black CAPMs, February 2015

WACC methodology in 2013, and we note in principle that we do not believe it is the correct approach. In our November 2013 submission[71] we said:

> Sydney Water does however have concerns about the proposed simple averaging of the prevailing cost and its long-term average cost in estimating the cost of debt. The proposed 50:50 weighting between the prevailing cost of debt and the long-term average appears arbitrary. It implicitly assumes that about half of a business' debt portfolio is refinanced at any point in time, which may not reflect a business' efficient financing practice.
>
> Sydney Water considers that the weighting of current and long-term estimates should reflect, on average, the ratio between current debt financing requirements (that is, the amount to be refinanced in the current period or flow requirements) and the total notional debt in the capital structure (that is, the stock requirements). If this approach were applied to infrastructure assets, in the absence of large growth in investment being required, we believe that it would result in more weighting being given to the long-term estimates.

There is much recent evidence from financial institutions, regulators and experts to support the view that it is more appropriate for firms with long-lived assets to hold a greater proportion of long-term debt than short-term debt. Table 9-1 provides some examples.

Table 9-1 – Evidence of support for more long-term than short-term debt

Comment	Source
It is common for infrastructure service providers to issue long-term debt to mitigate refinancing risk. This is because infrastructure businesses tend to be highly-geared and to have fixed assets with long lives. If such a firm has difficulties refinancing, it does not have the option of selling a portion of its assets or of materially reducing costs (a large proportion of which are fixed). Since the consequences of refinancing difficulties are likely to be relatively severe for such a firm, the tendency is to take steps to mitigate refinancing risk – by issuing long-term debt.	Professor Stephen Gray, *Frontier Economics* report for Ashurst, TransGrid Cost of Debt Transition, January 2015
While infrastructure financing is broadly similar to general corporate financing, infrastructure assets have some distinct features that influence their financing strategies. Infrastructure assets tend to be: • long-lived (such as roads with 30-50+ year concession contracts or utilities with 50-100 years asset lives) • capital intensive • lower risk and return than the market as a whole (ie ungeared asset betas of less than one) • single-purpose businesses with very limited potential for strategic changes	**Queensland Investment Corporation (QIC)** *Submission to Financial System Inquiry*, August 2014

[71] See Sydney Water, *WACC methodology – Sydney Water submission to IPART Draft Report*, November 2013, p 9

over time. As a result, the optimal financing tenor for infrastructure assets tends to be much longer than general corporate financing requirements. Shorter debt means taking more refinancing risk, more exposure to future debt market appetite and to future economic uncertainty. This increased risk will ultimately be reflected in a higher cost of equity, and lower value for the asset.	
Debt profile will be a blend of short and long-term debt but heavily weighted to long-dated maturities to achieve match with asset lives and sourced at lowest economic cost with due consideration to interest rate and foreign exchange risks.	**EPCOR Utilities Inc.** Investor Presentation, March 2014
Analysis on NMa and Eneco's peers also confirms the maturity matching principle: utilities and network operators finance themselves long-term to match their asset longevity and mitigate risks. The dominant theory in the academic literature on optimal debt maturity is the 'Maturity Matching Principle', stating that long-term assets should be financed with long-term debt. The empirical evidence clearly shows this, with survey evidence from CFO's across Europe. Even NMa's own peer group companies all have debt tenors in excess of 16 years. A longer period will better match the risk profile and asset maturity of network operators and lower tariff volatility. Regulators such as Ofgem and BNetzA also use longer reference periods to better match the optimal debt profiles.	**PwC** presentation to NMa[72], Optimal debt portfolio and the regulatory cost of capital, January 2013
Long-term borrowings are structured or hedged to match assets and earnings, which are largely in sterling, indexed to UK retail price inflation and subject to regulatory price reviews every five years. The long-term nature of this funding also provides a good match to the company's long-life infrastructure assets and is a key contributor to the group's average-term debt maturity, which is about 25 years.	**United Utilities Group PLC** *Annual Report and Financial Statements* for the year ended 31 March 2014

Sydney Water has demonstrated that it manages our debt portfolio in a way that minimises our costs and the risk our business faces as a result of regulation. For example, we have increased our proportion of inflation-indexed debt to hedge against the cashflow risk from having an indexed RAB. We have also recently explored opportunities to take on low-coupon debt. Therefore, while we do not agree with IPART's proposed short- and long-term debt mix, consistent with our desire to decrease the risk associated with regulation, Sydney Water is still looking to replicate the 50:50

[72] Competition Authority for the Netherlands until April 2013

portfolio proposed by IPART. This represents a prudent approach to debt management, as it reduces the risk that our actual cost of debt deviates from the regulated cost of debt over the regulatory determination period. To do this, we have been working closely with T-Corp to ensure we have access to the appropriate debt instruments.

The challenge for Sydney Water in attempting to replicate the 50:50 portfolio immediately is that, as would be expected for a business such as ours with longer-lived infrastructure, we currently hold more long- than short-term debt capital, It will take us until the end of the current regulatory period, ie 2019–20, before we can transition our debt portfolio from our current levels to 50:50, While we could expedite the transition to a 50:50 split, this would be costly, and would not represent a financially prudent or efficient approach to debt management. At the time of lodging the submission, we estimate the cost of making an immediate transition would be about $60 million. Such a cost not in Sydney Water's or our customers' best interests.

As it would not be financially prudent to incur this level of expenditure just to meet IPART's assumption, and we believe other utilities will be in a similar position to Sydney Water in attempting to transition to a 50:50 split, we propose in the interim IPART adopt a 40:60 value for the ST:LT mix of debt for 2016–20. The 40:60 split is roughly the average mix of our long- and short-term debt over the 2016–20 period. This would ease the transition for utilities to the long-term positon of 50:50 in the next price period. Based on the ST:LT debt estimates used by Sydney Water, this approach would increase the regulated WACC marginally, by about 0.15.

9.3 Sydney Water's forward-estimate of the regulatory WACC

We broadly accept IPART's new WACC methodology, and believe it is an innovative approach which represents a significant improvement on its previous approach. However, we are aware that due to our $15 billion RAB, changes in the WACC can have a large effect on customers' bills, our costs, and revenues. Even a small increase in the WACC between price resets could negate the effect of large efficiencies made by Sydney Water over the regulatory period. We suggest IPART considers whether it would be better for customers to allow some smoothing over time of potential changes in the WACC – for example allow a higher WACC during periods when market rates are at historic lows in order to enable a lower WACC in the future when market rates are rising. This would reduce the adverse impact on bills of a higher WACC in periods where there are higher interest rates. In setting the WACC, we suggest that where appropriate, there is likely to be merit in allowing the regulator to have the freedom to take into account market conditions, without being tightly bound by rules.

As Sydney Water makes our submission to IPART a year before IPART makes its final determination, we have had to estimate values for the risk-free rate, the debt-risk premium and the short-term market risk premium to the time when IPART will actually observe these figures. Recent market movements in interest rates have demonstrated a level of uncertainty which may persist over the short-term. For example, market rates have reduced further since we forecast a WACC for the purpose of our submission. And the Reserve Bank of Australia (RBA) has suggested[73] that interest rates may remain low for a not inconsiderable time. This means our estimate of the WACC is likely to be subject to forecasting error.

Table 9-2 – WACC parameters and estimation of the WACC

	IPART 2012–16		IPART Feb 2015 update		Sydney Water forecast for 2016–20	
			ST	**LT**	**ST**	**LT**
Risk free rate	3.6%		2.7%	4.90%	2.42%	4.48%
Inflation forecast	2.8%		2.5%	2.9%	2.5%	2.5%
Debt margin*	3.3%	4.8%	2.20%	2.90%	2.54%	2.96%
Market risk premium	5.5%	6.5%	8.3%	6.0%	8.2%**	6.0%
Debt funding	60%	60%	60%	60%	60%	60%
Equity funding	40%	40%	40%	40%	40%	40%
Equity beta	0.6	0.8	0.70	0.70	0.70	0.70
Cost of equity (nominal post tax)	6.9%	8.8%	8.5%	9.1%	8.2%	8.7%
Cost of equity (real post tax)	4.0%	5.8%	5.9%	6.0%	5.5%	6.0%
Cost of debt (nominal pre-tax)	6.9%	8.4%	4.9%	7.8%	5.0%	7.4%
Cost of debt (real pre-tax)	4.0%	5.4%	2.3%	4.8%	2.4%	4.8%
Real post tax WACC	4.0%	**5.6%**	3.8%	5.3%	3.6%	5.3%
WACC mid-point *(50:50 ST:LT)*			4.51%		4.47%	
WACC mid-point *(40:60 ST:LT)*			4.65%		**4.62%**	

* Debt risk premium + 12.5 basis points debt issuance costs | ** Short-term MRP based on measurement of data at the time.

[73] Managing Two Transitions, speech by Philip Lowe, Deputy Governor, at the Corporate Finance Forum, Sydney – 18 May 2015

As shown in Table 9-2, Sydney Water's analysis resulted in a forward looking WACC estimate of 4.6% for the 2016–20 period on an assumed debt portfolio of 40:60 (ST:LT) debt.

The above parameters reflect the prevailing conditions in financial markets just before we lodge the submission, and Sydney Water's assessment of other estimated parameters (equity beta, market risk premium and gamma). Data was provided by TCorp using the forward rates method of estimation. We did explore another option for estimating market parameters, based on the time taken to return to long-term averages (ie estimates based on an exponential decay technique). However, given the historically-low market conditions and prevailing opinion about the prospects for short- to medium-term changes, we concluded the forward rates method was a better estimator of likely market rates at the time IPART sets the WACC.

IPART's 2012 Determination of the WACC was based on its previous methodology. Sydney Water's estimate of the WACC (and IPART's February 2015 update) uses IPART's revised methodology. Therefore, when comparing the Sydney Water's estimate of the WACC for 2016–20 with IPART's 2012 Determination, the following methodological differences must be noted. IPART in 2012:

- used only short-term (ST) point estimates of the risk-free rate and inflation forecast, but the long-term (LT) value for the market risk premium, rather than both ST and LT estimates
- estimated the debt margin based on a range of BBB/BBB+ bond yields, representing a wider market segment. This resulted in a wider range of margin over the risk free rate
- set the WACC at the top end of the range at 5.6%, whereas now IPART will use a mid-point estimate, unless the uncertainty index suggests it is more appropriate to use a lower or upper-bound value in the range
- used parameters for the risk free rate, inflation forecast and debt margin based on 20–day averages of market data and assuming a 5-year term-to-maturity. Recent estimates by IPART are based on both short-term 40–day averages and long-term averages, assuming a 10-year term-to-maturity.

10 Regulatory framework

Key messages

- Sydney Water aims to deliver long-term benefits to customers through a robust and flexible regulatory framework that reinforces our efforts to continue to improve efficiency.
- We believe our proposals to modernise the regulatory framework will enhance outcomes for customers, the regulator, and our business.
- For the regulated pricing of services our key proposals are:
    - water tariffs that balance what customers want with our estimate of the long-run marginal cost of water
    - no change in the approach to wastewater pricing
    - a Sydney Desalination Plant (SDP) cost pass-through mechanism that takes into account customer preference for usage prices
    - support for IPART's proposal to consider wholesale access pricing.
- We propose IPART adopt stronger incentive-based regulation by introducing:
    - pricing flexibility through the adoption of a weighted average price cap (WAPC), which will allow us to tailor tariffs to better meet customer needs
    - incentives to decrease costs, which provides benefit to customers of lower prices, through the introduction of an efficiency benefit sharing scheme (EBSS) on opex and capex
    - cost pass-through mechanisms, to ensure customers do not pay for costs that do not occur.
- The incentive schemes proposed are all being introduced in a measured way, with:
    - the WAPC subject to pricing principles, a pricing strategy and an ongoing oversight role for IPART
    - a 25:75 sharing ratio of gains from the EBSS for opex and capex, maximising the benefits to customers;
    - a capped carry-over of +/-$50 million
    - partial application of the EBSS (60% of opex, 10-15% of capex)
    - the cost pass-through mechanisms being subject to high materiality thresholds before they apply.

We noted in Chapter 4 the importance of ensuring regulated firms have the right incentives to promote better outcomes for customers. This chapter sets out in more detail how we propose to do this.

We have based our proposals for modernising the regulatory framework on the following principles.

- We are focused on the long-term interests of customers. It is important to note that this does not always mean the lowest prices in the short-term.
- We support the promotion of outcomes that are consistent with those that would be expected from an efficient, competitive market, even though Sydney Water is a monopoly supplier.
- We want to reduce the burden and costs of regulation for all stakeholders: IPART, Sydney Water, customers and other stakeholders. Our proposals aim to achieve this.
- We aim to provide greater certainty for Sydney Water, other industry participants and customers, which we expect to result in lower prices in the long run.

The key steps to achieving these principles are:

- giving greater weight to customer preferences and allowing the flexibility in pricing to do this
- providing stronger incentives to improve efficiency
- providing greater flexibility for innovation in services and prices.

This chapter sets out our preferred regulatory framework and provides detail for our proposed:

- regulatory determination period
- approach to regulated pricing of:
    - water and wastewater services
    - the recovery of the costs of the Sydney Desalination Plant (SDP) being activated
    - wholesale services
- introduction of incentive regulations through:
    - providing price flexibility through a weighted average price cap
    - an efficiency benefit sharing scheme
    - a cost pass-through mechanism.

10.1 Proposed determination period

The length of the regulatory period is a matter of judgement. Shorter periods give the regulator more confidence in the information it relies on to set prices and reduces the risk of making incorrect decisions. Shorter periods also enable benefits to be returned to customers more quickly.

Shorter periods also increase the administrative burden of regulation, as reviews are held more frequently, and also increase uncertainty for the regulated company because of the shorter period allowed for investment. Higher uncertainty means higher risks for investors and higher costs for customers. The use of adjustment mechanisms to alter prices within a determination period reduces the risk to the regulator of getting it wrong and so can support longer determination periods. Longer determination periods provide stronger incentives to the regulated business.

Sydney Water proposes a determination period of four years for the next regulatory period, but suggests that IPART leads a discussion within that period to consider the options for a different length of period from 2020.

At present, there are several reasons for maintaining a four-year regulatory period:

- It provides IPART an opportunity to align the next review period (from 2020) with the Operating Licence period, which is also due for review in 2020.
- There are practical constraints that prevent a longer determination period from being applied from 2016, including insufficient time to engage stakeholders, prepare the correct models and gather relevant data. However, signalling a review now of the appropriate length of the determination period in 2020, will provide sufficient time for proper analysis and discussion with stakeholders to take place.
- There appears to be no strong incentive or evidence of need or desire to deviate from the current approach to setting a four-year period.
- Proposing a different length of regulatory period would also be a significant change, requiring a reassessment of our ability to forecast accurately and collect sufficient data of the right quality to support a longer determination period. It would also mean IPART would need to review the mechanisms by which we return benefits to customers. Careful analysis would be needed of the relevant issues and appropriate responses. We believe there is insufficient time to carry out this work properly in the current period.
- Our proposals to enhance our customer engagement and modernise the regulatory framework will, if adopted, create some uncertainty for all parties. It would be appropriate for these implementation issues to be understood and addressed before considering further significant changes.

10.2 Regulatory pricing

The pricing of water, wastewater and stormwater services is highly visible to customers, but not always understood. The prices for these services are also central to our ongoing business. Water tariffs are made up of a fixed component and a usage-based component. For wastewater, residential customers are only charged a fixed tariff. For non-residential customers, the charge structure is both fixed and usage-based.

Usage charges influence customers' water use behaviour (and to a certain extent, for non-residential customers, their wastewater service behaviour). This gives customers some degree of control over their water and wastewater bills.

Our decisions about the proposed level and structure of prices are informed by three factors:

- what customers tell us they prefer
- our forecast costs and revenues over the coming price period
- the estimated cost of supplying services sustainably 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).

We propose changes in the basis for setting water tariffs, but not for wastewater or stormwater. We also propose some reductions in the tariff levels for all three services. We take this approach for following reasons:

- We are concerned about potentially significant swings in the water and wastewater usage prices, as a result of heavy reliance on the economic concepts of LRMC and SRMC. Customers do respond to price signals, for example by investing in new equipment and changes in their own behaviour, but as part of a measured response. Price volatility (that is, short-term, significant price swings) is unwelcome, because it can undermine how consumers respond, in good faith, to earlier price signals. As noted by the Australian Energy Market Commission (AEMC)[74], consumers are more likely to be able to respond to price signals, if those signals are consistent and apply for a reasonable period of time. Sudden price changes, major tariff restructures, or significant year-to-year price volatility, will make it difficult for consumers to make informed consumption decisions. Our proposals avoid such volatility by maintaining tariff structures broadly where they are now.
- Over the next regulatory period, Sydney Water is looking to engage customers in greater depth and across more issues than ever before, on the issues that matter most to customers in water and wastewater pricing. To support our customer engagement, and underpin our proposals for greater tariff flexibility, we want to look further at the principles underpinning the pricing for services and revisit existing analysis. Included in this would be analysis of the scope of any references to SRMC and LRMC. Currently, LRMC of water only refers to the cost of new resources, whereas SRMC of water is assumed to refer to resources, treatment and transport. For wastewater, there is no LRMC estimate at all, and SRMC is assumed to refer to transport, treatment and disposal. The use of SRMC and LRMC concepts in pricing would be strengthened if a consistent approach was taken.
- We need to reduce tariffs in the regulatory period, because of our falling cost profile. Both our water and wastewater revenue requirements in real terms ($2015–16) are forecast to be lower than in IPART's 2012 Determination. We propose to achieve this in a way that

[74] See AEMC, *National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, 27 November 2014, page iii

reflects an increasing focus on customer preferences without losing sight of the economic principle of sending price signals.

We believe there is merit in maintaining tariffs broadly at current levels while this work is done, to ensure a holistic approach to pricing, involving IPART, Sydney Water and its customers and other stakeholders.

10.3 Water pricing – finding the right balance

For water, we propose changing the basis for water charging, while maintaining prices near their current level. We try to find the right balance between the usage component and the fixed charge, based on customer preferences, our forecast costs and revenues, and the LRMC of water.

What we have found from our analysis is a tension between what customers have told us they prefer in the way of tariff structures, and what our LRMC model shows as the potential cost of supplying water sustainably in the long run. We also need to reduce tariffs in the regulatory period because of our falling cost profile.

10.3.1 Customer preferences

We have asked our customers and their representatives about their preferences for water tariff structures. We held meetings with our Business Customer Forum and our Customer Council, used focus groups and an online survey to inform customers about the options for water tariffs and tested their views. We explained to customers how water tariffs are constructed and what some of the implications might be for water conservation and bill control from different usage and service charge combinations, as shown in Figure 10-1. We gave customers an interactive tool to help them see the effects on their own bill of different tariff structures. Chapter 3 details our approach.

What we found was a strong (but not overwhelming) preference for a tariff structure that combined a high usage price with a low service charge, similar to what customers already experience in the current water tariff.

Figure 10-1 – Reward efficiency vs bill certainty

Customers gave a range of views to explain their preferences. Some were clearly driven by the principle of having an incentive to save water. Others wanted to save as much as possible on their bill, based on their current usage. Some thought in terms of fairness or reasonableness. Details of our customer engagement on tariff structures are in Chapter 3 and Appendix 4.

10.3.2 Calculating the LRMC of water resources

This overall preference for a relatively high usage and low service charge is contrasted by our work on an updated estimate of LRMC.

Historically, IPART has used the LRMC of water resources as the main basis for its decisions on setting water usage prices. Prices based on LRMC can act as a signal of the incremental costs of consumption and encourage efficient water use. In periods of drought when water is relatively scarce or when we invest in supply capacity, one could expect the LRMC of water to be relatively high. However, since the 2012 IPART determination, the drought has ended, water storages have recovered substantially, and there has been limited post-drought increase in demand that has usually happened in the past. These factors give an expectation that LRMC estimates are likely to be lower than previous levels.

We have updated and improved the model we used to estimate LRMC in our 2011 submission to IPART for the price review for the 2012–16 period. We based our model on the Average Incremental Cost (AIC) method, as used by IPART in its 2012 Determination and recommended in its November 2014 Submission Information Pack to water utilities[75]. The new model takes greater account of the amount of spare capacity in the system (that is, the gap between actual demand and the maximum that could be supplied in theory). We have used latest demand forecasts and figures for the total yield of the water supply network. We have also incorporated scenarios to estimate the impact on the LRMC of different assumptions about growth, water availability and other factors. Details of our approach are in Appendix 5.

[75] IPART, *Guidelines for Water Agency Pricing Submissions*, November 2014.

What our work is showing is a figure for LRMC, based on current factors, of $1.16 per kL. A usage price at this level would require a threefold increase in the residential service charge, which would not be in customers' interests or reflect what they have told us they prefer.

Sensitivity analysis suggests the plausible range of LRMC estimates is $0.97 per kL to $3.10 per kL. The range of LRMC estimates for different assumptions is set out in Appendix 5. The fact that the base case estimate is near the lower end of the range reflects our assumption that the key variable – system yield – has greater scope to fall than to rise. However, it should be noted that the assumptions underlying our base case estimate reflect, in our view, the most likely scenarios.

The wide variation in LRMC estimates highlights the sensitivity of the LRMC model to the assumptions used. It points to the need to use caution in how much weight we accord to LRMC as the basis for setting tariffs. LRMC calculations are only a snapshot at a point in time of the forward-looking cost of supplying water sustainably. Naturally, these estimates vary over time. There is an analogy here with the recent improvements in the approach IPART takes to the WACC. IPART recognised that "on the day" or "spot rate" estimates of the cost of capital are highly variable, and hence adopted an approach that placed greater weight on long-term estimates[76].

10.3.3 Water pricing – proposed way ahead

This LRMC estimate is substantially lower than the current water usage price and presents a difficult decision in terms of our proposed tariff structure for water. How do we accommodate our customers' preferences for a higher usage price and lower service charge while at the same time setting a usage price that is based closely on LRMC, within a framework that requires us to reduce overall revenues to match our falling cost profile? The tension between the two approaches is clear. How do we find the right balance?

We have weighed the advantages and disadvantages of taking one approach over the other:

- Continuing to set the usage price based on close reference to LRMC maintains a consistency with the historic approach to pricing. There is no 'right' or 'wrong' LRMC estimate. Continuing with LRMC as a basis for usage prices protects against Sydney Water being accused of changing the methodology to arrive at a pre-determined answer. However, a usage charge that was based closely on a much lower LRMC estimate would introduce price volatility, which is not good for customers and is not what customers have said they prefer.
- Setting the usage price with stronger weighting towards customers' preferences for tariff structures reflects our new corporate strategy of becoming a more customer-focused organisation that delivers tariffs aligned with what customers want. Through our research, customers have told us they prefer a higher usage price and a lower service charge. Maintaining a tariff structure broadly similar to the current structure also provides continuity for customers, avoiding wild swings in prices and encouraging water efficient behaviour.

[76] IPART, *Review of WACC Methodology, Research – Final Report*, December 2013.

However, setting a relatively high usage price in the face of low estimates of LRMC risks inviting the criticism that prices are not set on the basis of sound principles.

We propose a consistent approach between water and wastewater, 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 feel 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.

More details of the proposed prices for all customers are in Chapter 5. We intend to do further work on pricing as part of our proposed customer engagement on the use of pricing flexibility and customer preferences on tariff structures.

10.4 Wastewater pricing

Currently residential and non-residential customers are subject to different pricing structures for their wastewater services. Residential customers and some, smaller non-residential customers pay for wastewater services through a single fixed charge. Larger non-residential customers pay a combination of a fixed charge based on water meter size, and a standard usage component. This is the same structure used for pricing water services.

Sydney Water proposes to maintain this approach for 2016–20, with some adjustment to the levels of tariff. However, we believe this is one area where further engagement with customers about their preferences, combined with greater pricing flexibility, could prove fruitful.

In particular, we consider relatively more attention is given to the pricing of water services and the right method of cost recovery, than to wastewater pricing. As a consequence, wastewater pricing is less well understood, by customers, Sydney Water and IPART. We suggest that in the next price period wastewater charges and cost recovery should be placed under greater scrutiny, with detailed analysis to ensure the right principles and approach are adopted to set future wastewater prices.

10.4.1 Wastewater pricing – analysis

IPART proposes two important principles for wastewater charging. Usage charges should continue to be applied only to non-residential customers and secondly, that usage prices should be based on an estimate of the SRMC of transport, treatment and disposal of domestic-strength effluent. Its reasons[77] for this are as follows:

[77] IPART, *Discussion paper on costs of service of water and sewerage services for metropolitan water utilities*, November 2014; IPART, *Review of price structures for metropolitan water utilities*, March 2012; IPART, *Staff paper Sewerage Pricing Reform*, April 2011.

- Residential wastewater discharge is less variable than residential water demand and wastewater flows are more difficult to meter, so there is less reason to charge on the basis of usage.
- Wastewater systems are less interconnected than water systems, so changes in customer behaviour (and attendant costs) in one system do not affect the costs of other systems, so LRMC-based pricing is not appropriate.
- Wastewater system capacity is driven more by stormwater flows than by customers' discharges.
- Wastewater systems are affected less by changes in volumes than water systems are, because wastewater loads also affect the costs of treatment and transport.

We believe wastewater pricing contains complexities that do not apply to water pricing. These complexities must be considered in a full analysis of the most appropriate approach to charging.

- Wastewater systems are typically more localised than water networks, as demonstrated by the higher number of treatment plants and unconnected networks (see Table 10-1). Neither water nor wastewater is entirely connected, although we accept the proportion of total customers on the largest interconnected water network is much greater than for wastewater.

Table 10-1 – Our water and wastewater systems

	Separate systems[78]	Pipes (kms)	Treatment plants	Pumping stations
Water	11	21,000	9	164
Wastewater	24	24,000	29	680

- Currently, differences in the interconnectedness of supply networks and consequent differences in the costs to serve particular customers are acknowledged and addressed by the averaging of these costs across the entire customer base (by applying postage stamp pricing to both water and wastewater services). Capital investment in capacity is borne by all customers. This points to two conclusions: firstly, that usage-based charging is appropriate equally to water and to wastewater systems and secondly, that the use of LRMC as a reference point for usage-based charging also applies to both services.
- If the NSW Government decided that postage stamp pricing was no longer desirable, then the degree of interconnectedness of water and wastewater systems would be a potential driver for some limited geographic de-averaging of charges (that is, charges could be

[78] This depends on the definition of 'separate'.

location specific), to the extent that behaviour in one system does not affect the costs of service provision in other systems. However, there would still need to be reference to long-term investment needs (and hence long-term price signals using the LRMC principle) for all customers located on a particular network.

- Wastewater volumes are directly related to drinking water volumes – what is used must then be disposed of. So, wastewater behaviour is likely to be influenced by the water usage price (for water conservation efforts) as well as the wastewater usage price (for decisions on pre-treatment and recycling). Wastewater customers face two price signals, which makes pricing for wastewater services more complex.
- Wastewater transport networks are typically built to cope with some allowance for stormwater volumes (that is multiples of the average flow during dry weather, or ADWF). This can be many times greater than the volumes discharged directly by customers, although we recognise that some stormwater is direct run-off from customers' properties. Wastewater treatment plants are similarly designed to cope with the load associated with multiples of ADWF. Therefore, wastewater transport and treatment are affected by both volumes and loads. We agree with IPART that it seems appropriate not to differentiate between residential property types when deciding on the appropriate level of wastewater charge. However, we also believe this is not a relevant consideration in the decision whether to charge residential customers by reference to volumes discharged.
- Localised wastewater networks can be linked with each other at a catchment scale. Discharges in one area can have significant impact on customers and the environment downstream, and potentially alter the receiving environment for discharges from another wastewater network. For example, before constructing the deep ocean outfalls, discharges from the coastal wastewater treatment plants (which are collected from as far inland as Blacktown and Liverpool) severely affected the health and use of Sydney's beaches. Likewise discharges from the inland treatment plants can impact the Hawkesbury-Nepean River many kilometres downstream from the discharge point. Furthermore, the three treatment plants in the South Creek catchment are regulated as a 'bubble' licence. Under the bubble licence Sydney Water has discretion to manage the outputs from the individual plants, provided loads of total nitrogen and phosphorus do not exceed a cumulative cap. Sydney Water is proposing to either extend the reach of the existing bubble or establish a series of similar bubbles in the Hawkesbury-Nepean catchment. Under this scenario, expenditure in one catchment will reduce costs for areas under the bubble, but have a net environmental benefit for an unrelated bubble or sub-catchment.
- Marginal cost pricing for wastewater services is less well understood than for water services. In the short run, when water availability is constrained, demand can be moderated, supplies can be restricted or augmented with more expensive sources. The marginal costs of water supply vary as availability reduces. But for wastewater services, when availability (of treatment, transport or disposal capacity) is reduced, demand for the service cannot be so easily constrained or availability increased, in the short run. Instead of behavioural changes by customers, what is more likely to happen in the short-term is

existing capacity (for example of pumps or other fixed assets) is degraded at a faster rate than normal, in order to cope with the extra demand, leading to a reduced asset life than we would otherwise expect. This is an opportunity cost that is not currently captured in estimates of marginal cost. In the longer term, we could expect increased investment in wastewater capacity, so we need to focus on the using long-term price signals.

There are also some important similarities between the approaches to water and wastewater pricing, which are worth noting:

- Customers do not welcome volatile prices (that is, prices that change significantly from year-to-year). We should set the usage components of both services to ensure stable prices over time. This is not to say that prices cannot change, but any changes should be gradual and well-supported by strong evidence. Pricing at short run marginal cost (SRMC) is not a sustainable model for either water or wastewater services. It can encourage inefficient behaviour by sending an inappropriate price signal and bring forward the need for investment in capacity.
- It is clear from our survey on water tariff structures that residential customers value having a degree of control over their bills. It has also been clear from the two-part water tariff and the ‘user-pays’ principle that customers ought to pay a proportion of the costs they impose on the supply system. It is reasonable to assume the same principles should also apply to wastewater charges and bills. Also, having a usage charge for wastewater could strengthen current water conservation initiatives, although this would be a secondary effect, not a primary driver for wastewater usage charges. This is one area we suggest where pricing flexibility could be used to good effect. Metering discharges is straightforward. The UK water sector applies a usage charge to wastewater flows, based on the metered water volumes minus an allowance for water ‘not returned to sewer’.
- Wastewater pricing is facing its own long-term cost challenges. Increasing investment is needed to service growth within our existing discharge limits, particularly at our inland facilities on the Hawkesbury-Nepean River. In the next decade, we expect that up to three additional treatment plants may be required to service growth in the South West Growth Centre along with substantial amplifications at our Riverstone treatment plant to service the growth in the North West Growth Centre.
- Along with the need to service growth, in the future our licence conditions may also be subject to increasing constraints. Both of these pressures are likely to raise the average costs of supply, which needs to be reflected in usage prices that send the right long-term price signal to consumers.

10.4.2 Wastewater pricing – a proposed approach

We have outlined the reasons why wastewater pricing is more complex than water pricing. Given the likely long-term cost challenges, we believe the wastewater charge is likely to grow as a proportion of customers’ overall bills.

There appears to be little firm rationale to support the existing charge structure. Some non-residential customers face a price signal, but others and all residential customers do not. This seems to be at odds with the user-pays principle.

Equally, there appears to be insufficient evidence to move away from the existing charge levels for non-residential usage pricing, but good reasons to remain at current levels. The cost characteristics and economic and social drivers for pricing for wastewater services do not appear to be well understood. Significant new costs are likely to be incurred, putting upward pressure on wastewater costs and prices.

This suggests that the way we charge for wastewater services as a whole should be subject to closer scrutiny, and potentially, review. It seems prudent to avoid large swings in prices and tariff structures now when a future review may decide a different approach to pricing is appropriate. We would also suggest that further, more detailed engagement with customers to reveal their preferences for wastewater charging would be both necessary and desirable before engaging in material tariff reform.

Therefore, Sydney Water proposes to maintain the wastewater usage price at the 2015–16 level ($1.10 per kL) in real terms for the 2016–20 period.

10.5 Desalination cost recovery

We referred earlier to the right balance within the tariff structure between usage and fixed charges. The usage charge provides an incentive to use water wisely, and the higher the charge, the stronger the incentive. This sends a price signal to customers and ensures we can recover our costs.

Sydney Desalination Plant (SDP) is currently in long-term shutdown mode, because of the absence of drought, the recovery of dam storages and lower consumer demand. If dam storage levels fell to 70% of capacity, then the NSW Government would restart the plant and it would remain in operation until total storage capacity had risen to 80%.

Sydney Water would incur additional costs when the plant restarts, which IPART allows us to recover from customers. Assuming SDP produces a full year's output of 90 GL following its restart, the costs would be about $74 million a year, plus a one-off restart charge of about $6 million. The $74 million comprises $13 million of fixed costs, and $61 million of variable costs[79]. If SDP output was lower than 90 GL, the total variable cost component would be lower than $61 million.

In Sydney Water's current determination, IPART has set a cost-recovery mechanism that would allow Sydney Water to recover these costs through a single, extra fixed charge from every customer. The charge, applied in the year after the costs are incurred, would be about $40 for each customer, based on the costs outlined above.

[79] These costs derive from the IPART, *Determination for Sydney Desalination Plant*, 2013. Therefore when IPART sets a new determination for SDP in 2017, these cost figures may change. Our proposal would use an agreed formula and real data in the event SDP was operated, rather than a prescribed set of numbers.

However, Sydney Water believes this cost-recovery structure misses an opportunity to potentially send a price signal to customers about the relationship between their water behaviour and the costs of operating SDP. It also allocates costs equally across the customer base, with no consideration of the user-pays principle. Instead of applying only a fixed charge, the costs could be recovered by a combination of a smaller fixed charge plus a charge based on usage (see Figure 10-2). This structure would mimic the general water tariff, which we know customers are familiar with. This includes an incentive to save water, which is not a feature of the current desalination cost-recovery mechanism, but is also something which customers have told us they value.

10.5.1 Our proposed approach

Our approach is to introduce a usage charge component into the cost-recovery mechanism and keep the fixed charge component, but at a reduced level. Our Customer Council suggested recovering all costs through the usage charge, to send a strong price signal to customers. This is something we could consider for the future, but is not our preferred approach at present. We would aim to recover the same level of costs which we otherwise would be allowed to do through a pure fixed charge approach. We would retain as much of the current process as possible, with necessary adjustments to the timing and method of recovery to reflect the new structure.

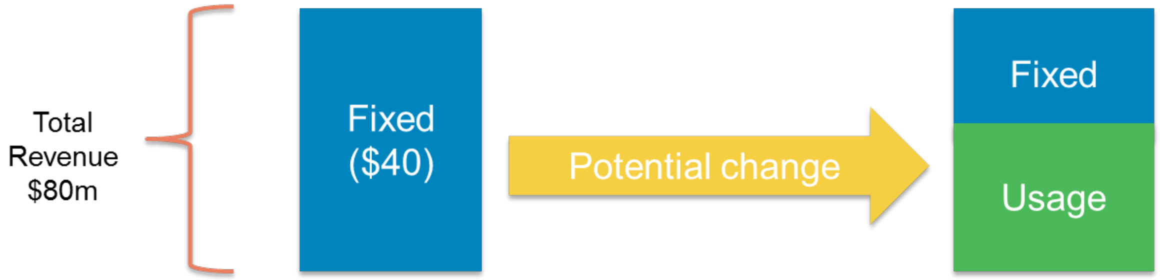
In practice, this would transpire as follows.

- For recovery of the usage charge element:
  - Introduce a new ‘pass-through’ process.
  - Calculate the charge, based on the likely variable proportion of SDP costs and the volume of sales.
  - Apply to all customers[80] through a single increment to the standard water usage charge, applicable to all volumes sold (that is, a single, higher charge not an inclining block tariff).
  - Recover in the current year (that is, no lag) for as long as SDP operates.
  - Once the SDP was no longer operating and relevant costs were no longer being incurred, the usage charge would return to the standard level.
- For recovery of the fixed charge element:
  - Maintain the current ‘pass-through’ process.
  - Calculate the charge, based on the fixed proportion of relevant SDP costs (including restart charge) plus any residual costs not recovered by the usage-based component and number of eligible customers.
  - Apply to all customers, once a year.

Recover costs in the following year (that is with a one-year lag).

[80] Excluding all customers currently benefitting from or eligible for our hardship schemes

Figure 10-2 – Potential change to the cost recovery model



10.5.2 Implementing the cost-recovery charge

There would be some implementation issues associated with introducing this usage-based cost-recovery charge.

- Sydney Water proposes to work with IPART and the Metropolitan Water Directorate to educate and inform customers about the proposed new charge. We envisage that customers will need to understand the cost-recovery charge is a rebalancing of the approach by which existing costs would be recovered, and not a new charge. It will be necessary to emphasise that this proposal is also meant to be revenue-neutral.
- To the extent that customers respond to the stronger price signal, Sydney Water costs could be lower than otherwise would happen, benefitting customers through lower prices.
- The proposed new charge would need to reflect the operating rules for the SDP as set out by the Metropolitan Water Directorate and IPART's new determination for SDP in 2017.
- For most customers, the period when the SDP begins (and ceases) operating will not wholly align with their billing period. Sydney Water will ensure customers pay the appropriate charge for their water usage based on a pro-rata allocation of usage under the different charges.
- Converting the fixed cost to a variable price introduces revenue risk for Sydney Water, which is not present in the current mechanism. We propose to maintain the existing risk-neutral framework by amending the existing cost pass-through mechanism to allow us to recover the residual costs not captured by the usage charge.

10.5.3 Longer term price signals

Water authorities and governments usually address the problem of managing supply-demand imbalances by augmenting supply capacity and/or introducing usage restrictions. During the Millennium drought, for instance, both options were used (the building of the SDP and restrictions).

However, IPART[81] and Sydney Water both consider that price also can play a role in moderating consumer demand. Scarcity prices could reduce the need for water restrictions and encourage consumers to reduce discretionary use when dam levels are low. Scarcity pricing has been used in parts of Brazil and the United States, in response to supply constraints due to severe droughts. The role of pricing must be fully integrated with existing water conservation measures used by Metropolitan Water Directorate.

In the longer term, the desalination cost-recovery charge could be used as the basis for a more sophisticated approach to signal the marginal costs of responding to drought situations or to complement an integrated approach to managing supply and demand.

Sydney Water is not proposing a scarcity price for the 2016–20 review period. However, we believe it would be worthwhile to engage customers and other stakeholders in our approach to water conservation moving forward, and any subsequent design and operational issues.

10.6 Wholesale water and wastewater service pricing

10.6.1 Introduction

Sydney Water operates under legislation that permits licensed third party utilities to on-sell Sydney Water's water and wastewater services to end-users. In these cases, Sydney Water is providing a wholesale service to the on-sellers, who provide retail services to the customers. These retail suppliers can be distinguished from Sydney Water as the primary water utility, and from end-users, by referring to them as 'secondary water utilities'.

Sydney Water is aware that potential and actual secondary water utilities have raised concerns to IPART about the approach taken by Sydney Water in response to requests for access to our systems (in other words, Sydney Water's provision of wholesale services). Specifically, concerns have been raised about the terms for access in relation to the pricing principles set out in the *Water Industry Competition Act 2006 (NSW)* (WIC Act).

Sydney Water acknowledges that IPART intends to address the pricing of wholesale services to secondary water utilities in its 2016 pricing determination. Our submission is intended to inform IPART's consideration of the issues, and set out our preferred approach.

10.6.2 The regulatory framework for wholesale services

Purchasing wholesale services and the subsequent retailing to end-use customers can be achieved by secondary water utilities successfully seeking access to Sydney Water's infrastructure under the WIC Act, which is certified as an effective regime under the *Competition and Consumer Act 2010 (Cth)* (CCA). WIC Act is legislation specific to the NSW water sector, and expressly provides for third parties to access Sydney Water's wholesale services so as to retail them to customers.

[81] See IPART, *Opportunities for further reform – submission to the Competition Policy Review Issues Paper*, June 2014, p 18.

Wholesale services to secondary water utilities are also subject to the CCA, which imposes additional obligations on Sydney Water in respect of the supply of such services. As an alternative to the declaration of monopoly assets, the owners of those assets can submit voluntary undertakings to IPART for approval, specifying the terms and conditions by which entrants can seek access. Sydney Water lodged a draft voluntary access undertaking for drinking water to IPART in January 2012 and received comprehensive feedback in July 2012.

Given the significance of some of the issues raised by IPART, and because we were already negotiating with potential entrants, we decided it was more appropriate that these issues be resolved through a policy debate rather than through adopting an access undertaking. We chose not to seek approval of our undertaking from IPART. However, as access has re-emerged as a priority for Sydney Water and secondary water utilities in the last year, we are looking again at the access undertaking as part of our approach to enabling third party access to our infrastructure services.

The regulator may also choose to regulate wholesale services provided by a public utility such as Sydney Water, as part of the periodic determination of that utility's prices.

Under the *Independent Pricing and Regulatory Tribunal Act 1992*, when making a price determination, IPART is to have regard to the need to promote competition in the supply of the service concerned.

Efficient competition should encourage customers to choose the right price/quality trade-off and lower the total costs of supply. Average prices will fall because the total cost of supply falls. If the initial prices reflect costs, increases in efficiency brought by competition mean reductions in prices for the same (or better) level of service. Inefficient entry increases the total costs of supply and average prices. It can lead to lower (or similar prices) for some customers, at the expense of many customers, particularly those who pay geographically-averaged prices.

10.6.3 Provision of wholesale services to date

Sydney Water has always taken a constructive approach to providing wholesale services. It has consistently and proactively sought to make access available on negotiated terms to secondary water utilities.

Sydney Water has never refused a request for access.

To date, one secondary water utility has agreed to receive wholesale services, at Central Park and Discovery Point. Sydney Water is currently negotiating with other potential secondary water utilities to provide wholesale services for on-selling at several other sites where proponents have sought WIC Act licences.

We believe that the buying of wholesale services and on-selling them to end-users is not the same as buying those services as a customer. Any entity who wishes to do this via the monopoly infrastructure of a primary water utility is an access seeker. The key factor at play here is the existence of postage stamp pricing, and the obligation under the WIC Act to price for access in a way that is consistent with the maintenance of postage stamp pricing.

An access pricing approach based on the relevant retail price minus avoidable costs (RMAC) ensures the maintenance of postage stamp pricing. This approach was endorsed by the Australian Consumer and Competition Commission (ACCC) in 2007 in the *Services Sydney* case[82]. Deviating from RMAC risks encouraging inefficient entry that would place artificial upward pressure on average prices to the remaining customers by reducing the scope to fund services in higher-than-average cost areas from revenues in lower-than-average cost areas. This could amount to a transfer of funds to the private sector with no corresponding benefits to the remaining Sydney Water customers.

Further, to the extent that entrants provide ‘green solutions’ outside of an explicit NSW Government directive, these only offer private benefits to a localised customer base and should not be subsidised by the postage stamp price paid by the broader customer base of the primary water utility. If local customers wish to buy a premium product offered by entrants, they should be willing to pay for it at premium prices.

The WIC Act defines[83] postage stamp pricing as:

> a system of pricing in which the same kinds of customers within the same area of operations are charged the same price for the same service.

We believe that a retailer of water and/or wastewater services to end-use customers is not the ‘same kind of customer’ as an end-user of those services. Accordingly, they ought to pay an access or wholesale price that specifically considers their role in and effect on the supply of water and wastewater services to all the end-users of those services.

10.6.4 Wholesale services – proposed way ahead

Sydney Water supports IPART’s proposal to address the issue of pricing for wholesale services as part of the 2016 pricing determination. Sydney Water believes the access framework in the WIC Act, including maintaining postage stamp pricing, supports efficient entry. The NSW Government has clearly shown its support for enabling efficient competitive entry to the NSW water sector by introducing and subsequently amending the WIC Act. However, we recognise that some parties remain uncertain about the scope of the WIC Act and the services it covers. A wholesale access price (or a price methodology) determined by IPART will foster greater certainty in the market place, which is good for customers as well as all water utilities. Alternatively, Sydney Water could further progress its voluntary access undertakings.

[82] ACCC, Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation. ACCC Arbitration report, 19 July 2007

[83] Section 41(3) WIC Act

10.7 Incentive regulation

Effective economic regulation relies on regulators achieving the right balance of controls and freedoms to provide monopoly firms with the right incentives to pursue the profit motive while protecting consumers from the worst excesses of monopoly behaviour. Economic regulation is a means to an end (the emergence of competitive markets), not the end itself.

As outlined in Chapter 4, best practice regulatory economic framework should provide firms with incentives to pursue allocative, productive, and dynamic efficiencies. Incentives must be targeted to ensure regulated businesses seek to deliver outcomes that are desirable from the perspective of society. A strong, incentive-based regulatory system will align the regulated firm's financial outcomes with the benefits and costs it creates for customers. Regulators have recognised the benefits to customers from giving regulated firms[84] incentives, in terms of lower prices, greater efficiencies and better service levels.

In other words, if firms have more control over decisions and the ability to use 'real time' information, then they can choose how they deliver on outcomes and which projects they prioritise. It can also mean that firms are encouraged to innovate more than they otherwise would. This flexibility can lead to more cost-effective solutions (and hence better outcomes for society) than if outputs were prescribed externally to the business.

Strong incentives also allow the regulator to 'step back' from detailed operational matters of the business, potentially reducing the overall burden of regulation, and avoiding the risk that information asymmetry leads regulators to take decisions about the business that are not in customers' interests.

Two high-profile reports have highlighted the need for better economic regulation of the urban water sector in Australia[85]. We believe it is important both the regulator and the regulated firm are part of this journey of improvement. The upgrade of Sydney Water's credit rating by Moody's Investors Service (Moody's) in March 2015 is evidence that both Sydney Water and IPART are moving to a more transparent regulatory framework that results in better outcomes for customers. We want to keep that progress going, specifically by strengthening the regulatory incentives on Sydney Water to be efficient in how it allocates costs and recovers revenue through prices.

10.8 Incentive regulation – pricing flexibility

Historically, IPART has set levels and structures for every tariff Sydney Water charges customers for each year of the price review period. IPART generally resets prices every four years, at the start of the price review period. Sydney Water submits price proposals at the periodic review, but IPART determines prices.

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[84] Ofwat, *Future water and sewerage charges 2010–15: Final determinations*, November 2009

[85] I. Harper, P. Anderson, S. McCluskey, M. Obrien, *Competition Policy Review - Final Report* (Harper Review), March 2015 and Frontier Economics, *Improving economic regulation of urban water*, A report prepared for the Water Services Association of Australia (WSAA), August 2014.

Once the price period has begun, Sydney Water has little ability to change prices in real terms from those set by IPART. Sydney Water could charge less than the maximum tariff set by IPART, but only with approval from the Treasurer and without being able to recover the lost revenue. We are allowed to pass through the costs of turning on the Sydney Desalination Plant, through a process set by IPART in the pricing determination.

Sydney Water believes this one-size-fits-all framework is inefficient and inflexible. We prefer a greater degree of flexibility within the regulatory period over how we set prices, both through time, and across different services and customer groups.

Flexible pricing has a number of advantages.

- Sydney Water's proposals would be revenue-neutral over the regulatory period but can have longer term benefits for consumers through better matching prices to their preferences. Targeting tariffs to specific groups of consumers can help us make more efficient use of our assets, which minimises costs over time and helps keeps prices lower.
- Pricing flexibility complements Sydney Water's proposals for greater incentives on cost efficiency. By enhancing the incentive to understand our costs better, we can price in a more efficient manner, applying differentiated tariffs or better reflecting costs of service, thereby reducing costs to customers in the long term.
- To the extent that tariffs do not currently reflect the costs of providing services to different customer groups, flexible pricing provides the opportunity to rebalance prices so that they are more cost-reflective, while maintaining postage stamp pricing.
- Giving Sydney Water greater flexibility to set our own prices strengthens the incentive to understand customer preferences for more targeted services, and the costs of supplying them. Pricing flexibility provides the opportunity to develop a suite of tariff options, and gives customers the freedom to choose tariffs that suit them best. It also means it would be easier for Sydney Water to run tariff trials and innovative tariff designs before applying them to the wider customer base.
- Flexible pricing has the benefit of shifting the burden of regulation away from the regulator and onto the regulated firm. Instead of the regulator setting individual prices and tariff structures, the firm takes on this task. But because the firm has a better understanding of its customers' needs and its own costs than the regulator has, it is in a better position to set prices (levels and structures). That means the burden of regulation is also reduced, because the firm is more efficient at doing this.
- Flexible pricing aligns with acknowledged regulatory best practice in Australia and in overseas jurisdictions. Our approach is modelled on the approach IPART successfully used in electricity and is now embedded in the national approach. It also draws heavily on the framework developed and refined by Ofwat in the UK water sector since 1989. The use of established precedents allows IPART to expedite the design and implementation of pricing flexibility.

10.8.1 Lessons from other sectors

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 is not just in the UK that pricing flexibility is adopted.

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[86].

Pricing flexibility is also embedded in the national approach to electricity pricing, following the AEMC's rule change[87] 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[88]. 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.

10.8.2 Our proposed approach

Sydney Water proposes to achieve pricing flexibility through a tariff basket model, using a Weighted Average Price Cap (WAPC) form of price control. The WAPC is a mechanism by which proposed price increases are monitored, approved and constrained. WAPC is not a policy tool, but it does allow Sydney Water (and IPART) to give effect to agreed pricing policies – such as introducing more cost-reflective or targeted tariffs. The tariff basket model facilitates gradually developing and implementing more cost-reflective prices.

A tariff basket model works by gathering different regulated services into one or more 'baskets' and applying a price cap to the average annual increase in prices of all the regulated services in each

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[86] 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.

[87] 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

[88] Services were provided under the name 'CityRail'. See IPART, *Review of maximum fares for CityRail services from January 2013, Transport — Final Report*, November 2012.

basket. We refer to this price cap as a K-factor. Each price is weighted, so the price increases reflect an appropriate balance of revenue across all services. Within the overall annual price cap, or K-factor, set by IPART, Sydney Water would have flexibility to change prices by different amounts, introduce new tariffs and retire old ones, in every year of the price period. IPART would approve the proposed tariffs for that year, as long as the weighted average price increase was less than or equal to the overall K-factor. The proposed WAPC formula is shown in Table 10-2.

Table 10-2 – Proposed WAPC formula

Proposed Weighted Average Price Cap formula
$$\frac{\sum_{i=1}^{n}\sum_{j=1}^{m} p_t^{ij} q_{t-1}^{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{m} p_{t-1}^{ij} q_{t-1}^{ij}} \le K_t * (1 + CPI_t)$$

Where Sydney Water has *n* tariffs, which each have *m* components and:

$i = 1,\ldots n$

$j = 1,\ldots m$

$$\sum_{i=1}^{n}\sum_{j=1}^{m} p$$

p_t^{ij} is the price currently being proposed for component *j* of tariff *i*

q_{t-1}^{ij} is the quantity of component *j* of tariff *i* that was sold in the previous year

K_t is the limit set by IPART on the increase in the overall average charge for each year *t.* The limit is expressed as a weighted average percentage change in prices

CPI_t is the rate of inflation (as set by CPI movement) for year *t*

10.8.3 Scope of our proposed approach

The key aspects of our tariff basket model are outlined below.

- Our focus is on adding customer value and improving cost-reflectivity through targeted tariffs, so a price cap is the appropriate approach. A revenue cap would transfer volume risk to consumers and likely lead to increased price volatility, both of which Sydney Water wants to avoid. Therefore, our proposal is to cap price increases, not regulated revenues. In this way consumers are protected from price volatility and revenue risk.
- Specifically, we propose that IPART determines prices for 2016–17 and then sets a WAPC for the rest of the regulatory period. Chapter 5 sets out in detail our proposed prices for 2016–17 and our proposed WAPC (K factor = 0).

- In principle, a single basket (and a single price cap) covering all regulated services would provide maximum flexibility to Sydney Water to set prices going forwards. In this case, we could reapportion costs between different services or change pricing policies (such as allowing the wider customer base to contribute to the costs of providing stormwater, on the basis that this benefits all customers) as needed. However, we recognise that the costs of water, wastewater and stormwater services are currently apportioned correctly and allocated separately from each other by IPART. We are also aware of some uncertainty around IPART's legal authority under the *IPART Act 1992* to set a single price methodology for more than one group of regulated services. So, we are proposing to use three baskets, for water, wastewater and stormwater services – each of which will have its own price cap.

We propose that the tariff basket model be complemented by measures that promote greater transparency about our short-term and medium-term approach to pricing. This will also allow IPART to retain an appropriate level of control over the types of changes in tariffs that Sydney Water would be able to apply. These measures include:

- a set of pricing principles, published by IPART, which we must consider in our approach to pricing
- a pricing strategy published by Sydney Water
- an annual process to approve proposed tariffs and ensure changes are in line with agreed charging principles.

Sydney Water and IPART can agree to the content and form of the pricing strategy, and the charging principles as part of our recommended implementation process. However, we set out some examples of what these documents might look like.

Pricing principles – example

IPART could publish a set of pricing principles which would set the framework for Sydney Water to set tariffs. Below are some examples of the types of principles that could apply to Sydney Water, based on principles used in other jurisdictions[89].

1. Prices should be consistent with the WAPC and any applicable side constraints set by IPART.
2. Sydney Water must not show any undue preference towards, or undue discrimination against any customer or class of customer, including potential customers.
3. 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

[89] See for example Ofwat's approach based on Condition B of UK water companies instruments of appointment; *IPART, 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; and the AEMC, *National Electricity Rules* Version 69, March 2015.

- the efficient costs of providing services to customers
- customers' preferences for tariff levels and structures
- the long-run marginal cost of water supply
- the maintenance of postage stamp pricing.

4. 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.[90]

Alternatively (or in addition), IPART could choose to introduce side constraints into the price control formula. These would be used to limit the annual price movements for certain groups of customers or types of tariffs. However, we do not propose formal side constraints, for the following reasons:

- Side constraints do not add anything more achieving the objectives of pricing flexibility than can be obtained through published pricing strategies and charging guidelines.
- Side constraints can only be adjusted at price resets, when the price control formula is reviewed. This can severely constrain the regulator's ability to quickly and easily adjust the parameters of the pricing flexibility framework within a regulatory period. Such flexibility is necessary and desirable during the early stages of implementation.

Pricing strategy – example

Sydney Water could develop and publish a long-term approach to pricing, setting out the scope, scale, timing and rationale of our anticipated changes in prices. The strategy would explain why Sydney Water wanted to take a different approach to pricing, what might be the costs and benefits of this, and highlight how customers could be involved in making decisions.

For example, Sydney Water might propose the following, for consideration by stakeholders:

- A measured approach to water pricing reform, promoting innovation in the availability and design of tariffs at a timeframe and on a scale agreed with customers.
- A balanced strategy that looks to introduce tariff innovation while minimising volatility in overall prices and avoiding undue disparity between groups of customers.
- A focus initially on non-residential customers.
- An approach to pricing that is based on sound principles and well-researched evidence, including significant customer engagement.

[90] This has similar characteristics to the Tariff Structure Statement introduced by the AEMC in November 2014

Sydney Water would develop the pricing strategy in collaboration with customers and full engagement with IPART, and other interested stakeholders, referring to agreed charging principles as published by IPART.

A published strategy provides both transparency and certainty to customers and IPART about how Sydney Water intends 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 them in the development of this approach, we can inform the strategy with their values and preferences.

Approval and compliance process – example

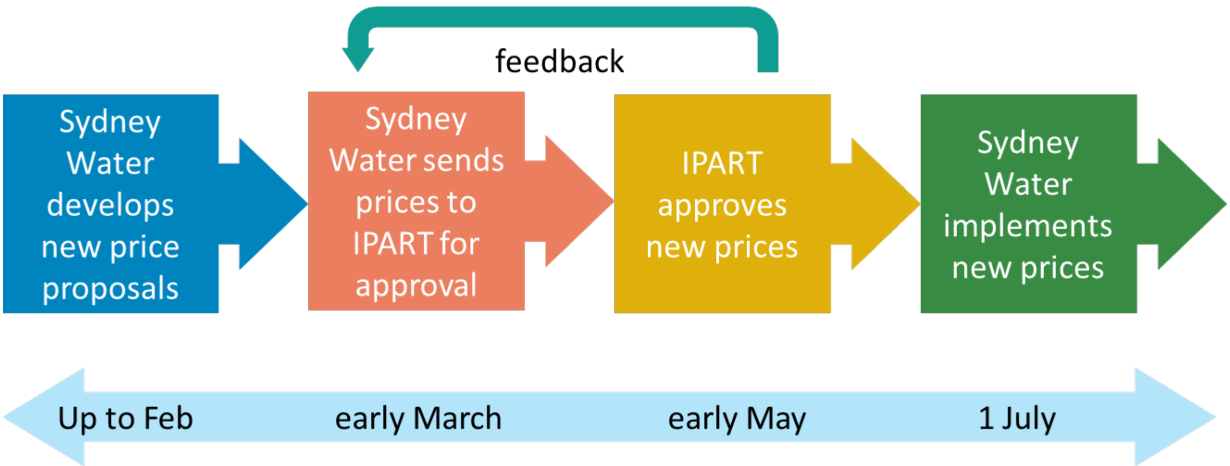
The tariff basket model introduces:

- a need for Sydney Water to set prices that meet the annual price cap
- a need for IPART to approve the proposed prices and check compliance with the price cap and attendant charging principles.

The tariff submission and approval process can be straightforward, and should avoid unnecessary burden on either Sydney Water or IPART.

New charges apply each year from 1 July. Sydney Water would look to have IPART approve the new tariffs by the start of May that year, to give enough time to ensure a smooth transition to the new prices. We would provide IPART with sufficient time to examine our proposed tariffs, and seek clarification or resubmission if necessary. This means we would submit our proposed tariffs for approval around the start of March. The process is outlined in Figure 10-3.

Figure 10-3 – Timeline for charges approval



Checking compliance with the price cap would be straightforward, using a simple spreadsheet model.

Adding value with targeted tariffs – example

We have no formal proposals yet. Sydney Water will engage with customers and other stakeholders over the course of the price review period to find out where pricing flexibility could be used to provide greater added value or better reflect costs. However, in this section we give an indication of the areas where pricing flexibility may be applied to develop targeted tariffs.

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.

10.9 Incentive regulation – cost efficiencies

The price-cap model of regulation used by IPART (and regulators around the world) is built around giving regulated firms an incentive to deliver services desired by customers at the lowest sustainable cost. As outlined in Chapter 4, it was a significant change in the economic regulation of utilities, replacing the US-style rate-of-return or cost-of-service regulation, which had dominated up to that point.

The early regulatory model encouraged firms to make efficiencies compared with the regulatory determination, by allowing the firm to keep any gains made. Gains would be handed back to customers at the next regulatory review period. So, the sooner gains were made after the start of the regulatory cycle, the longer the firm could keep them. This approach also meant the firm was encouraged to reveal its actual costs (so as to gain the efficiency reward). Revealed costs are used by the regulator to set the baseline for costs in the following regulatory period, thereby helping the regulator overcome the problem of information asymmetry. There is no incentive on firms to increase costs so as to influence the assessment for next period's baseline, because of the likelihood of generating a large carryover loss, and the fact that the regulator has scope to reset the baseline based on all relevant information (not just in one particular year).

As Professor George Yarrow noted in his advice to the Australian Energy Regulator (AER) on incentive regulation ‘it is not central to this (cost-reduction) incentives argument that the price path be set on the basis of projections of fully efficient costs’.[91]

Sydney Water has responded to the incentives by reducing its costs. For example, over the 2012–16 regulatory period, compared with the regulatory allowance set by IPART we have reduced our combined opex and capex by more than $450 million. We propose to pass these efficiencies on to customers in the 2016–20 price period by reducing the annual average single residential home bill by about $100. We believe that improving the regulatory incentive framework will help us do even better.

Incentive regulation is good for consumers, as it rewards the regulated firm for working harder to achieve cost efficiencies and pass these through in the form of lower charges.

In practice, however, as noted in Chapter 4, the early regulatory model has been shown to provide weak incentives, in the following ways.

- There is a stronger incentive on the firm to seek efficiencies at the start of the regulatory period than at the end[92]. In other words, because the power of the incentive declines over the regulatory period, there could be sub-optimal behaviour. For example, firms might bring forward investment within the period, or even defer investment from the last year of the current period to the first year of the next one, so that benefits could be retained for longer. Or, the firm may pursue short-term expenditure reductions at the expense of long-term efficiency gains, benefiting current customers but not future customers.
- The firm has an incentive to increase actual expenditure in the ‘expected’ base year used for the opening allowance in the following regulatory period, in the hope of receiving a higher allowance in the next period. With a higher overall baseline, any gains made will be greater.
- The firm has an incentive to increase forecasts in the hope of receiving a higher regulatory allowance. Then, any expected gains from beating the inflated allowance will be higher.

The presence of weak incentives in the traditional model does not necessarily mean a firm will seek to exploit them. Firms with a strong Executive team and Board of Directors (as Sydney Water has) will direct the firm to operate in a way that aligns the interests of customers with those of the firm. Also, the extent to which a firm benefits from the weak incentives depends on the close scrutiny by the regulator of the firm’s price submission and its ability of the regulator to determine the appropriate level of costs and allowed expenditure.

[91] George Yarrow, *Preliminary views for the AEMC*, p6. See www.aemc.gov.au/getattachment/66d7fa3e-e218-44d0-9c47-41913dd12c8f/Professor-George-Yarrow.aspx

[92] This is explicitly acknowledged by IPART in IPART, *Review of water prices for Sydney Desalination Plant Pty Limited, From 1 July 2012, Water — Final Report*, December 2011, pp 29–30.

10.9.1 Evolution of the regulatory model

We note in Chapter 4 that a key feature of best-practice regulation is the ability to change over time to meet and beat the challenges that the sector faces or is likely to face. In some jurisdictions (for example in the UK water sector, the Australian energy sector and the regulation of SDP by IPART), the design of the regulatory model has been improved to remove or reduce these weaknesses in the regulatory incentives.

In others (for example NSW urban water) the simple model remains in place, although this is not to say there have not been improvements in other aspects of regulation.

We believe it is appropriate and desirable to move the regulatory framework forward by improving the way the cost-efficiency incentive is applied. We suggest there must be explicit recognition that firms face costs within and outside their control, and that it is desirable to treat these types of costs through separate incentive mechanisms.

Specifically, the way we suggest this is done is through the application an Efficiency Benefit Sharing Scheme (EBSS)[93] for costs that Sydney Water can control, and the use of a cost-pass through methodology for material costs outside our control. The EBSS should only address controllable costs, because to include other costs risks giving the firm windfall gains or losses. For costs outside the firm's control, we believe it is right that these costs should be passed through to customers, but only if they occur. This can be achieved using an appropriate cost pass-through methodology. Alternatively, if such a methodology cannot be provided for, an ex-ante probabilistic allowance needs to be made in the cash flow modelling, as IPART did for the volume risk for State Water (now WaterNSW), the specific case of cost risks for SDP and the Shoalhaven transfers for the Sydney Catchment Authority (SCA, now WaterNSW).

10.9.2 Measured approach now and in the future

Sydney Water recognises that its proposals for stronger incentives will take time to be implemented. We and IPART will both need to develop our skills and understanding of how to administer and work within the changing environment that a stronger incentive regime will bring. We do not want the effectiveness of our proposals or confidence in the regulatory framework to be undermined by a process that is unworkable or risks that are too great to bear.

With this in mind, our proposals explicitly include constraints and simplifications, including:

- a carry-over period that matches the term of the proposed regulatory period, to maximise benefits for customers. This means for the proposed four-year regulatory period, the benefits of cost efficiencies on opex would be shared approximately 75% to customers and 25% to Sydney Water (on a present-value basis). A longer carry-over for opex would mean greater benefits to the regulated business – eg a five-year carry-over would lead to the business sharing 30% of the benefits, while a ten-year carry-over would result in the business sharing 50% of the benefits

[93] Also known as the Efficiency Carry-Over Mechanism.

- the same sharing ratio being allowed on the capex EBSS as for the opex EBSS, that is 75% to customers and 25% to Sydney Water
- a ‘base, step and trend’ approach for opex EBSS, which allows IPART to retain full control over the costs to be included in the appropriate base year, for the next regulatory period
- only limited types of expenditure to which capex EBSS will apply – capex EBSS would be limited to only critical water mains and reticulation renewals, and electricity
- limited application to overall expenditure – EBSS will apply to about 10–15% of Sydney Water’s total capex and about 60% of average historical opex (only regulatory opex, excluding bulk water)
- a ‘cap and collar’ approach for opex and capex EBSS, which limits total rewards and penalties for Sydney Water to $50 million for each over the four-year period
- symmetric rewards and penalties for beating or failing to beat cost-efficiency targets
- continued use of efficiency audits, until IPART is satisfied that it can scale down the extent of any review, when Sydney Water is considered to be at the frontier of efficiency relative to its peers
- a materiality threshold for the cost pass-through methodology set high enough so that only significant risks, approved by IPART, would qualify.

By adopting a measured approach with constraints around the initial design and operation of the incentives, we mean to assure IPART that it retains control over the process (including pace) of implementation and its preferred level of regulation of Sydney Water.

It must be noted that taking a measured approach is not cost-free. Applying constraints on the EBSS means, in theory, the power of the incentive is weaker than without any constraints, although still stronger than without an EBSS at all. For example, capping the benefit available in any period means the firm would have an incentive to reduce effort in pursuing cost efficiencies, once the total level of savings had reached the cap. Instead, the firm would have an incentive to maintain current levels of spend to realise additional ongoing opex benefits and defer further activity until the following period, when the cap is ‘reset’.

This reduction in the power of the incentive can be considered as the price of a measured approach. The lower the cap, the greater the degree of control over implementing the EBSS, but the lower the overall gains for consumers in the long run. However, this opportunity cost is still relatively lower than the opportunity cost of foregone efficiencies in a regulatory world without an EBSS.

Sydney Water proposes, on balance, that it is appropriate to take a measured approach. As stronger incentives are generated within the scheme and confidence in its ultimate operation is achieved by IPART and Sydney Water, we would encourage IPART to review the constraints.

This review may include an independent audit of the practical elements of the constraints, such as:

- increasing the limits of the applicable ‘cap and collar’ beyond $50 million
- expanding the types of expenditure to which capex and opex EBSS will apply
- removing or reducing the scope of the efficiency audits
- reducing the materiality triggers for the risk management methodology.

In the long term, it is our desire that regulation of the NSW urban water market follows best practice. As set out in Chapter 4, regulators in the UK are often seen as the pioneers of best practice incentive regulation. The first UK approaches were characterised by a relatively ‘light’ review of costs and an emphasis on incentives over cost benchmarking. More recently, both Ofwat and Ofgem (the electricity and gas market regulator) have introduced a menu approach to determining the regulated firms’ allowed revenues. A ‘menu’ is a regulatory tool intended to help regulators overcome asymmetric information problems, by providing companies with choices that give them incentives to:

- reveal upfront the level of (efficient) expenditure they intend to carry out over the price control period
- deliver their expenditure as efficiently as possible.

The menu approaches are broadly known as the Capex Incentive Scheme (CIS) and Information Quality Incentive (IQI) respectively. It is our long-term view that such information quality schemes best serve the long-term benefits of customers as information asymmetry is the fundamental problem for regulators.

If our proposals for stronger incentives are adopted for 2016–20, it is for IPART to decide the appropriate point at which it would review the design and implementation of the schemes and decide on next steps. As a minimum, we would encourage IPART to take stock of the current regime during the course of the 2016–20 regulatory control period to prepare the way for the next reset. For example, IPART could consider service performance incentive schemes like those in the electricity and UK water and energy sectors, based on our planned customer engagement and analysis of their willingness to pay for higher levels of service. Sydney Water stands ready and willing to help in that process.

10.10 Efficiency Benefit Sharing Scheme

In theory, for a given set of conditions, any firm ought to be able to reach a level of maximum efficiency in how it operates. For convenience, we refer to this as the ‘point of total efficiency’. At this point, customers enjoy all the benefits of that optimised performance by the firm in perpetuity. In practice, of course, these conditions are unlikely ever to remain static – customer behaviour changes, financial markets vary, competition emerges, and so on, so a firm is unlikely ever to be ‘totally efficient’. But it is useful to consider how incentives affect the firm’s behaviour.

For example, under the current model of regulation, the firm would eventually reach the point of total efficiency. In essence, what an Efficiency Benefits Sharing Scheme (EBSS) does is give the firm an incentive to reach that point sooner, by increasing the financial rewards available to it. Customers also benefit from the firm reaching this theoretical point of total efficiency sooner, because they reap the benefits for longer.

An EBSS is an incentive mechanism which enhances the sharing of financial benefits between the regulated firm and its customers of any efficiency gains or losses made during a regulatory period. An efficiency gain is where operating or capital expenditure actually incurred by the firm in a regulatory period is less than the allowance set by the regulator, for the same or better outcome. A loss occurs if actual expenditure is more than the regulatory allowance.

The EBSS means the firm retains gains (or bears losses) for a defined period of time regardless of the year of the regulatory period in which the gain is achieved. By being able to carry over the efficiency benefit, there is a continuous and equal incentive for cost efficiency in each year of the regulatory period, instead of a declining power of incentive. The term of the carry-over of the EBSS affects the size of the sharing of any benefit to the business from any cost saving on opex. Figure 10-4 highlights the stronger incentive for cost efficiency where there is a four-year regulatory period and an EBSS with a four-year carry-over period.

Figure 10-4 – Power of cost-efficiency incentive with and without EBSS

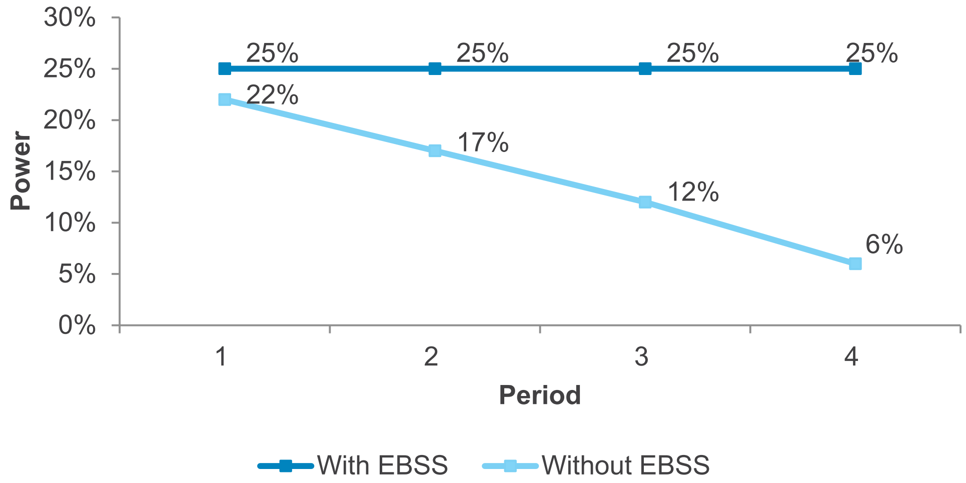
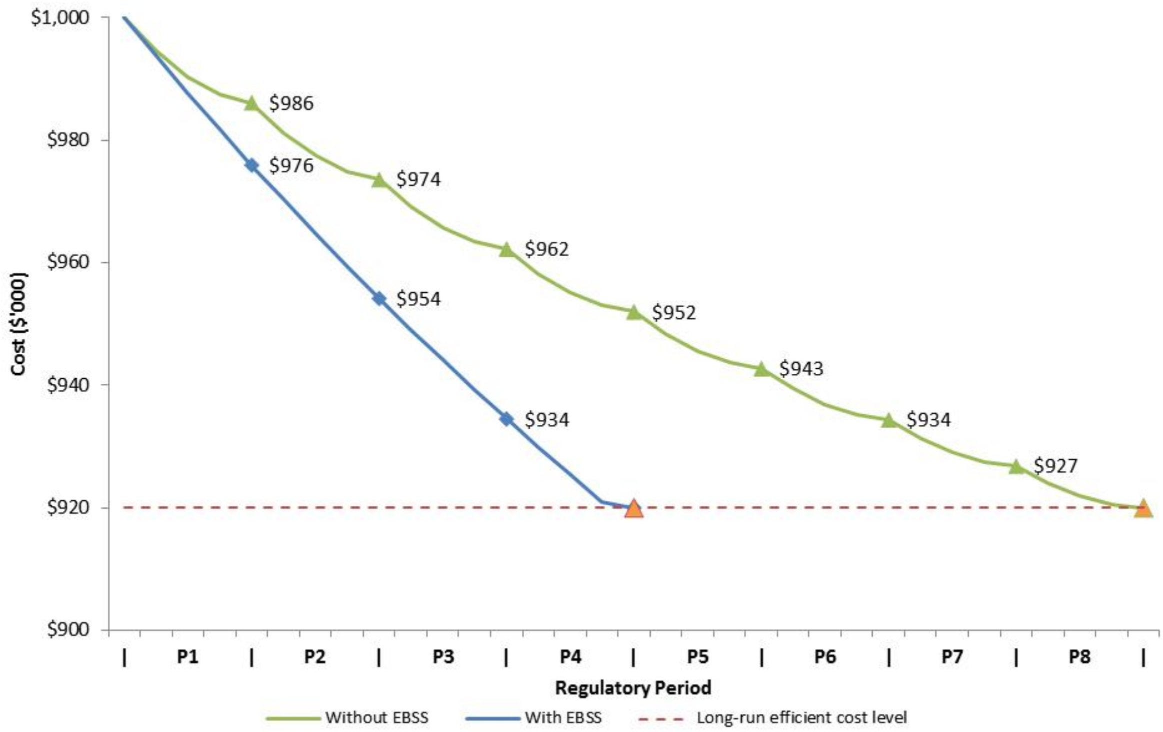


Figure 10-5 shows the effect of an EBSS on the time it takes a firm to reach the point of total efficiency, for a set of hypothetical conditions.

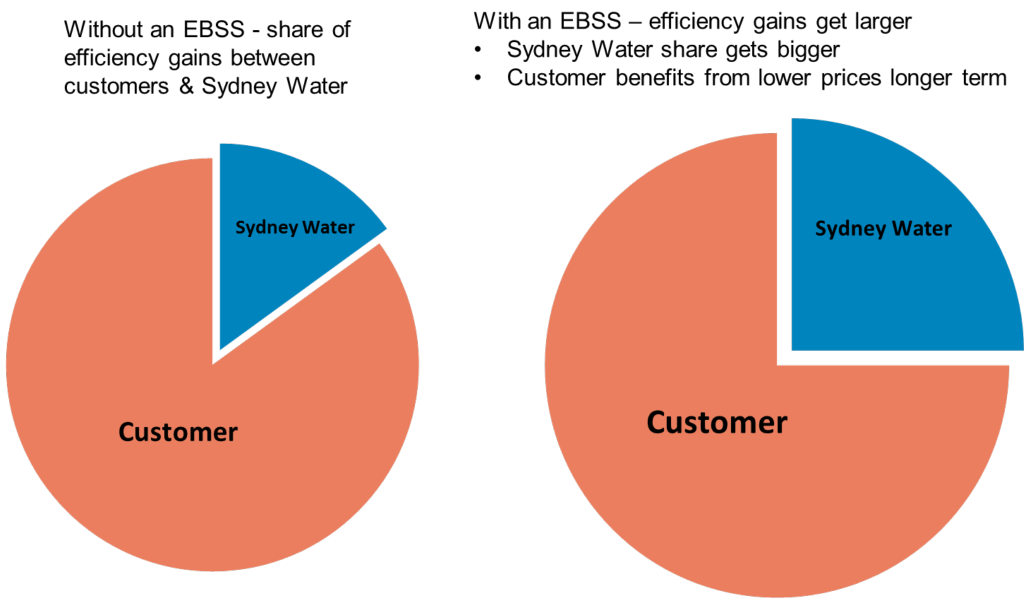
Figure 10-5 – Stylised example of the effect of an EBSS on the incentive to pursue efficiencies



Note: an efficiency improvement of 2.5% year-on-year is assumed.

Additionally, it is important to note that under an EBSS, not only are efficiencies achieved more quickly, but additional efficiencies are realised. Figure 10-6 shows this concept.

Figure 10-6 – EBSS – Sharing of efficiency gains



What an EBSS does is provide Sydney Water with greater reward for successful innovation and for minimising those costs it can control. An EBSS helps promote delivering services at the lowest efficient cost, in the shortest possible time and seeks out innovations, making customers better off over the long term through decreased prices.

Further, the regulator benefits as the stronger incentive to minimise cost means a firm also has more incentive to reveal accurate costs, which helps the regulator overcome the information asymmetry problem. In the longer term, as the scheme matures and the regulator becomes more confident of the accuracy of the firm's forecast costs and actual expenditure, there is less need for costly upfront efficiency audits. An EBSS incentivises and rewards true cost information to be revealed by Sydney Water, allowing it to make efficient business decisions. So, revealed costs become a better guide to true efficient costs and an improved source of information over the current simple model in place.

10.10.1 How are rewards and penalties captured?

Figure 10-4, Figure 10-5 and Figure 10-6 illustrate the incentive and efficiency improvement from employing an EBSS. The EBSS leads to rewards (or penalties) for the regulated firm. Conceptually, these rewards (or penalties) are captured via the Annual Revenue Requirement (ARR) as an additional 'building block'. This extra block, or the rolling 'carry-over', applies for the duration of the following regulatory control period.

Figure 10-7 illustrates how this works, for a hypothetical cost-efficiency improvement in both capex and opex.

The carry-over is the sum of the rewards and penalties in the four years of the preceding regulatory period (P0 below). This amount is carried over into the following four years of the regulatory period (P1 below) via the ARR. Over the longer term, a positive carry-over is returned to customers in the form of lower prices. It is important to note there is no 'double-counting' of the benefits. The new regulatory allowance in P1 is separate from the carry-over reward (or penalty).

Figure 10-7 – ARR with and without an EBSS

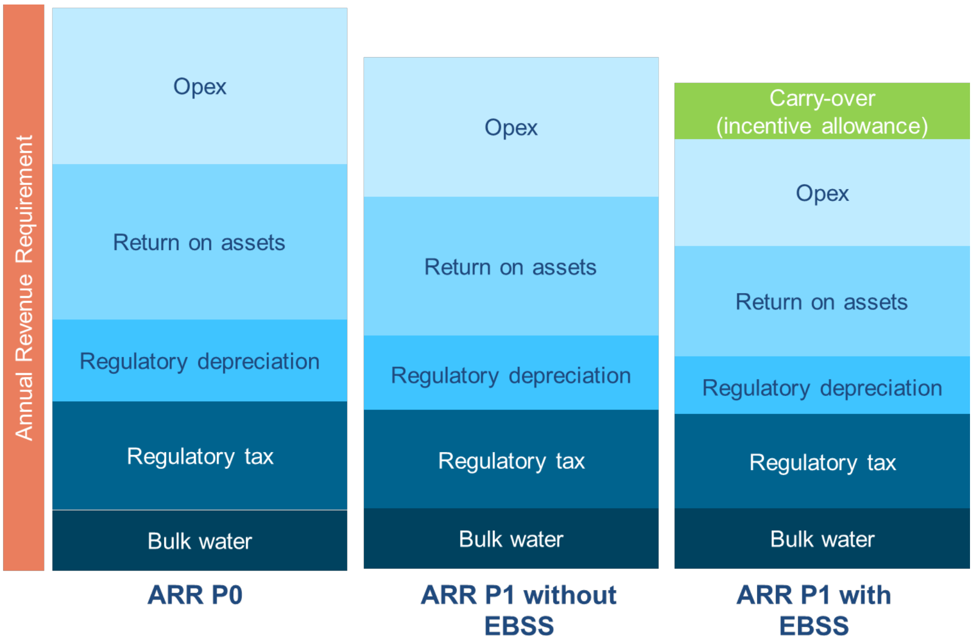


Figure 10-7 illustrates that with an EBSS in place, the P1 ARR with an EBSS is likely to be lower relative to a P1 ARR without an EBSS. This is a direct result of a firm's improved incentive power to generate greater cost efficiencies with an EBSS, that is, the cost-efficiency pie is now greater and realised more quickly than without an EBSS.

In this example, cost efficiencies have been generated in both opex and capex, meaning the building blocks are smaller than in P0. Both sets of efficiencies have a direct influence on forecast expenditure in subsequent periods, creating a virtuous cycle. This highlights the significance of revealed forecasting as part of the EBSS approach.

Lessons from other jurisdictions

EBSS schemes and the benefits to consumers, regulators and regulated firms have been recognised as commonplace features of best practice regulation. They have been adopted since the early 2000s by both the UK water regulator Ofwat, and the Australian Energy Regulator (AER) and have been introduced by the Commerce Commission in New Zealand. Chapter 4 has more details of these lessons.

Boxout 10-1 – EBSS in the Australian energy sector

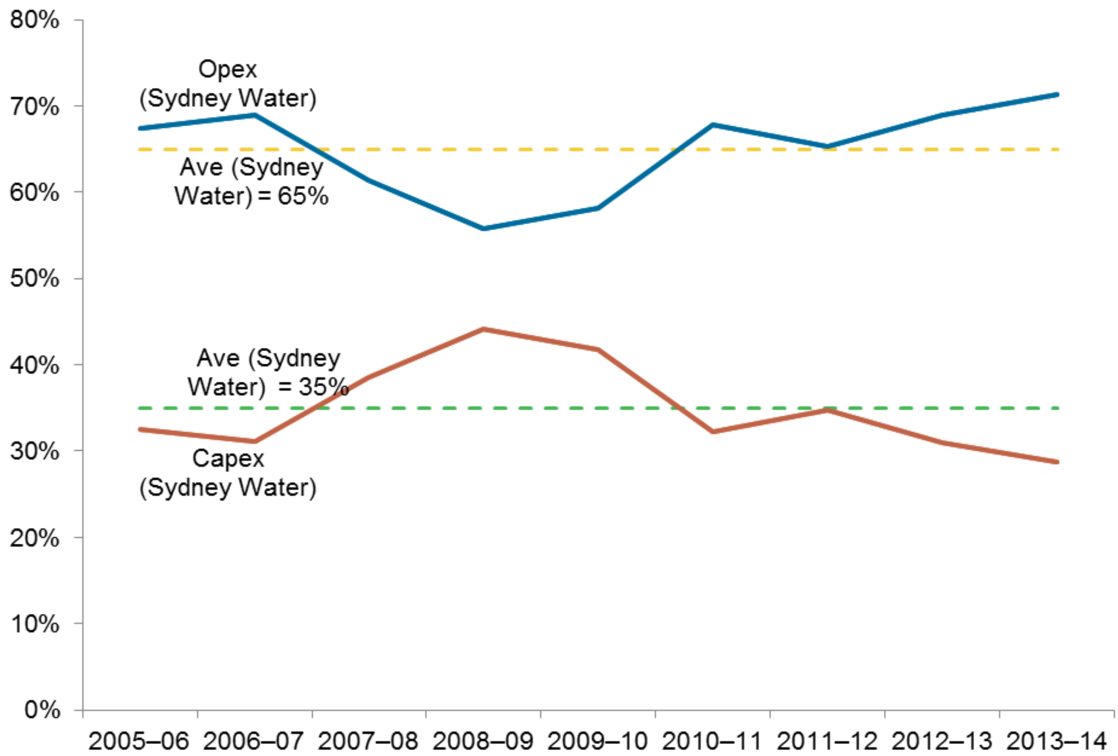
> The use of EBSS has not been without difficulties in the Australian electricity sector. Some firms have responded positively to the incentives and driven lower costs, resulting in lower prices for customers over the longer term. Others appear to have been rewarded for inefficient business decisions associated with capex, and large rewards for improved opex, despite not being a frontier efficiency setting firm relative to its peers.
>
> This behaviour may have been driven by two factors:
>
> - EBSS opex schemes were introduced by the AER, not by the firms
> - A ratio of about 65% to 35% between capital costs and opex.
>
> Firms did not unanimously welcome the introduction of the EBSS, and some were very unfamiliar with how the EBSS schemes would affect their businesses in the short-term. Also, with an EBSS that only applied to a third of total cost, firms were given weak incentives to reveal their true capex costs and so benefited from deferring major capital projects. The substitution of opex for capex in the early years of regulatory periods was rewarded twice, once through lower opex and the associated EBSS, and again by deferring capex.
>
> The AER has subsequently removed the EBSS from those firms which it believed were far from the frontier.

Boxout 10-1 describes our understanding of the negative experiences of using an opex EBSS in the Australian energy sector. We want to avoid a repeat of these type of errors that led to poor outcomes. We rely on three important factors to help us achieve this:

- First, Sydney Water is actively in favour of an EBSS scheme, and can see the long-term benefits to its customers, IPART and Sydney Water.
- Second, Sydney Water's ratio of capex to opex is about 35% to 65%, which translates to capital costs (ie a return on and of investment) making up just under 50% of total costs (Figure 10-8). This is in contrast to parts of the electricity industry where the historically reported ratio of capital costs to opex costs is closer to 30:70. Also, our capex EBSS is only a partial scheme, applying to ongoing expenditure rather than major projects.
- Third, by introducing an EBSS for both opex and capex, the incentive to inefficiently substitute between the two types of expenditure is much reduced.

Further, Sydney Water is suggesting design elements of the EBSS scheme that will limit the negative aspects seen in the Australian electricity industry and strengthen the regulatory incentives to catch-up to top industry performers and improve overall efficiency.

Figure 10-8 – Historical ratios of Sydney Water's capex and opex



This is important, and it mirrors historical best practice evident in the UK water sector. In the UK, the experience with EBSS mechanisms over the past 20 years has seen further strengthening of the EBSS incentives, particularly with firms being arguably more engaged in the process, as is Sydney Water. It is worth noting that Ofwat's ability to compare performance among many companies gives an extra dimension to the use of incentive-based regulation.

However, what is most crucial is that Ofwat has strengthened incentives in a number of inventive ways, and in doing so improved the performance of the overall sector.

The improvements, outlined in Chapter 4, have broadly included:

- incentives for catching up to top performers, extra rewards (in the form of a multiplier of basic rewards) for those at the top for continuing to out-perform, and penalties for poor performers
- rolling incentives for both capital and operating expenditure
- service quality incentives
- menu regulation for capital expenditure through the capex incentive scheme (CIS).

Our EBSS proposals only apply to water capex, and water and wastewater opex. We are not proposing it applies to wastewater capex. However, we are considering schemes in which we may choose opex instead of capex as the lowest cost solution for society. At present, this would not be as beneficial as an EBSS scheme, because we would be penalised via the EBSS opex scheme for incurring higher opex. One solution could be to include a 'true-up' mechanism to address this.

10.10.2 EBSS and the use of benchmarking

One option to address the information asymmetry problem is through strengthened benchmarking. This approach is important and has merit in that it improves transparency and the quality of regulatory decisions. Ofwat and Ofgem use benchmarking to enhance their use of EBSS.

However, there are inherent challenges with benchmarking, including (but not limited to) the following.

- Models are necessarily incomplete - there are many factors specific to any particular firm that affect its costs and not all can be incorporated in models.
- Data can be of variable quality and results can be susceptible to data errors.
- The number of comparators may be limited.
- The consequences of getting the allowed costs ‘wrong’ are asymmetric and fall onto the firm and its customers.

In principle, better information from an EBSS complemented with benchmarking allows a regulator to narrow this risk and the margin allowed. So, regulators globally have sought to improve the quality of benchmarking and the range of information available for estimating efficient costs. But they have proceeded with caution when using benchmarking information and results. For example, in its advice to Ofgem, CEPA advised that:

> Benchmarking is an important tool that can inform judgements about efficiency. However it is only a tool and cannot substitute for judgements based on a wider range of evidence[94].

Further details of the operation of the EBSS, its mechanics, and the difference between the operation of an opex and capex EBSS are outlined in Appendix 5.

10.11 Managing cost risks

Under the current regulatory model, IPART sets Sydney Water’s prices on a forward-looking basis for a four-year period. Prices are set to be sustainable over the regulatory period. However, there will inevitably be uncertainties during the period, such that costs outside the control of an efficient company are too uncertain to be included at the time prices are set. The recent repeal of the carbon tax and subsequent refund to customers is a good example.

We believe an explicit cost pass-through methodology ought to be in place to manage the risk that these uncontrollable costs occur, and allow us to pass through efficient costs to customers. Sydney Water’s WACC estimated by IPART does not recognise or allow for non-systematic risks. We argue that they cannot be ignored, and should be addressed in ex-ante adjustments (through a probabilistic assessment of the risk) or ex-post adjustments, in a cost pass-through mechanism.

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[94] CEPA, *Background to Work on Assessing Efficiency for the 2005 Distribution Price Control Review, Report to Ofgem*, September 2003, p 8.

As outlined in Chapter 4, such schemes are a standard part of the regulatory framework in the energy sector in Australia and in the UK water and energy sectors. The electricity sector in Australia allows for cost pass-throughs, but also contingent cost mechanisms.

A cost pass-through methodology would contribute to regulatory best practice objectives and are in the long-term interest of customers by:

- **setting efficient prices** – ensuring prices reflect an accurate estimate of efficient costs based on reasonably certain assumptions
- **efficient risk allocation** – allocating certain risks to customers only when it is appropriate and efficient to do so
- **ensuring financial sustainability** of Sydney Water – meaning Sydney Water can continue to maintain and/or improve its service quality for customers.

We have identified three types of risks which could be addressed in a methodology:

- There is a risk that costs of existing projects could vary materially from those included in the regulatory allowance, for reasons outside Sydney Water's control.
- There is a risk that material costs emerge which are not included in the regulatory allowance. These could be due to changes in legislation or legal standards, or a regulatory obligation. For example, Sydney Water might be obliged to meet higher wastewater treatment standards.
- There is a risk that costs occur due to unforeseen circumstances that would have a substantial effect on a firm, from *force majeure* events such as earthquake, bushfire or pandemic illness (often referred to as a risk of 'shipwreck').

In practice, IPART already employs both ex-ante and ex-post approaches.

- The ex-ante approach addresses the potential costs of using extra pumping to transfer more water from the Shoalhaven river, as a drought response measure. Costs are included in the bulk water price Sydney Water pays to WaterNSW, irrespective of whether the costs are incurred.
- The ex-post approach provides for us to recover the additional costs from customers for operating Sydney Desalination Plant (SDP) (if required) using an agreed formula.

We believe these approaches could be the basis for a methodology that covers other costs not included in the price determination. Our preferred approach is to use an ex-post adjustment to prices, to recoup additional revenue to cover additional costs only if they are incurred.

Managing cost risks – proposed process

Under our preferred approach, if such risks occurred, Sydney Water would apply to IPART to adjust prices to recoup the additional revenue required, until the end of the current regulatory period. We would agree on a process with IPART to do so. The mechanism should also apply if an adjustment was merited to return revenue to customers.

Additionally, we believe Sydney Water should be obliged to report major cost events to IPART (whether beneficial or adverse) and pass the benefits to customers, if appropriate. We could report these as part of the Annual Information Return (AIR) process.

The methodology should also allow IPART to offer to adjust prices if it thought circumstances warranted a change in allowed revenues.

Sydney Water recognises that such schemes come with administrative costs. Neither should a cost pass-through methodology be a substitute for poor planning or forecasting. Adjustments would only be made if it was shown that changes were outside the control of Sydney Water and that Sydney Water is operating prudently and efficiently. Consequently, to minimise these potential costs and provide us with the right incentives, we would propose the constraints as shown in Table 10-3.

Table 10-3 – Proposed constraints on risks within the cost pass-through methodology

	Material variance	New obligations	Shipwreck
Materiality threshold • variance in allowed costs is material	✓	✓	✓✓[95]
Uncertainty • the project costs were agreed to be subject to uncertainty at the determination[96]	✓		✓
Obligations • the costs are reasonably required for Sydney Water to meet its obligations[97]	✓	✓	✓
Not already funded • costs are not already in Sydney Water's regulatory allowance	✓	✓	✓
Uninsurable			✓

[95] The double tick means the threshold would be higher for shipwreck events than for others, to reflect the higher significance

[96] The purpose of the methodology is to deal with cost forecasting uncertainty for Sydney Water's price review submission. Therefore, the status of the project at the time of the regulatory determination must be uncertain including, specifically one of more of the following: i) It is not sufficiently certain that the event or condition will occur during the regulatory period; ii) The costs associated with the event or condition are not sufficiently certain; iii) The timing of the project is uncertain.

[97] Our obligations include those set out in our Operating Licence, environment protection licences (EPLs), the *Australian Drinking Water Guidelines*, the *Sydney Water Act 1994* and the *Water Industry Competition Act 2006*, or resulting from a Ministerial Direction.

- the costs are not efficient to fully insure (either through external or self-insurance) to meet the costs of it occurring[98]

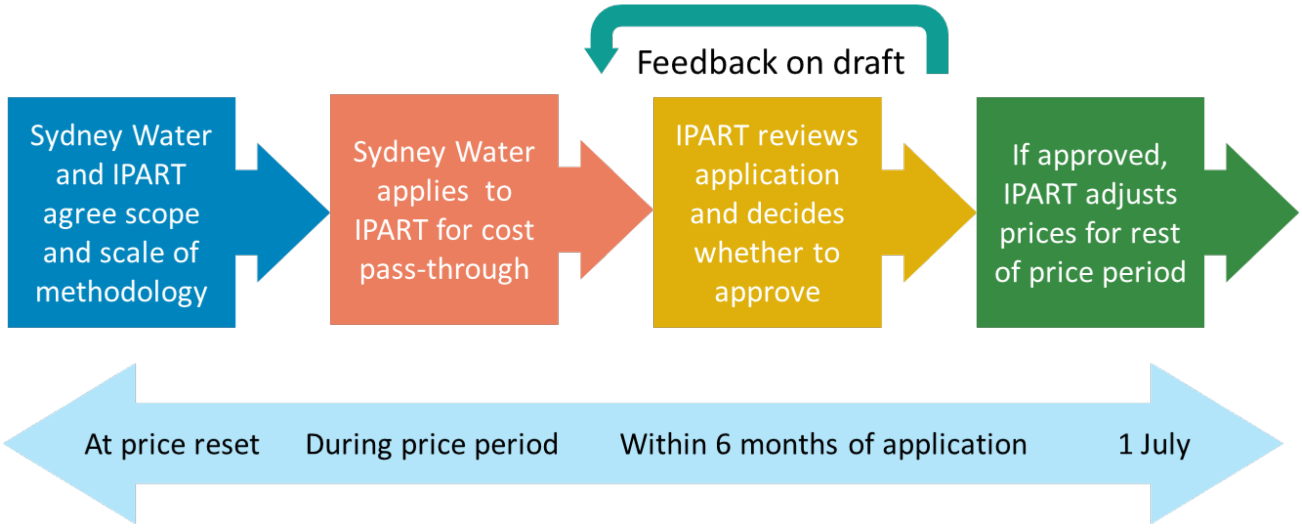
The materiality threshold would be determined by referring to opex or capex, for example:

- based on the forecast combined opex and capex for the proposed solution, where that forecast expenditure is greater than $50 million or 5% of the value of the average annual combined expenditure allowance approved by IPART for the relevant regulatory period
- for shipwreck events, be at least 1% of revenue for remaining years of regulatory period.

We propose the following process to manage cost risks.

- Sydney Water would decide if there are relevant changes in circumstance which support us applying to IPART to adjust the regulatory allowance. Sydney Water would show in its application how the relevant constraints have been met.
- On receiving an application, IPART would assess Sydney Water's project-specific forecast capital and incremental operating expenditures, determining the impact on the revenue requirement over the remaining regulatory period.
- If IPART approves the application, we would adjust prices at the start of the new financial year.

Figure 10-9 – Proposed process for managing cost risks



[98] Sydney Water is not obliged to claim for a positive cost pass-through, but we propose an obligation under the proposed scheme for Sydney Water to notify IPART when a negative pass-through event occurs, and for Sydney Water to pass that benefit onto customers.

10.11.1 Proposed methodology for cost projects

We propose the following methodology to calculate the final price impact to customers, in any given year in which the three project types discussed above are triggered by the agreed events, and the overall cost approved by IPART, which includes a prudency review.

$$Incremental\ revenue\ requirement\ (IRR)\ per\ customer\ _{kt}$$
$$= \frac{(\delta ROA_{kt} + \delta RofA_{kt} + \delta Opex_{kt}) + \delta Tax_{kt}}{Customers_{kt}}$$

$Where$:

- $RofA_{kt} = Return\ of\ Assets = \left(\sum_{j=1}^{5} \frac{\delta_k^j.Capex_{kt}}{A_{kt}^j}\right)$
- $ROA = Return\ on\ Assets = \ \left(\sum_{j=1}^{5} \delta_k^j.\,Capex_{kt}\right).WACC\ _{pt}$
- $Opex_{kt} = Operating\ expenditure.$

And

- $\delta_k^j = per\ cent\ of\ project\ k\ which\ falls\ into\ resource\ category\ j\ for\ project\ k\ at\ time\ t,$

  $$noting\ that\ \sum_{j=1}^{5} \delta_k^j = 1\,;$$

- $A_{kt}^j = the\ assest\ life\ remaining\ for\ resource\ category\ j\ of\ project\ k\ at\ time\ t$
- $Capex_{kt} = total\ capex\ for\ project\ k\ in\ time\ t;$
- $WACC\ _{pt} = the\ post - tax\ real\ WACC\ in\ period\ t;$
- $j = is\ resource\ category\ type, being\ one\ of\ the\ following\ 5\ categories$:
  - $civil;$
  - $electronic;$
  - $mechanical;$
  - $electrical; or,$
  - $non - depreciable.$
- $k = is\ specific\ cost\ project; and,$
- $t = 1, \dots, n\ time\ periods.$

Importantly the range of projects, *k*, outlined above has the following approximate efficient cost splits δ_k^j for each dollar of capital expenditure for the range of resource category types, *j*, Sydney Water does. See Table 10-4 for a non-exhaustive representative list of the splits for each project.

Table 10-4 – Representative list of the splits for each project

	Civil	Electronic	Mechanical	Electrical	Non-depreciable
Biosolids	50%	10%	30%	10%	0%
Building	100%	0%	0%	0%	0%
Electronic (excluding IT)	0%	100%	0%	0%	0%
Electronic control meters	0%	100%	0%	0%	0%
Electronic control valves	0%	100%	0%	0%	0%
Field monitoring equipment	0%	0%	100%	0%	0%
IT	0%	100%	0%	0%	0%
Laboratory equipment	0%	0%	100%	0%	0%
Land	0%	0%	0%	0%	100%
Modelling/planning	0%	100%	0%	0%	0%
Odour control plant renewals	0%	0%	50%	50%	0%
Plant and equipment (eg cars/trucks, furniture etc)	0%	0%	100%	0%	0%
PSP mains	30%	0%	0%	0%	70%
Rechlorination plants	25%	5%	35%	35%	0%
Renewable energy assets	68%	7%	16%	10%	0%
Reservoir mixers renewals	0%	0%	50%	50%	0%
Reservoirs (except mixers)	100%	0%	0%	0%	0%
SCADA and IICATS	0%	100%	0%	0%	0%
SPS growth	50%	10%	20%	20%	0%

	Civil	Electronic	Mechanical	Electrical	Non-depreciable
SPS renewals - mechanical/electrical only	0%	0%	50%	50%	0%
SPS renewals - others	50%	10%	20%	20%	0%
Stormwater mains/channels	100%	0%	0%	0%	0%
Wastewater main renewals	100%	0%	0%	0%	0%
Wastewater mains growth	30%	0%	0%	0%	70%
Water mains	100%	0%	0%	0%	0%
Water meters	0%	100%	0%	0%	0%
WFP renewals	50%	10%	25%	15%	0%
WPS growth	50%	10%	20%	20%	0%
WPS renewals	50%	10%	20%	20%	0%
WWTP growth	50%	10%	30%	10%	0%
WWTP potable water savings	50%	10%	30%	10%	0%
WWTP process and reliability improvement	0%	5%	48%	48%	0%
WWTP renewals	0%	0%	50%	50%	0%

The above range of resource category types *j* has the following approximate asset lives for the average project, as shown in Table 10-5.

Table 10-5 – Asset lives for the average project

	Civil	Electronic	Mechanical	Electrical	Non-depreciable
Water/stormwater/wastewater	100	15	30	25	N/A
Corporate	68	10	30	25	N/A

10.11.2 IPART Act and cost recovery methodology

We recognise there may be constraints in the IPART Act on IPART's ability to implement cost recovery mechanisms such as those we have outlined here. We believe that the methodology we propose would provide IPART with the authority to address those concerns and take these proposals forward.

Further detail of the cost pass-through methodology is outlined in Appendix 5.

11 Regulatory application

Key messages

- Through our modernising regulation project, we have identified a number of existing regulations that can be improved. To ensure better long-term outcomes for Sydney Water and customers we propose:
  - adjustments to the regulatory tax allowance estimate to remove systemic issues that would lead to an efficient business being under-compensated for its tax liabilities
  - that regulation provides for the benefit of land sales to be shared 50:50 between Sydney Water and our customers
  - a regulatory treatment of finance leases that ensures a financially-neutral position, where the finance lease provides tangible net benefits for customers, and a reduction in operational and other risks for Sydney Water.
- For Rouse Hill we seek the following changes:
  - recovery of stormwater charges from 1 July 2016 from those customers receiving services who are not currently being charged
  - recovery of land acquisition costs associated with stormwater management costs, including costs identified since 2013, through charging existing and new customers the same $237 land charge increased by CPI each year.
- We believe the recycled water avoided cost framework:
  - provides a disincentive to invest in schemes by restricting cost recovery to 30 years
  - can be enhanced by IPART providing further guidance on how it assesses avoided costs.
- Our schemes delivered under government direction are:
  - St Marys Recycled Water Scheme (2007)
  - Rosehill Recycled Water Scheme (2008)
  - Green Square stormwater (2013).

Chapter 10 sets out our proposals for modernising the regulatory framework, to strengthen the incentives for Sydney Water to pursue cost efficiencies and provide greater price flexibility.

Our work on modernising regulation has also identified aspects of IPART's current regulatory treatment of specific issues that create perverse incentives and promote sub-optimal outcomes over the longer term for customers and Sydney Water's annual revenue requirement (ARR). These issues are in relation to the regulatory treatment of tax, land sales and finance leases.

As part of the pre-submission consultation process, we have already put forward our preferred positions to IPART for preliminary consideration.

In this chapter we provide our proposed approach on these existing regulations, along with reporting on a number of other regulatory requirements. The chapter is set out as follows:

- our proposed approach for regulatory treatment of tax, land sales and finance leases
- our proposals for the Rouse Hill stormwater drainage boundary and Land Charge issues
- our suggestions on enhancing the existing regulatory framework for cost recovery of recycled water
- the reporting of schemes under section 16A Directions
- outstanding issues from the 2012 Determination.

11.1 Adjusting our current regulatory framework

11.1.1 Regulatory tax

In calculating costs for a regulated business for the purposes of setting prices, IPART allows an amount in the revenue requirement for the tax that would be paid by an efficient business. By adopting a post-tax building block approach, IPART expects that the framework will more closely align the regulatory tax allowance with the tax liability, based on current Australian taxation legislation. This more accurately estimates the tax liability of a similar well-managed and privately-owned business.

The move from a pre-tax to a post-tax framework in the 2012 Determination resulted in an extremely low regulatory tax building block for Sydney Water. The building block was substantially below the actual tax paid. Our analysis (as presented in our position paper[99] to IPART in January 2015) showed that most of the differences between the statutory tax paid by Sydney Water and the regulatory tax allowance were due to the different frameworks and assumptions that applied.

Nevertheless we identified a number of internal inconsistencies in how the current regulatory tax allowance was calculated. We highlighted these tax anomalies in our position paper to IPART and proposed corrective actions with rationale to support our proposals. For these identified anomalies, we also proposed appropriate tax recovery adjustments that could be included in the tax revenue building block calculation.

To avoid potentially high regulatory tax losses or gains in any given year, and difficult to forecast taxable items, we have also recommended IPART apply a 'true-up' process for regulatory tax

[99] Sydney Water, *Regulatory treatment of tax – Sydney Water's analysis and position*, 21 January 2015, available on request.

adjustments. This proposed approach will enable us to recover the appropriate tax paid on certain items, including cash contributions, grants, asset contributions and property sales.

We understand that IPART may have concerns about a retrospective true-up on variable items that should be within our control (for example, property sales). In particular, it could be argued that a true-up process reduces the incentive to improve forecasts, which could have alleviated the issue. On that basis we have reconsidered our earlier retrospective true-up proposal on variable items in our original position paper, and have refined our position on these issues. In the light of the material nature of the actual and forecast tax loss on property sales in this current determination period though, we request IPART consider adjusting the net capital gains incurred over the 2012–16 price path.

Regulatory tax proposals

Below are details of our proposals on regulatory tax:

- Additional income items – for example capital gains from property sales – where appropriate tax should be recovered, should be added to the tax block for the tax recovery calculation.

  Under the current regulatory framework, the full receipts (including tax) from property sales are deducted from the RAB. However, we do not recover the capital gains tax paid on the sales. Not recovering regulatory tax will result in a tax loss to Sydney Water, and exacerbates the loss already incurred from having the full sales value deducted from the RAB. On this basis, we propose IPART includes an appropriate adjustment for the tax recovery on capital gains in the post-tax building block to rectify this anomaly.

- For the tax recovery on capital gains from property sales, we propose to recover the actual/forecast capital gain from the 2012 Determination in the subsequent 2016 determination period.

  This approach is in line with the current regulatory tax calculation using forecast tax depreciation in the post-tax building block framework. Adopting this approach will also reduce the uncertainty of the forecasts used for property sales and capital gains. This will ensure we recover an appropriate tax allowance, without needing a retrospective ‘true-up’ process as we previously proposed in our position paper in January 2015.

- For the forecast of cash and non-cash contributions in the tax block calculation, we have generally used a five-year average approach to forecast the figures for use in the tax building block.

  Under the post-tax building block framework IPART has determined that all cash and gifted asset (non-cash) contributions to regulated activities should be included in the assessment of the regulatory tax allowance. In our 2012 pricing submission we excluded the amount received from cash contributions for tax recovery only. For this submission, we have incorporated the appropriate tax recovery for this item in our tax recovery calculation.

- Our analysis in the position paper showed that there was an inconsistency in deploying CPI within the post-tax ARR calculation in the 2012 Determination. IPART used a higher CPI rate to calculate the cost of debt in the tax building block, yet applied a lower CPI rate in determining the ARR. This resulted in a lower regulatory tax allowance for Sydney Water. We understand that IPART accepts there is inconsistency, and this should be rectified in the 2016 Determination. Sydney Water has included the appropriate adjustment in our 2016 price modelling.
- Our analysis in the position paper also highlighted that there are situations where the tax treatment of operating expenditure under the regulatory and tax frameworks differ, for example, the current treatment of payment for finance leases. This has resulted in an over-deduction of operating expenditure under the post-tax building block calculation. We understand that IPART is aware that these differences should be rectified when they arise.

  We cannot apply this proposed treatment for payments of finance leases in our current tax block calculation, as we have adopted a different regulatory treatment in this submission.
- Our position paper has also highlighted a minor income item adjustment issue, where the gross (tax inclusive) amount is deducted from the determined notional revenue requirement, but tax paid on the income item was not allowed for anywhere in the 2012 Determination. This refers to customer income from S16A (of the *IPART Act 1992*) recycled water schemes. IPART has acknowledged the modelling oversight on this item.

For additional information on how we analysed and applied the proposed items in the building block calculation, see Chapter 5 or our January 2015 position paper, which is available on request.

11.1.2 Regulatory treatment of land sales

Sydney Water land and current regulatory treatment

Sydney Water manages an extensive portfolio of land assets within our fixed asset register (FAR). We categorise these properties as either non-surplus or surplus land assets. Surplus land assets are assets which we own, but are not integral to the delivery of our services. We identify these surplus land assets as being available for sale, primarily to be added to the Sydney housing market, or dedicated for community use through an extensive governance program. Through this governance program, we have identified about $444 million[100], ($2014–15) of surplus land to be sold between 2012 and 2020.

The current regulatory treatment of surplus land sales is to deduct the entire sales value (which also ignores regulatory tax treatments and forecasts[101]) from the Sydney Water RAB with all

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[100] About $33 million of this was sold in 2014. Due to revisions this figure is $3 million less than the total figure quoted in Sydney Water, *Regulatory Treatment of Land Sales,* April 2015. The revision does not impact the conclusions provided in this section nor the April 2015 submission of this topic.

[101] IPART, *The incorporation of company tax in pricing determinations. Other Industries – Final Decision*, December 2011

benefits going to customers[102]. As we outlined in a position paper submitted to IPART in April 2015[103], this treatment means that if we sold $444 million of surplus land assets, Sydney Water could incur a discounted net present value (NPV) loss of up to $222 million[104]. This is calculated as the difference over 100 years between the present value (PV) reduction in the RAB revenues equal to $444 million, and the interest payment savings on debt of the $222 million generated from the sales proceeds net of expenses and taxes.[105] This outcome gives us a large regulatory disincentive to sell land assets as part of the efficient management of Sydney Water's business. This arises primarily from the current regulatory treatment of land sales, where we lose the future year-on-year revenue stream as a result of the reduction in the RAB.

Creating the right incentives for regulatory land sales

For Sydney Water to sell land efficiently, IPART must put in place a regulatory incentive that is marginally net benefit positive[106] (benefits less costs is positive). This can be done by changing the current allocation of the benefits so that they are shared between customers and Sydney Water.

There is considerable regulatory precedent for sharing the benefits of not only land sales, but also the unregulated income generated from using regulated assets. While the non-land sales precedents do not appear directly relevant, they are important to consider as they relate to regulators desiging sharing rules that provide incentives for a regulated business to make appropriate commercial decisions, where it is efficient to do so, and provides customer benefit.

Regulatory precedents in other jurisdictions

Sydney Water has considered a number of existing regulatory precedents for sharing rules:

- the sharing rule for land sales determined by Ofwat
- IPART's letter to Hunter Water in 2013 on the sharing of land asset sales
- IPART's rule for rental income derived from renting space on regulated land
- the AER rules for unregulated services provided using existing regulated assets.

[102] IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other services, Water – Determination and Final Report*, July 2008, p 65

[103] Sydney Water, *Regulatory Treatment of Land Sales*, April 2015, available on request.

[104] The result assumes that the capital gains is on the full sales value, the nominal cost of debt is 6% and the real post-tax WACC is 5.6%. The assumption in relation to the capital gains tax can reflect reality for Sydney Water, as the book value of most land within Sydney Water's regulatory and tax asset base has been recorded at close to zero. This means that the sale value of any land asset has a taxable gain close to 100%.

[105] Sydney Water assesses benefits in terms of the decreased debt repayments that are required, and the foregone interest costs associated with that debt. If the business raised both debt and equity capital, then the analysis of the benefits should also include the decreased equity required.

[106] A positive net benefit is required because a net benefit of $0 means that Sydney Water is indifferent to the process of selling land and maintaining the status quo. This means any more efficient outcomes from a better management of land portfolio assets or sharing of benefits with customers and avoiding potentially inefficient holding costs of land are not realised.

Where the term α denotes the allocation of the benefit or sharing with customers, Table 11-1 summarises the results of the sharing rules based on precedents and other jurisdictions reviewed.[107]

Table 11-1 – Summary of precedents and other jurisdictions

Precedent	α (customer benefit)	Adjustment applied in true up
Ofwat – land sales	0.50	All actuals except final 2 years of regulatory period forecast based
IPART – Hunter Water property sales	0 surplus/non–operational, pre–2000 $0<\alpha<1$ surplus/non–operational, post–2000	Adjustment applied at time of sale
AER – shared assets	0.10	No adjustment due to predictable contractual nature of revenue from asset sharing
IPART – Sydney Water property rental	0.50	Currently no adjustment

In summary, up to 50% of proceeds from surplus land are shared with customers. The lower bound of 0, or no sharing, applies only to sales proceeds of assets that can be identified as surplus pre-2000, which was before the 'line-in-the-sand' inception of Sydney Water's RAB.

The upper bound of 50% sharing is based on the Ofwat property sales and IPART property rental precedents. Crucially, the 50:50 sharing rule for Ofwat was introduced as there was originally no sharing of the benefit of land sold with customers. The regulator became concerned that land was being sold that was required to maintain services to a minimum level, and as a result, introduced a 50:50 sharing of the sales value along with requirements that businesses introduced stronger governance programs. This combination strengthened the regulatory incentive to sell only surplus land where it was efficient to do so, and ensured a benefit is provided to customers from the sale.

Sydney Water agrees with the principle outlined by IPART in the original letter to Hunter Water. That is, for post 'line-in-the-sand' properties the value deducted from the RAB should be the value the property originally entered the RAB at, adjusted for inflation. However, we remain concerned that this rule may not be pragmatic to apply where multiple assets are being sold and where a majority of the land is operational and a pre 'line in the sand' asset. Such land will require an implied value.

[107] Each of the precedents summarised establishes sharing rules that, for the most part, deliver some benefit to customers. However, none of the treatments specifically address the regulatory tax issue outlined in Section 11.1.1.

The proposed regulatory treatment

Regulatory options and criteria for assessing the potential regulatory options

Sydney Water believes that for the regulatory treatment of land sales the two most appropriate solutions are:

- the 50:50 rule adopted by Ofwat
- the rule outlined by IPART for Hunter Water.

To determine the most appropriate rule we have assessed them against the following criteria:

- Sharing benefits to the extent customers have contributed to the asset – sharing the benefits of the land asset sales with customers, to the extent it can be determined that customers have paid for those assets via paying for the services supplied using those assets.
- It must provide an NPV-positive outcome to incentivise the sale of land where it is efficient.
- Existing regulatory precedent – IPART should consider regulatory precedent, especially where the rules have been in place for some time and have been demonstrated to enable pragmatic solutions that create the correct incentives.
- Certainty of approach – predictability and easily-forecast regulatory outcomes are desirable, as they help to minimise risk and variability of outcomes.
- Simplicity of approach – a straightforward and low administrative burden to the regulatory process and scheme is desirable.
- Transparent approach – helps maintain trust between Sydney Water, our customers and IPART, and ensures accountability and that review can be done easily.

These criteria are not exhaustive or necessarily mutually exclusive. They are, in our view, useful to judge which of the possible regulatory solutions, existing or new, might be most favourable for customers, Sydney Water, our shareholders and IPART.

Regulatory solution

Based on the criteria, Sydney Water believes the Ofwat 50:50 rule provides the most appropriate solution, as it:

- shares the benefits of lands sales with customers
- is likely to be NPV-positive – demonstrated by estimates from our April 2015 submission
- is based on good regulatory precedent from the UK
- offers certainty
- is simple and transparent.

Sydney Water supports the principles established by IPART in the letter to Hunter Water. That is, surplus land assets sold should not be deducted from the RAB if they were non-operational and held before the 2000 line-in-the-sand valuation. These are assets that customers would not have paid for through the services provided to them, so they should not share in the benefit of any sales. On the other hand, land acquired after the line-in-the-sand value, or held before the line-in-the-sand value and reclassified as suplus post-2000, should be shared with customers in some proportion, as they have in part paid for the land through paying for services the land provides.

We remain concerned though that this approach does not yield a transparent solution for customers or a pragmatic solution for the business. Given that the sharing rule will vary for all property sold post-2000, for this approach to work it would need a very simple sharing rule established for the pre line-in-the-sand operational property that was consistent and transparent.

Having a consistent, transparent and simple sharing rule for pre line-in-the-sand property is important for Sydney Water due to:

- the large number of surplus land assets we are proposing to sell
- Sydney Water and IPART appearing to apportion some implied value to non-depreciable assets in that 2000 line-in-the-sand valuation through the process of developing the RAB[108]
- 99% of our land assets in our fixed asset register being held pre-2000, meaning that customers may not share in the substantial portion of surplus land sold.

We recognise that in preferring the 50:50 approach of Ofwat, regardless of whether we decided the land was surplus before or after the line-in-the-sand valuation, we are effectively choosing not to distinguish between the sharing rule before and after 2000. Based on our land portfolio being made up of substantial pre-2000 asset, this is likely to provide customers with greater benefit from the sale of land than they have directly paid for services through their bills. Nevertheless, Sydney Water believes our proposed regulatory solution is principled and balances the benefits to customers and shareholders.

Customer impact of the proposed regulatory solution

We estimate the customer benefit from selling the surplus land valued at $444 million with a 50:50 regulatory treatment over the 2012–20 periods is a bill saving of $6.80 a year (in $2014–15) from 2020 onwards. This is made up of a drop in bills by $4.30 a year over the 2012–16 period, and a further reduction from additional land sales by $2.50 a year over the 2016–20 price path. In assessing the customer impact from the sale, we have ignored the potential one-off increase in bills from any adjustment to the tax building block allowed for in 2012–16 and 2016–20.

[108] We believe this results in a great degree of complexity that will be involved in unravelling the true nature of assets to apportion with customers.

Regulatory 'true-up' of the RAB

Given the size of the land portfolio being considered for sale in the current and upcoming price path, we propose that the 50:50 rule be applied to both 2012 and 2016 pricing periods, and be adopted when rolling the RAB forward to 1 July. Also, while not directly related to the true-up of the RAB, we believe that it would be appropriate for IPART to provide for a true-up process for regulatory tax. We have assumed that as there is a 50:50 sharing of the benefits of the land sales value, the effective capital gains tax Sydney Water should pay is only the half of the sales value that it retains. Using this approach, and the earlier assumptions, there is a positive NPV of the proposed property sales of $64 million.

Table 11-2 and Table 11-3 show our actual and forecast property sales proceeds and the related capital gains for the current and upcoming pricing periods. We have incorporated these forecasts in our submission.

Table 11-2 – Property sales proceeds for 2012–20 – before 50:50 split ($2015–16 million)

Current Determination	**2012–13**	**2013–14**	**2014–15**	**2015–16**	**Total**
Non Allocable	10.6	17.6	76.6	117.1	222.0
Water	2.8	4.0	4.4	41.0	52.2
Wastewater	1.6	7.4	3.6	2.4	15.0
Stormwater	0.1	0.0	1.7	0.0	1.8
Total Net Sales Proceeds	15.1	29.1	86.3	160.5	291.0
Next Determination	**2016–17**	**2017–18**	**2018–19**	**2019–20**	**Total**
Non Allocable	45.9	37.6	37.6	37.6	158.6
Water	0.0	0.0	0.0	0.0	0.0
Wastewater	5.2	0.0	0.0	0.0	5.2
Stormwater	0.0	0.0	0.0	0.0	0.0
Total Net Sales Proceeds	51.1	37.6	37.6	37.6	163.8
Total Sales Proceeds from 2012–13 to 2019–20					**454.8**

Table 11-3 – Capital gains on property sales for 2012–20 – before 50:50 split ($ nominal, million)

Current Determination	2012–13	2013–14	2014–15	2015–16	Total
Non Allocable	3.8	9.6	56.6	97.9	167.9
Water	1.7	2.9	4.0	14.3	22.9
Wastewater	0.8	3.9	1.6	1.0	7.3
Stormwater	0.0	0.0	1.5	0.0	1.5
Total Capital Gains	6.3	16.4	63.7	113.2	199.6
Next Determination	**2016–17**	**2017–18**	**2018–19**	**2019–20**	**Total**
Non Allocable	29.1	26.3	27.3	28.3	111.0
Water	0.0	0.0	0.0	0.0	0.0
Wastewater	4.1	0.0	0.0	0.0	4.1
Stormwater	0.0	0.0	0.0	0.0	0.0
Total Capital Gains	33.2	26.3	27.3	28.3	115.1
Total Capital Gains from 2012–13 to 2019–20					**314.7**

Summary

Our proposal is for 50 cents from every $1 of all sales proceeds to be shared with customers, and the other 50 cents with shareholders. The 50:50 rule has regulatory precedent, as it has been applied by Ofwat in dealing with land sales by regulated water utilities in the UK. We also believe it should apply to all surplus land sold, regardless of whether it was identified as being in the RAB before or after the 2000 line-in-the-sand. This is likely to mean customers get the benefit of land sales that they may not have paid for through bills. This will over-compensate customers.

Sydney Water estimates that by applying the proposed approach for land sales over the 2012–20 periods, customers will receive around a $6.80 a year reduction in customer bills from 2020 and onwards. Our estimated benefit from the 50:50 sharing rule is a positive NPV of $64 million.

We propose capital gains tax applies only to the 50% share of the sales value passed on to our customers. We also propose that the rule be put in place when forecasting revenues and land sales for 2016–20, and be used in the true-up process of the opening RAB for 2016.

11.1.3 Finance leases

Principles

In refinancing the existing agreements and developing the proposed treatment of the lease costs Sydney Water has adhered to the following principles:

- There should be tangible net benefits for customers. The outcome from renegotiating the agreements should be to reduce expected costs (after factoring in quantifiable risks) in net present value terms. Customers will only be better off if we can reduce our costs through the renegotiation.
- There should be reduced operational and other risks. A number of the risks, such as the operational risks from the deterioration of key assets, cannot easily be quantified. However, reducing these risks is an important objective of renegotiating leases.
- If principles (1) and (2) are met, Sydney Water should be able to recover the renegotiated lease costs. That is, the regulatory arrangements for finance lease costs should provide us with a reasonable expectation that we can recover the costs of the lease if the renegotiated lease reduces costs for customers and other risks.

The renegotiated outcomes are consistent with these principles and the proposed regulatory arrangements are based around ensuring that Sydney Water recovers the renegotiated lease costs and no more. The benefits to Sydney Water come from reducing operational and other risks.

Finance lease definition

According to Australian accounting standard AASB 117, a lease is an agreement where the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time. A lease is classified as a finance lease if it 'transfers substantially all the risks and rewards incidental to ownership of an asset'. There are no strict guidelines as to what constitutes a finance lease, however, there are guidelines within the standard.

Tax and accounting treatment of finance lease charges

For accounting purposes, finance leases are recognised as assets and liabilities on balance sheets of the lessees from their inception and subject to depreciation over time. The lease payments are split into notional interest and principal components. The finance lease liability reduces over time with the repayments of principal lease payments.

For taxation purposes, an immediate tax deduction can be claimed for the interest components, whereas the principal components are treated as payments to purchase the assets. These are accumulated over the term of the finance lease and would become depreciable for tax purposes after ownership of the assets transfers to Sydney Water at the end of the lease term.

Interest rate considerations

There are finance lease arrangements, such as some of Sydney Water's finance leases, where a part of asset ownership and operational risks stays with the lessor. The lessor would typically view and wish to incorporate in such lease agreements, not only the funding cost to the lessor, but also a premium to the lessor for risks associated with owning, operating and maintaining the asset.

The lessor risk premium could be considered as operational, but it is not separable from the funding cost component. The finance lease risk premium payments are efficient legitimate expenditures as the finance leases protect lessees from some potential future cost increases (for example, increased operational and maintenance costs).

The implied lease interest rates are likely to be higher when the long-term leases are entered in a period of low interest rates. It is because the lessor will factor into the lease possible increases in the fixed interest in the later years of the lease term.

Sydney Water's finance leases

Sydney Water currently has two contracts which include finance lease components:

- The Blue Mountains Tunnel Agreement (BMT) includes a finance lease for the Blue Mountain Wastewater Tunnel
- The Macarthur Water Filtration Agreement (WFA) includes a finance lease for the Macarthur Water Filtration Plant (WFP).

The Blue Mountains Wastewater Tunnel was built for Sydney Water by the private sector under a build, own and operate (BOO) contract in the 1990s. This arrangement has a substantial existing finance lease component, and involved constructing and operating a 39 kilometre tunnel to transport wastewater from the upper Blue Mountains area to the treatment plant at Winmalee. The driver for constructing the asset was to reduce wastewater discharges in the sensitive World Heritage-listed areas of the Blue Mountains.

For all above WFAs, the agreements to purchase water filtration services from the four privately-owned water filtration plants were separately established in the 1990s as build, own, operate (BOO) contracts. The Macarthur WFA was originally treated for tax and accounting purposes as operating 'off-balance sheet' service agreement, until renegotiated and amended in 2010.

The Prospect WFA and Wyuna WFA are currently treated for tax and accounting purposes as operating off-balance sheet service agreements. From 1 July 2016, we are proposing that the two WFAs for Wynua and Prospect, also be treated as finance leases.

Confidentiality clauses in the contracts contain restrictions preventing Sydney Water from disclosing the negotiations or terms of the agreements, without the consent of the relevant counterparties. Sydney Water has obtained the consent of the relevant counterparties to disclose certain confidential information to IPART, and this information has been set out in Appendix 10, which is confidential.

Appendix 10 highlights the business rationale for entering into such arrangements, which include the reduction of financial and operational risks, and improvements in operational and commercial flexibility.

Regulatory treatment of finance leases

Current regulatory treatment

IPART currently treats all finance lease charges as operating expenditure. This has the following implications:

- immediate recovery of finance lease payments.
- incorrect regulatory treatment of tax on lease payments.

IPART raised its concerns about the misalignment between the economic life of the leased assets and the period over which Sydney Water seeks recovery of the lease payments.

We have raised concerns about the misalignment between the tax treatment and the regulatory tax treatment, resulting in under-recovery of finance lease related taxes.

Regulatory options

Sydney Water identified two regulatory options to ensure recovery of finance lease payments and associated taxes:

- continue to treat finance lease charges as operating expenditure and increase regulatory tax provision for finance lease related tax payments
- recognise finance leases as assets and include in the RAB at an agreed date at the NPV of future lease payments.

Fundamentally, we believe that any lease extensions that we have renegotiated are financially and operationally sound, and will deliver a better deal for customers. Having achieved a positive value from these transactions, our objective then under any regulatory option is to only seek to recover the lease costs of these contractual arrangements. Our proposals will aim to achieve a financially-neutral position (NPV of revenue = NPV of costs and taxes) from the regulatory treatment of these transactions.

IPART's proposed regulatory treatment of finance leases

As outlined in Chapter 5, after discussions with IPART and a submission from Sydney Water[109] outlining our proposed position, IPART indicated its preferernce for the treatment of finance leases is to[110]:

- include the value of the underlying lease asset in the regulatory asset base (RAB) rather than treating it as an operating expenditure

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[109] Sydney Water, *Regulatory treatment of finance leases*, 10 October 2014

[110] IPART, *Fact Sheet, Regulatory treatment of finance leases*, January 2015

- have the asset value:
    - for new assets based on the efficient capital expenditure of a new asset
    - for existing assets, use either the lease payments to inform the RAB value or a depreciated optimised value.

The rule applies to both new and existing finance leases. When the lease payments are used, IPART is also proposing to use the ‘implied interest rate’ in the lease agreement to discount the future finance lease payments (principal and interest) to work out the amount to include in the RAB.

Risks of IPART’s proposed approach

IPART’s proposed approach poses some risks to our desire to achieve financial neutrality from the regulatory treatment of finance lease arrangements.

In general, it poses a cashflow timing disadvantage to Sydney Water compared with the current opex approach employed. It also imposes higher uncertainty and risks to Sydney Water. The reason being that key parameters such as the value of the asset, the asset useful life, and the returns Sydney Water can earn on the asset over a number of determination periods are uncertain. In contrast, the rate embedded in the lease is set from the inception date.

Interest rate risk

Finance leases typically involve an agreed or implied interest rate determined at the lease inception for the term of the lease. Once the lessee enters the finance lease arrangement, it has no control over the future finance lease interest payments, regardless of the changes to financial markets or regulatory regime.

Including the finance leases in the RAB with four-year resets of the regulatory WACC exposes the lessee to the regulatory interest rate risk, resulting in potential under-recovery or over-recovery of the lease interest rate payments. For example, if the implied rate is higher than the regulatory WACC it would result in a loss to the lessee. On the other hand, if the implied rate is lower than the regulated WACC, it would result in a gain.

Cash flow risk

The asset lease terms are typically significantly shorter than the asset economic lives.

Including the asset in the RAB and regulatory depreciation over the asset economic lives may expose the lessee to financial risk, due to a time lag between lease payments and recovering costs through regulated revenue.

Optimisation risk

The implication of IPART’s proposed approach is that the lessee would be subject to asset optimisation risk by IPART when determining the appropriate value of the underlying lease assets to be incorporated into the RAB.

Prudency of any contractual arrangements (including finance leases) should be considered in the context of the financial market condition, operational and commercial issues faced and information available when the regulated entity entered into the contract.

On this basis Sydney Water would prefer IPART to consider mitigating the risks and providing certainty at the outset.

Sydney Water's proposed regulatory treatment of finance leases

As highlighted earlier in the section, Sydney Water's objective is to achieve a financially neutral position (NPV of revenue = NPV of costs and taxes) for the regulatory treatment for these transactions that contain a finance lease component.

We have limited ability or scope to change the historical parameters of contractual arrangements established in the 1990s. Our preferred regulatory treatment is for all lease payments to be treated as operating expenditure with a relevant regulatory revenue tax provision. This is similar to the current regulatory treatment for both operating and finance leases, where the cash outflow for leases aligns fairly closely with cash inflow determined for these transactions as annual revenue requirements.

However, considering IPART's preferred position in its January 2015 Fact Sheet, we are proposing that finance leases are treated as follows:

- establishing separate RABs (one for water, and one for wastewater) for the finance lease assets, with civil, electrical, mechanical, electronic and non-depreciating (CEMLND) components
- determining the future finance lease payments (interest and principal) as in alignment with the accounting treatment
- determining the lease value for inclusion in the RAB as the NPV of future finance lease payments (interest and principal)
- using the prevailing regulatory WACC as the discount rate
- including the value of the underlying finance lease assets (approximately $680 million) in the opening 2016–17 RAB
- applying the similar RAB roll-over process to the RAB for finance leases, for adjusting any on-going capital expenditure (such as plant upgrade) to be incurred.

It may be difficult to estimate future regulatory WACC over such a long period. The lessee could lose or gain, subject to the actual regulatory WACC being lower or higher than the assumed prevailing WACC at the time the lease was included in the RAB. We have modelled the RAB, based on our estimated prevailing regulatory WACC proposed for the 2016 determination period.

To avoid the issue of under- or over-recovering returns, we propose that IPART could consider establishing a separate RAB for each finance lease and determining a fixed regulatory WACC over the lease term or over the useful life of the lease asset. An alternative option is to revalue the component of the RAB for the leases at each determination at the prevailing WACC. In this case, if the WACC goes up, the RAB will go down but with the adjustment to allow revenue in regard to the leases to match the costs, it will provide an effective means of ensuring Sydney Water recovers the costs of the renegotiated leases and no more. We have not at this stage fully incorporated the above alternative option (ie fixed regulatory WACC for each lease) in our pricing model in this submission, but we believe that this alternative option of treatment of finance leases, is in line with our key principles.

A separate RAB for finance leases is also essential to facilitate any changes to the finance lease charges resulting from any capital works completed or initiated over the previous pricing period (similar to other capital projects funded by Sydney Water). By adjusting the opening value of the RAB for finance leases under a roll-over process at every future pricing review, any over- or under-valuation for completed capital projects (such as plant upgrades) funded via finance lease arrangements could then be appropriately considered.

The proposed RAB for finance leases has a value of $683.2 million and a weighted average remaining asset life at 1 July 2016 of 54 years. Appendix 10 contains more details on each of the contractual arrangements and the individual RAB values for each scheme. Also see Chapter 5 for more details on the length of the regulatory asset lives and depreciation of the finance leases used in the pricing modelling.

11.1.4 Other

Implementing the current determination

Sydney Water made three departures from the 2012–16 determination. Two of the departures relate to *Schedule 4 – Recycled water services from the Rouse Hill Recycled Water Plant and stormwater drainage services in the Rouse Hill area*, while the third relates to Sydney Desalination Plant pass-through costs:

- **Rouse Hill land charge** – refer to Section 11.2.1.
- **Rouse Hill stormwater drainage charge** – refer to Section 11.2.1.
- **SDP pass-through** – annual adjustment to water service prices based on payments to, and water supplied by, Sydney Desalination Plant (SDP). The 2012 Determination provides for an annual adjustment to water service charges to reflect the actual operating regime of SDP in the previous financial year. Specifically, Sydney Water must use the charges paid to SDP and the volumes of water received from SDP in the previous financial year to calculate the adjustment. However, due to the timing for calculating the prices (generally in late May each year to be applied from July each year) and the variability of some of the network charges, Sydney Water will only be able to pass through the 10-month actual and two-month forecast SDP charges in the annual adjustment to water service prices.

  Bearing in mind the very tight indicative timescale of mid-June 2016 for releasing the final report and determination, IPART would need to consider the implications of adjusting the annual SDP pass-through costs well before this in order for Sydney Water to be able to implement prices from 1 July 2016.

11.2 Rouse Hill stormwater drainage boundary and land charge issues

11.2.1 Implementing the current determination (areas implemented or not implemented)

Rouse Hill land charge

This relates specifically to *Table 16 Stormwater drainage charge (Rouse Hill land charge) for new properties in the Rouse Hill area*, in IPART's 2012 Determination.

The current determination sets the maximum price for the Rouse Hill land charge at $969.21 a year (for five years). In August 2013, in response to concerns raised by affected customers, the NSW Government sought to reduce the land charge and asked Sydney Water to reconsider the amount of land needed to carry out stormwater drainage and flood mitigation in the Rouse Hill development area.

Subsequently, Sydney Water reviewed how much land it required for trunk drainage operations in the area. Based on information available at the time, the remaining 50 hectares nominated for acquisition in the Local Environment Plans was reduced to 11 hectares. This reduced the land charge to $237 a year (for five years) and was backdated to 1 July 2012. The NSW Treasurer approved this in August 2013.

Rouse Hill stormwater drainage charge

Boundary issue

Sydney Water is applying the Rouse Hill stormwater drainage charge in line with the maximum prices set by the current determination. However, we are not applying these charges to all customers within the Rouse Hill area, defined by the map included in Attachment A of the current determination. In 2013, we identified that this map did not accurately correlate to the map of the actual stormwater catchment. This meant some customers were receiving the service, but were not technically allowed to be charged by Sydney Water (because they were outside the defined area for charging). And some customers were not receiving the service, but were technically allowed to be charged (beause they were inside the defined charging area).

After we realised this, we only applied Rouse Hill stormwater drainage charges to customers within the common area of the map of the Rouse Hill area in Attachment A and the actual stormwater catchment. Sydney Water refunded stormwater drainage charges that had been paid since 1 July 2012 to customers whose properties were not within the boundaries of the map in Attachment A. We did not charge customers whose properties were within the map but were not in the stormwater catchment. For future determinations, Sydney Water is proposing to levy this charge based on receipt of services and update this map to include all properties within the Rouse Hill stormwater catchment.

Reduced stormwater drainage charge applied to Castlebrook Memorial Gardens

The price for stormwater services in the Rouse Hill area is more than for stormwater services in a declared stormwater drainage area. The difference in price reflects the difference in costs to build, operate and maintain the stormwater systems.

However, the current pricing determination introduces two anomalies that benefit non-residential customers within a declared stormwater drainage area and disadvantage non-residential customers within the Rouse Hill area. These are:

- an effective price cap for customers within a declared stormwater drainage area
- a reduced price for customers (within a declared stormwater drainage area) who have taken steps to reduce the impact of their stormwater run-off, and meet our assessment criteria. The reduced price is set at that for a 1,000m^2 site.

Castlebrook Memorial Park (within the Rouse Hill stormwater drainage area) is a very large site (360,000m^2) and the calculated annual charge in 2014 was $47,056. However, for properties within a declared stormwater drainage area, charges are capped at a maximum area of 45,000m^2. The annual Rouse Hill stormwater drainage charge for a 45,000m^2 property is $5,984. Also, Castlebrook Memorial Park invested in collecting, treating, storing and re-using stormwater on-site. A similar customer within a declared stormwater drainage area who introduces this type of stormwater management receives a low impact charge (equivalent to the charge for a 1,000m^2 site). The annual Rouse Hill stormwater drainage charge for a 1,000m^2 property is $132.99.

In June 2014, Sydney Water obtained the NSW Treasurer's approval to charge Castlebrook Memorial Gardens a reduced stormwater drainage charge, equivalent to that for a 1,000 m^2 property.

For all other charges Sydney Water has applied the charges set by IPART – either fixed prices or prices calculated using the methodology determined by IPART. On 1 July each year, as required under the determination, prices are adjusted for inflation using the inflation figures provided by IPART.

11.2.2 Proposals for 2016–20

Sydney Water proposes:

- to recover Rouse Hill stormwater drainage charges, from 1 July 2016, from all customers who receive stormwater services, including those who are currently not charged. At present, Sydney Water levies a Rouse Hill stormwater charge for each property of $140.33 per year ($2015–16).
- to recover costs associated with all land acquisition for stormwater management, including additional costs identified since 2013 (see Boxout 11-1).

Boxout 11-1 – Recovery of capital costs for Rouse Hill stormwater works

We recover most of our Rouse Hill stormwater capital costs through wastewater charges. These relate to civil works and are about $27 million ($2015–16).

We recover the remaining capex costs for land acquisition through the Rouse Hill land charge, which was a new charge IPART set in 2012. The land charge is based on estimates of the total amount of land Sydney Water needed to acquire for stormwater management and the number of new Rouse Hill properties. IPART's modelling assumed all new properties that connected to Sydney Water's systems between July 2012 and June 2022 would pay the land charge. This land charge would also be levied on new properties in the Rouse Hill area connecting to Sydney Water's systems and receiving stormwater drainage services over a five-year period.

The land charge was initially set at $969 a year ($2012–13) based on estimates that Sydney Water would need to acquire 50 hectares of land ($56 million, $2015–16). However, in 2013, we agreed with Government after public concerns about the charge were raised, to lower the charge to $237 a year ($2013–14). Only 11 hectares were included in the current charging rate.

The Treasury approved reducing the charge and noted the Department of Finance and Services' estimation that the charge be reduced to $237. Latest estimates by Sydney Water are that this area must be increased to around 19 hectares for civil infrastructure.

We propose to recover the increase in the land acquisition costs ($17.1m, $2015–16) from general wastewater charges. This would allow us to keep the land charge at the current level plus CPI for existing customers, and for new customers connecting to new properties by June 2026 (which extends the recovery period by four years).

The concept is in line with IPART's 2012 pricing determination for the Rouse Hill stormwater capital costs (civil works), where there was a proportional split of capital costs between the beneficiaries of the integrated water management approach used in this area.

An alternative option is for Sydney Water to recover these additional costs from customers connecting new properties by June 2026. Our modelling has shown that this would involve a large customer impact as we would need to increase the Rouse Hill land charge to $534 a year ($2015–16). This is not our preferred option.

11.2.3 Rectifying the boundary for Rouse Hill stormwater customers

Sydney Water provides stormwater drainage services to customers in the Rouse Hill area. At present, we levy charges for these services on properties within the Rouse Hill stormwater charging area. These charges include both the Rouse Hill stormwater drainage charge and the Rouse Hill land charge. A map of the charging area is on our website.

The Rouse Hill charging area is based on, but not identical to, a map of the Rouse Hill area included in the 2012 price determination as Attachment A. Subsequently, we identified this map to be an older version that did not accurately reflect the full Rouse Hill stormwater catchment area. The larger, correct area of the Rouse Hill stormwater catchment was determined in 2011 through topographical mapping by SKM and Sydney Water staff.

After this error was identified, we only levied stormwater charges on properties that fell within both the Rouse Hill stormwater catchment area and the map of the Rouse Hill area published in the 2012 Determination. This combined area is referred to as the Rouse Hill charging area.

As the Rouse Hill charging area is smaller than the Rouse Hill stormwater catchment area, about 2,300 Rouse Hill customers who receive stormwater services are currently not being charged. This includes an estimate for growth in the existing chargeable area, which may increase slightly, if land in currently uncharged areas in the catchment is also developed.

This pricing determination provides an opportunity to rectify this anomaly, which was due to an administrative error.

Rouse Hill stormwater drainage charge

Our preferred approach for determining which properties are subject to Rouse Hill stormwater charges would be for IPART to include a clause within the determination that states that all Rouse Hill properties that receive stormwater services will be liable for stormwater charges, and remove the map from the determination and remove or amend the definition of the Rouse Hill area. Sydney Water would be happy to provide suggested wording.

Under our approach, all properties within the Rouse Hill stormwater catchment area would be liable for Rouse Hill stormwater charges from 1 July 2016. We prefer this approach because it:

- is based on a user-pays principle
- allows us to recover costs from all Rouse Hill customers who are receiving stormwater services, which was the intention of IPART's previous determination
- aligns with the approach for applying declared stormwater drainage area charges.

Sydney Water would continue to publish a map of the area for Rouse Hill stormwater charges on our website.

If IPART does not agree to remove the map from the determination, we ask that the map is updated to reflect the topographically correct Rouse Hill stormwater catchment area. Sydney Water is able to provide IPART with this updated map.

Increase in the customer base receiving the Rouse Hill stormwater drainage charge

Table 11-4 outlines the current customer base receiving Rouse Hill stormwater drainage charges, along with the estimated additional properties which will receive charges as they have been deemed to receive stormwater services. These additional properties are made up of the estimated:

- 2,300 properties that receive stormwater services, but are not being charged
- 1,200 properties that are expected to be developed before July 2016. This growth estimate is based on current growth rates in the Rouse Hill chargeable area.

Table 11-4 – Rouse Hill stormwater drainage charge customer base, at time of submission, applying a user-pays principle

	31/12/2014 customer base	Assumed growth	Properties from boundary change	1/7/2016 customer base
Residential	24,378		1,645	26,023
Industrial	1,066		567	1,633
Exempt	298		37	335
Vacant Land	813		34	847
Land under development/occupied land	368	1,200	17	1,585
Total	26,923	1,200	2,300	30,423

11.2.4 Rouse Hill land charge

Operating costs of the stormwater trunk drainage system at Rouse Hill are recovered through the Rouse Hill Stormwater drainage charge. Historically, capital costs were recovered through the Rouse Hill trunk drainage system developer charge, which Sydney Water charged to all development that drained to the Rouse Hill stormwater system. However, after 2008, when the NSW Government set developer charges to zero, Sydney Water had no way to recover the capital costs for the Rouse Hill trunk drainage system.

As part of its 2012 Determination, IPART established a new charge to recover a portion of these capital costs, known as the Rouse Hill land charge. We apply this charge to all new properties in the Rouse Hill area for five years after the new property is connected. This was based on the principle that Rouse Hill customers are the major and direct beneficiaries of Sydney Water's land purchases, as this protects their properties from flooding. IPART set the charge based on estimates of the total amount of land Sydney Water would need to acquire for stormwater management plus the number of new Rouse Hill properties. We were to apply this to all new properties, connected to Sydney Water's systems between July 2012 and June 2022.

As noted in the 2012 Determination, there was a degree of uncertainty around costs relating to land acquisition, as they are difficult to forecast. While Sydney Water always seeks to negotiate the best price, ultimately costs reflect conditions at the time. For example, the Land and Environment Court may rule on prices in specific cases. Even when land sales are negotiated without recourse to the courts, previous rulings, which usually escalate with time, continue to set expectations for subsequent negotiations with other landowners.

The Rouse Hill land charge, initially set at $969 a year ($2012–13), was based on estimates that Sydney Water would need to acquire 50 hectares of land. After public concerns about the charge, Sydney Water agreed with Government in 2013 to lower the land charge to $237 a year ($2013–14), based on including 11 hectares of land in the charging rate.

Our preferred approach is to keep the existing land charge at the current level plus CPI, extend the recovery period by four years to June 2026 and allocate the remaining additional land acquisition costs of $17.1 million ($2015–16) to Sydney Water's wastewater RAB. Without the extended recovery period from customers to June 2026, the additional costs proposed to be included in Sydney Water's wastewater RAB will need to be increased $2.5 million to $19.6 million ($2015–16).

Sydney Water's proposed approach for additional land costs

Allocating the additional land acquisition costs to Sydney Water's wastewater RAB:

- reflects the original intent and design of the scheme, which was to minimise effluent impacts on the Hawkesbury-Nepean River as urban growth expanded
- largely retains the charging structure adopted in the last determination, which allocates operating costs to direct beneficiaries
- allows both direct and indirect beneficiaries to contribute to the costs of the scheme
- avoids a disproportionately large increase to Rouse Hill land charge customer bills
- has a minimal impact on general customer bills, adding around $0.40 (per customer) to general wastewater bills
- aligns with IPART's previously stated view that capital expenditure on drainage-related civil works in the Rouse Hill area improves the quality of water entering the Hawkesbury-Nepean River system, which indirectly benefits all of Sydney Water's customers. So, these costs should be shared by all of Sydney Water's wastewater customers.[111]

Sydney Water supports recovering costs for civil projects through general wastewater charges. The approach for managing stormwater at Rouse Hill benefits the environmental health of the Hawkesbury-Nepean River by reducing nutrients that contribute to algal blooms, weeds and reduced water quality. The river system supports a wide range of businesses, agricultural, aquaculture, tourism and recreational activities. The approach also aids flood control, which helps to increase the land available to facilitate development in the growth centres and contributes to the supply of affordable housing.

Under our approach there would be no change in the land charge amount for Rouse Hill customers, with existing and future customers continuing to pay the charge at the current rate plus CPI.

Chapter 5 provides more details on how the Rouse Hill land costs have been incorporated into the price modelling.

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[111] IPART, *Review of prices for Sydney Water Corporation's water, wastewater, stormwater drainage and other services from 1 July 2012 to 30 June 2016*, June 2012, p 85.

11.3 Recycled water – regulatory framework for cost recovery

Recycled water can have multiple benefits, such as increasing supply security, and through reducing discharges, improving visual aesthetics and the natural environment. But these benefits can be difficult to quantify. IPART has recognised that it is not straightforward to determine how to share the costs and benefits of recycling among the direct and indirect users.

IPART's 2006 report[112] sets out both the rationale for recycled water schemes and the regulatory framework underpinning cost recovery. Recycled water was seen as part of a system-wide approach to integrated water resource planning, ensuring the least-cost means of meeting long-term supply. IPART stated that it would review the guidelines as part of the current price review.

Other aspects of the system-wide approach to water resource planning include the use of water efficiency measures and reducing leakage. Historically, these measures have been considered individually, rather than as components of a single, integrated approach to sustainability[113]. However, this will change from 1 July 2015, when Sydney Water's new Operating Licence will come into effect.

A key new requirement of the Operating Licence is for Sydney Water to develop a methodology for an 'Economic Level of Water Conservation' (ELWC). The ELWC is required to cover (at a minimum) water leakage, water recycling and water efficiency (demand management). The new requirement means Sydney Water is required to take a more strategic approach to assessing a portfolio of ongoing and new investment in water conservation measures, as part of managing the broader supply and demand balance. The ELWC encourages Sydney Water to consider how best it can deliver water and wastewater services, cost-effectively and at the right prices.

Crucially, the ELWC means Sydney Water can take a broader consideration of the costs and benefits of recycled water and other activities, examining the financial, social and economic costs and benefits to support the delivery of the most cost-effective mix of these measures.

If the methodology identifies recycled water projects that are economically efficient, socially desirable and cost effective, Sydney Water would then plan and deliver them, in accordance with IPART's framework for recycled water cost recovery. For non-cost-effective schemes, we may have to consider alternative funding.

11.3.1 Current position – recycled water schemes

In 2013–14 Sydney Water supplied 13,000 megalitres of recycled water to residential and industrial customers and for environmental flows. A number of recycled water schemes contribute to this total. These are funded in a number of ways in line with IPART's funding framework:

[112] IPART, *Pricing arrangements for recycled water and sewer mining*, 2006.

[113] For example, note the separate measures for Water Use and Economic Level of Leakage in the current Operating Licence.

- schemes delivered pursuant to government direction are funded from the general Sydney Water customer base. (These schemes are subject to a Ministerial direction to IPART under Section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992*)
- schemes to service new development in growth areas of Sydney Water are generally funded through contributions from developers (developer charges) and by usage charges (mandated schemes)
- commercial schemes are funded by scheme customers under contractual arrangements (voluntary schemes).

Details relating to Section 16A schemes such as the St Marys and Rosehill recycled water schemes can be found in Section 11.4. Comprehensive revenue and cost information of recycled water schemes are provided in our Annual Information Return.

Sydney Water continues to track and ring-fence our recycled water costs and revenue in accordance with the approach that was detailed to IPART in our 2012 pricing submission.

Mandated schemes

Table 11-5 and Table 11-6 show the summary forecast output information for the two major mandated schemes, Rouse Hill and Hoxton Park. Only very marginal growth in recycled water volumes is forecast for these schemes.

Table 11-5 – Rouse Hill recycled water scheme forecast costs and revenues ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Operating costs	2.0	2.0	2.0	2.0	2.0
Operating revenue	3.9	4.0	4.1	4.3	4.5
Number of properties	27,153	28,300	29,544	30,916	32,272
Volume (ML)	2,159	2,248	2,346	2,442	2,535
Volume growth		4.1%	4.3%	4.1%	3.8%

Table 11-6 – Hoxton Park recycled water scheme operating costs and revenues ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Operating costs*	0.05	0.04	0.04	0.04	0.04
Operating revenue	0.24	0.26	0.29	0.31	0.32
Number of properties	3,743	4,304	4,856	5,276	5,581
Volume (ML)	129	148	162	173	180
Volume growth		14.4%	10.0%	6.3%	4.5%

* Water volume supplied through this scheme is forecast to comprise 100% of potable water. Operating cost excludes costs relating to potable top ups which is included in regulated opex

Some smaller residential recycling schemes are under consideration for developments in the following areas:

- Oran Park and Turner Road in the South West Growth Centre – supplying to about 1,000 dwellings, forecast 70 ML a year
- Colebee in the North West Growth Centre – providing to about 185 dwellings, forecast 12 ML a year
- Ropes Crossing in western Sydney – to supply to about 2,200 dwellings, forecast 76 ML a year.

In 2013–14, these schemes supplied in total 104 ML recycling water sales (ie from potable water top-up) to its customers. Sydney Water is currently reviewing the servicing options and pricing arrangements for these residential recycling schemes. The work will proceed over the next year.

Voluntary schemes

The Wollongong recycled water scheme, the biggest voluntary recycled water scheme, has been operating since 2006.

Table 11-7 shows some summary historical and forecast data of the scheme.

Table 11-7 – Wollongong recycled water forecast operating costs and revenues ($2015–16 million)

Historical/Forecast	2012-13	2013-14	2014-15	2015-16
Operating costs	1.8	2.0	2.2	2.0
Operating revenue	7.7	8.1	7.7	8.0
Volume (ML)	7,391	6,867	6,867	6,867
Forecast	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Operating costs	2.0	2.0	2.0	2.0
Operating revenue	8.0	8.0	8.0	8.0
Volume (ML)	6,867	6,867	6,867	6,867

Sydney Water also provides treated effluent (re-use water) to a number of small irrigation schemes such as parks and golf courses that are located close to wastewater treatment plants. The plants produce re-use water for their own purposes such as equipment cleaning. The re-use water sold is surplus to Sydney Water's needs. Third parties usually own the assets of the irrigation schemes. Sydney Water generally sets revenues to recover estimated costs of supply. The aggregate revenue, operating costs and volume of these recycling schemes is shown in Table 11-8.

Table 11-8 – Recycled water irrigation schemes forecast operating costs and revenues ($2015–16 million)

	2015–16	2016–17	2017–18	2018–19	2019–20
Operating costs	0.4	0.4	0.4	0.4	0.4
Operating revenue	0.1	0.1	0.1	0.1	0.1
Volume (ML)	1,282	1,282	1,282	1,282	1,282

Although Sydney Water is not seeking any cost recovery for any recycled water scheme under the avoided costs framework in this submission, we have identified some areas where the avoided costs framework could be enhanced.

11.3.2 Enhancements to the avoided costs framework

The avoided costs framework is meant to help water utilities apportion the costs and benefits of recycling appropriately. Under the framework, part of a scheme's costs can be recovered from all customers, if IPART agrees that that the recycled water scheme benefits the wider customer base.

Sydney Water supports the principle of recycled water and the avoided costs framework. We are in favour of an approach that benefits consumers, society and the natural environment. However, we have identified some areas where the avoided costs framework could be enhanced.

We believe the framework could benefit from greater clarity from IPART around the following issues:

- The extent to which the wider benefits and costs are incorporated into the avoided cost framework is uncertain. Developers, builders, homeowners and Sydney Water (and our customers) all bear costs and enjoy benefits in varying degrees from investment in recycled water. Sometimes there are wider costs and benefits, from recycled water decisions, which are not captured directly in the charges paid by local users. These are called externalities and private and social costs and benefits will not align when these are present. This means it is important for IPART to set clear guidance on the scope and scale of the externalities to be considered, and the relevant timeframe, in the avoided cost framework. It is also important to be clear where these externalities lie – with recycled water users, with Sydney Water's general customer base, or with the wider community.
- The regulatory treatment of avoided costs appears to give a disincentive to invest in recycled water. For example, the avoided cost framework restricts cost recovery to those incurred in the first 30 years of any development. Costs beyond the first 30 years of the scheme, including asset renewals, maintenance and operating costs continue to be incurred, but there is no guaranteed funding stream. Unfunded liabilities beyond the first 30 years would be at risk, because of the ease with which customers could substitute drinking water if recycled water prices are raised.
- Tax liabilities are potentially higher with recycled water schemes, as a consequence of the avoided cost framework, which capitalises operating costs and adds them to the wastewater RAB.
- There is an ongoing regulatory risk that IPART could dispute the avoided cost calculations submitted by Sydney Water after the investment has taken place. Disputes could occur on both the prudency of expenditure and the correct allocations between the provision of wastewater and recycled water services in recycled water projects. This could lead to under-funding by IPART of the avoided costs which means an escalation of potential risk of cost recovery for Sydney Water. We recognise that there is the potential for some of this uncertainty to be reduced once the ELWC comes into operation.
- There is also the longer term question of the role of recycling and the arrangements for cost-recovery, when customers are serviced by other market entrants. In particular, issues arise when competitors choose recycled water as part of their servicing plan for areas that are higher-than-average cost to serve. If a competitive market exists, Sydney Water raises the question of whether recycled water should be regulated at all.

Sydney Water agreed with the intent of the avoided cost framework to ensure socially-optimal schemes can be established for recycled water. However, there is an absence of certainty for Sydney Water under the current avoided costs framework. There also appear to be disincentives to invest in recycled water, through the limitations on future funding.

Sydney Water recognises that some uncertainty is inherent in the current regulatory framework and acknowledges that IPART must retain a degree of discretion when using its judgement at periodic reviews. However, we believe an increased level of certainty is possible, which would benefit Sydney Water and our customers. This could be achieved in two ways:

- First, IPART could compensate Sydney Water for the likely avoided costs, estimated at the start of the determination period, and then at the end of the period, use a 'true-up' mechanism to reconcile regulatory with actual costs.
- Second, IPART could inform us of how it would assess avoided costs under the recycled water guidelines, meaning Sydney Water retains responsibility for managing residual risk.

Sydney Water currently prefers the second of these two options as a more sustainable long-term solution. We will approach IPART for further clarity, using a case study based on the housing development at Marsden Park. In that example, recycled water solutions were costed and considered, but rejected partly because of concerns about the funding risk under the avoided cost framework.

11.4 Schemes delivered under government direction

The NSW Government has directed Sydney Water, under Section 20P of the *State Owned Corporations Act 1989* (NSW), to complete two recycled water projects. These are the Rosehill Recycled Water Project (formerly referred to as the Camellia Recycled Water Scheme) and the St Marys Recycled Water Project (formerly known as the Replacement Flows Project).

Both schemes were subject to a Ministerial direction to IPART under Section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW). This requires IPART to include Sydney Water's efficient costs of complying with the direction in the organisation's pricing, meaning customers fund some or all of these schemes.

The Ministerial directions were made for the St Marys and the Rosehill schemes in 2007 and 2008 respectively.

11.4.1 Rosehill recycled water

In the 2006 *Metropolitan Water Plan*, the NSW Government committed to increasing the amount of recycled water in Sydney to 70 billion litres a year by 2015. The Rosehill project was established to help achieve this goal.

The project is a privately financed partnership between Sydney Water and AquaNet Sydney Pty Ltd (AquaNet) to supply recycled water for industry and irrigation in Western Sydney. Sydney Water has a build own operate (BOO) recycled water agreement with AquaNet who owns and operates the recycled water supply network, while Veolia owns and operates the recycled water plant. The project was the first to be delivered by the private sector under the *Water Industry Competition Act 2006 (NSW)* (WIC Act).

Sydney Water supplies secondary treated wastewater from the Liverpool to Ashfield pipeline to a new water recycling plant at Fairfield. AquaNet then produces recycled water treated to a high level by ultrafiltration and reverse osmosis for supply to Sydney Water and AquaNet customers.

The high quality treated recycled water is suitable for irrigation, firefighting, use in cooling towers, boilers and some manufacturing processes.

The scheme commenced on 19 October 2011 and provides the high quality recycled water to the scheme's foundation customers.

Under the agreement with AquaNet, Sydney Water purchases recycled water from AquaNet and then retails it on to the foundation customers. AquaNet is able to retail recycled water directly to other customers.

Regulatory treatment of the 'cost gap' difference

The government direction requires IPART to allow Sydney Water to recover the difference between the cost of recycled water purchases from AquaNet, and revenues from the sale of recycled water from customers.

IPART includes this subsidy component in the price of water, which means all customers contribute. In the 2012 Determination IPART allowed Sydney Water to recover the cost gap through general water prices. The determined allowable amounts, averaging $13 million (in $2015–16) a year over the 2012 price period are shown in Table 11-9.

Since the scheme started, the recycled water revenues have always been lower than their costs. Over the 2012 price path, there is a forecast significant reduction in the demand for recycled water, thus its revenue. From this, the subsidy from drinking water charges is projected to be higher, at about $16 million a year for the 2016–20 price path.

The costs and revenue for the Rosehill recycled water scheme over the current and next determination periods are shown in Table 11-9.

Table 11-9 – Rosehill recycled water scheme net operating costs ($2015–16 million)

	Current determination period					Next determination period				
	2012–13	2013–14	2014–15	2015–16	Total	2016–17	2017–18	2018–19	2019–20	Total
Operating expenditure										
IPART	18.3	18.3	18.2	18.2	**73.1**					
Actual/Forecast	17.9	17.7	17.8	17.8	**71.2**	17.9	18.0	18.0	18.2	**72.0**
Variance	-0.5	-0.6	-0.4	-0.4	**-1.9**					
Revenue										
IPART	6.8	4.7	4.8	4.9	**21.2**					
Actual/Forecast	7.4	7.0	4.7	4.1	**23.2**	3.1	1.7	1.7	1.7	**8.2**
Variance	0.6	2.3	-0.1	-0.8	**2.0**					
Net operating costs										
IPART	11.5	13.6	13.4	13.3	**51.9**					
Actual/Forecast	10.4	10.7	13.2	13.8	**48.1**	14.8	16.3	16.3	16.5	**63.9**
Variance	-1.1	-2.9	-0.3	0.4	**-3.8**					

11.4.2 St Marys Recycled Water Scheme

The St Marys Recycled Water Scheme was also part of the NSW Government’s commitment in the 2006 *Metropolitan Water Plan* to increase the amount of recycled water in Sydney. It is Sydney’s largest water recycling project.

The scheme takes tertiary treated wastewater from the Penrith, St Marys and Quakers Hill water recycling plants and delivers it to the new St Marys Advanced Water Treatment Plant. Once at the advanced treatment plant the recycled water is treated to a high level using ultrafiltration and reverse osmosis technology. This highly treated water is then released into the Hawkesbury-Nepean River below the Penrith Weir.

The scheme contributes to the security of our drinking water supply. Since the quality of water discharged to the river from the advanced treatment plant is so high (like water released from the dam) an extra 18 billion litres of raw water is now held back in Warragamba Dam. This raw water was previously needed to replace flows into the river, but now can be used for drinking purposes. This release of recycled water into the Hawkesbury-Nepean River helps contribute to the healthy flow and quality of the river, and reduce the nutrient load.

The plant became fully operational in September 2010. It receives about 65 ML a day of tertiary treated wastewater from the three water recycling plants and produces up to 50 ML a day of highly treated water.

Regulatory treatment of costs

In line with the government direction, Sydney Water recovers the capital and forecast operating costs of the St Marys scheme through general water prices.

The capital investment for the scheme was allowed for and fully expended in the previous 2008 determination. The allowable operating costs in the current determination are fairly aligned with the actual/forecast operating costs. The forecast higher operating costs in 2016–17 and 2017–18 (as compared to later years of the 2016 determination period), reflect the periodic maintenance expenditure of the advanced water treatment plant, for example, replacing the reverse osmosis membrane.

The costs of the St Marys Recycled Water Scheme for the current and next determination periods are shown in Table 11-10.

Table 11-10 – St Marys Recycled Water Scheme net operating costs ($2015–16 million)

	Current determination period					Next determination period				
	2012–13	2013–14	2014–15	2015–16	Total	2016–17	2017–18	2018–19	2019–20	Total
IPART	7.7	8.0	9.9	10.6	**36.2**					
Actual/Forecast	6.9	6.7	6.7	9.2	**29.4**	9.3	9.2	7.7	7.6	**33.7**
Variance	-0.8	-1.3	-3.2	-1.4	**-6.7**					

11.4.3 Stormwater (Green Square – 16A scheme)

In October 2013, Sydney Water was directed by the NSW Government under Section 20N(1) of the *State Owned Corporations Act 1989* (NSW) to construct and amplify stormwater infrastructure for the Green Square development. In February 2014, the works were subject to a Ministerial direction to IPART under Section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW). This requires IPART to include Sydney Water's efficient costs of complying with the direction in our pricing.

The Green Square Stormwater Amplification Project

The project

Green Square is identified as Australia's largest urban renewal project, due to deliver 20,000 residential dwellings, house 40,000 new residents and cater for a permanent workforce of about 20,000 by 2030. One of the key issues hindering development in Green Square and work on the Green Square Town Centre is that the area floods at both Joynton Avenue and Botany Road.

To reduce flood risk, Sydney Water has worked with the City of Sydney over several years to identify and assess options. The project will create about 2.4 km of a new stormwater drain.

Sydney Water and the City of Sydney have formed the DG Alliance with UGL Engineering, Seymour Whyte Constructions, Parsons Brinckerhoff and RPS Manidis Roberts to build the stormwater drain. Detailed design work is underway with construction scheduled to start in mid-2015 and finish in late 2017.

Funding

The ‘Building the State’ package introduced in the 2012–13 Budget to boost housing supply, included the Housing Acceleration Fund (HAF). This was, amongst other things, designed to allocate funds for critical infrastructure to accelerate housing development. Sydney Water sought funding from the HAF for $36 million to complete the stormwater works for Green Square. In June 2013, the project was allocated $10 million from the HAF, leaving a shortfall of $26 million. The payment of the $10 million from the HAF was made as a single lump sum capital grant to Sydney Water in June 2015.

Expenditure to augment our stormwater assets to accommodate growth in Green Square will benefit the broader Sydney community. It will reduce local area flooding and the risks of flooding in stormwater events.

Regulatory treatment of costs

The Ministerial direction to IPART allows Sydney Water to attract a return on, and return of, capital through increased regulated stormwater charges from July 2016. The efficient cost that we can recover through prices excludes any costs we recover through the HAF or the City of Sydney Council.

Table 11-11 below outlines the capital costs of the scheme, and funding arrangements. The operating costs for the scheme are considered to be minimal and will be absorbed into existing contracts.

Table 11-11 – Green Square Stormwater Amplification Project funding arrangements ($ nominal, million)

	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	Total
Actual/Forecast Sydney Water costs	0.03	1.5	1.8	14.7	15.3	9.2	**42.4**
HAF funding (less tax)			7.0				**7.0**
Total costs to be funded through regulated stormwater charge							**35.4**

Note: Forward forecast assumes 2.5% year-on-year escalation as per IPART instructions

11.5 Outstanding issues from the current determination

In the 2012 Determination final report, IPART raised a number of issues to be addressed by Sydney Water in this, the 2016 pricing submission. The issues raised and Sydney Water’s responses are presented below.

11.5.1 Stormwater expenditure

IPART

IPART increased allowed stormwater expenditure from $9.4 million (in the draft determination) to $25.5 million in the final determination. Sydney Water forecast $32 million in the price submission. IPART will monitor actual expenditure over the 2012 Determination period.

Sydney Water response

Our stormwater expenditure over the current determination period will be above what IPART allowed in 2012. This overspend is primarily due to updated asset condition information leading to an increased number of assets requiring renewal. Further detail on stormwater capex is provided in Chapter 8.

11.5.2 RAB roll forward from 1 July 2012

IPART

RAB roll forward from 1 July 2012 for carbon-related costs.

Sydney Water

This is a non-issue, as IPART provided guidance to Sydney Water to apply a ‘regular’ non-carbon adjusted CPI to roll forward Sydney Water’s RAB from 1 July 2012. A carbon adjustment is not needed for the CPI applied to the RAB given that estimated carbon costs were excluded from Sydney Water’s capex estimate.

Also, we have used the CPI figures provided by IPART in its November 2014 Submission Information Pack for our 2016 price submission.

11.5.3 Demand forecasting model

IPART

IPART considered that the calibration data used for the forecast model was largely composed of restriction and Water Wise Rules, which might not reflect future conditions. IPART was to monitor the actual demand versus the determined/forecast demand.

Sydney Water response

This issue is addressed in Chapter 12.

In summary, over the current regulatory period we have seen greater water demand than was forecast. Sydney Water acknowledges that the lack of post-drought data used to calibrate the model in 2011 was a contributing factor to the under-forecast, but also that warmer than usual weather during this regulatory period has been a factor.

The model has since been recalibrated with post-drought data, and a hindcast using actual weather shows a very close alignment between the model prediction and actual demand. This indicates that the recalibrated model is accurate to the extent that we can predict the weather, and that the lack of post-drought data is no longer an issue.

11.5.4 Wastesafe charges for liquid waste traps >2 kL

IPART

IPART asked Sydney Water to justify why the charging level is appropriate.

Sydney Water response

Sydney Water uses Wastesafe, an electronic tracking system to monitor the generation, collection and transportation and disposal of grease trap waste.

During the 2012–16 price period the Wastesafe pricing methodology was changed (on 1 July 2013).

The new prices included:

- a flat liquid trap charge to cover the administrative effort of Sydney Water setting pump out frequencies and determining if the pump out has occurred (IT and reduced labour costs)
- a missed service inspection charge for liquid waste traps ≤ 2,000 litres
- a missed service inspection charge for liquid waste traps > 2,000 litres

The missed service inspection charges are to encourage compliance with the pump out schedules.

The charges are set to recover the additional (administrative and inspection) costs associated with bringing non-compliant customers back to compliance.

The main reason for the different charges, above and below 2000 litres, is that larger pits require two staff to attend on-site inspections to meet work, health and safety (WHS) requirements.

IPART should note that the missed service charges have only been in place since May 2014 (not 1 July 2013) due to issues with implementing the charges.

Table 11-12 – Wastesafe pits, pumpouts and missed service charge since May 2014

Pit size	Pit count		Pumpouts required		Missed service charges issued		Percentage of pumpouts that receive charge
<= 2,000L	11,540	83.2%	45,886	79%	1,845	92%	4.0%
> 2,000L	2,330	16.8%	12,032	21%	153	8%	1.3%
Total	**13,870**		**57,918**		**1,998**		**3.4%**

As shown in Table 11-12, the key points are:

- 17% of pits are greater than 2000 litres and account for 20% of pumpouts each year.
- we send about 10% of pumpouts a missed service letter

- we do not issue a missed service charge until a second consecutive pumpout is missed
- 8% of missed service charges were for pits greater than 2000 litres
- just 1.3% of the 12,032 pumpouts for pits greater than 2000 litres received a missed service charge.

11.5.5 Sewer usage charges

IPART

IPART will consider whether sewer usage charges should be reduced further and at what rate. IPART has indicated it would continue to reduce the discharge allowance for non-residential customers to 150 kL.

Our proposals about this are included in Chapter 10 and Chapter 5 of this pricing submission.

11.5.6 Recycled water

Refer to Sections 11.3 and Chapter 5.

11.5.7 Miscellaneous charges

Sydney Water's 2012 proposed charges for miscellaneous services were previously calculated consistently with IPART's miscellaneous charges formula as shown in Figure 11-1. In IPART's formula, we must consider only business unit overheads with no reference to include corporate overheads.

The charging level for Schedule 6 miscellaneous services have to date been based on IPART's formula. Any change to this costing principle may require a wholesale revision of all charges listed in Schedule 6. Since Sydney Water is not proposing any major change to the charges for miscellaneous services in the 2016 pricing submission, we have not revisited the above issue in our submission.

Also, the revenue from miscellaneous services is relatively insignificant and minor (less than $10 million a year) and have been showing a downward trend over the last few determinations.

Figure 11-1 – Comparison of IPART's and Sydney Water's Miscellaneous Charges formulae

IPART's Miscellaneous Charges formula:

Miscellaneous Charge = [(direct cost of labour including on costs + transport + equipment) x (business unit overheads)] + direct material cost

Sydney Water has calculated its costs in line with the following formula:

Miscellaneous Charge =Direct payroll cost (including on costs) + direct agency/contract costs + direct business unit overheads (inclusive of transport costs etc) + direct system support costs

12 Water demand and chargeable wastewater forecasts

Key messages

- Sydney Water has used the same approach to demand forecasting that was used in the 2011 submission and endorsed by IPART and industry experts. This approach is still considered robust. The model has been updated using the latest demand data and growth figures.
- Total demand over the next price path is expected to rise from about 515 GL in 2014–15 to 544 GL in 2019–20. Billed metered demand for residential and non-residential customers is expected to increase from 456 GL in 2014–15 to 483 GL by 2019–20. The update of the model has provided no evidence of any further 'bounce back' in water demand over the last three to four years.
- Average demand per dwelling is forecast to fall slightly as the proportion of BASIX dwellings increases over time. However, we expect average demand to increase because of our proposed lower usage price, which is likely to lead to an overall increase in average demand per dwelling. Furthermore, the number of dwellings we serve is expected to grow much faster which causes the forecast growth in total demand.
- Non-average weather conditions and more frequent weather extremes continue to be a key risk to the accuracy of our demand forecast. Deviations from average weather conditions can cause differences between forecast and actual annual water use of up to +/-5%.
- No significant increases are expected in the chargeable wastewater volumes. This assumes IPART makes no further changes to the daily allowance over the next price path. Any further changes would impact customers and affect Sydney Water's chargeable wastewater forecast.

The level of demand for water and wastewater services is a key consideration in our pricing proposal.

Estimates of total water demand affect our costs, because they underpin how much water we buy from WaterNSW, extract from the Hawkesbury-Nepean River, and the costs associated with treatment. Further, the expected billed metered demand – ie the volume of water used by our customers – determines our expected revenue.

In forecasting water demand, Sydney Water employs sophisticated panel data econometric techniques. Our model is constantly updated to take into account new information relating to demand, weather conditions and property growth. The model is also subject to a rigorous peer review.

Similarly, Sydney Water's estimates of chargeable wastewater usage impacts the level of revenue received from non-residential customers. We have updated our model and data to derive chargeable wastewater forecasts and these have been subject to a similar peer review process.

In this chapter, Sydney Water provides an overview of our forecast water demand and chargeable wastewater demand by outlining:

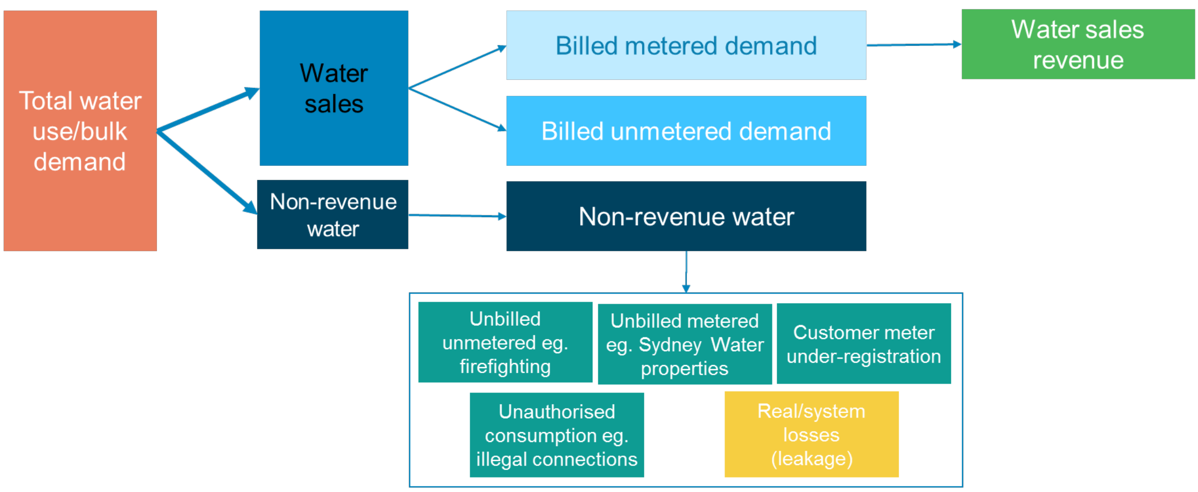
- the key terminology for water demand and the distinction between total water use and billed metered demand
- past, present and forecast water use in Sydney
- how the demand forecasting model has been updated
- the price elasticity demand estimates used to forecast the increase in demand as a result of the proposed decrease in the water usage price
- key risk and uncertainties associated with estimated water demand
- how we have developed forecasts for our chargeable wastewaster usage.

Due to the technical nature of the work that is done on demand modelling, greater detail about the information and estimation process is provided in Appendix 8.

12.1 Key terminology for water demand

Figure 12-1 provides an overview of the key water demand concepts, how revenue is raised from water sales, and costs associated with water purchased that are not being recovered.

Figure 12-1 – Overview of demand and revenues from water sales



Total water use equals the total amount of water produced by the water filtration plants plus the unfiltered water supplied to the Port Kembla steelworks. Unfiltered water use is included in billed metered demand. It therefore determines the forecast of raw water purchases from WaterNSW and water extracted from the Hawkesbury-Nepean river by Sydney Water. It also determines water treatment costs.

Billed metered demand is the volume of water used by customers who have a water meter (excluding water we use at our own sites). Billed metered demand determines the forecast of water sales revenue, which is why it is presented separately to the forecast of total demand.

The difference between total demand and billed metered demand is made up of billed unmetered demand and non-revenue water (see Figure 12-1). Billed unmetered demand is the (estimated) water use by customers who do not have a water meter. These customers do not pay for water use based on their actual demand (which is unknown), but through a higher service charge. Therefore billed unmetered demand is not relevant to forecasting water sales revenue and is not presented here.

Billed metered demand accounts for about 88% of total water demand, and billed unmetered demand about 1%. The remaining 11% is non-revenue water, the main component of which is real losses (leakage) at about 8%.

Throughout this chapter we use the terms water demand and water use interchangeably.

12.2 Water demand

12.2.1 Trends in water use

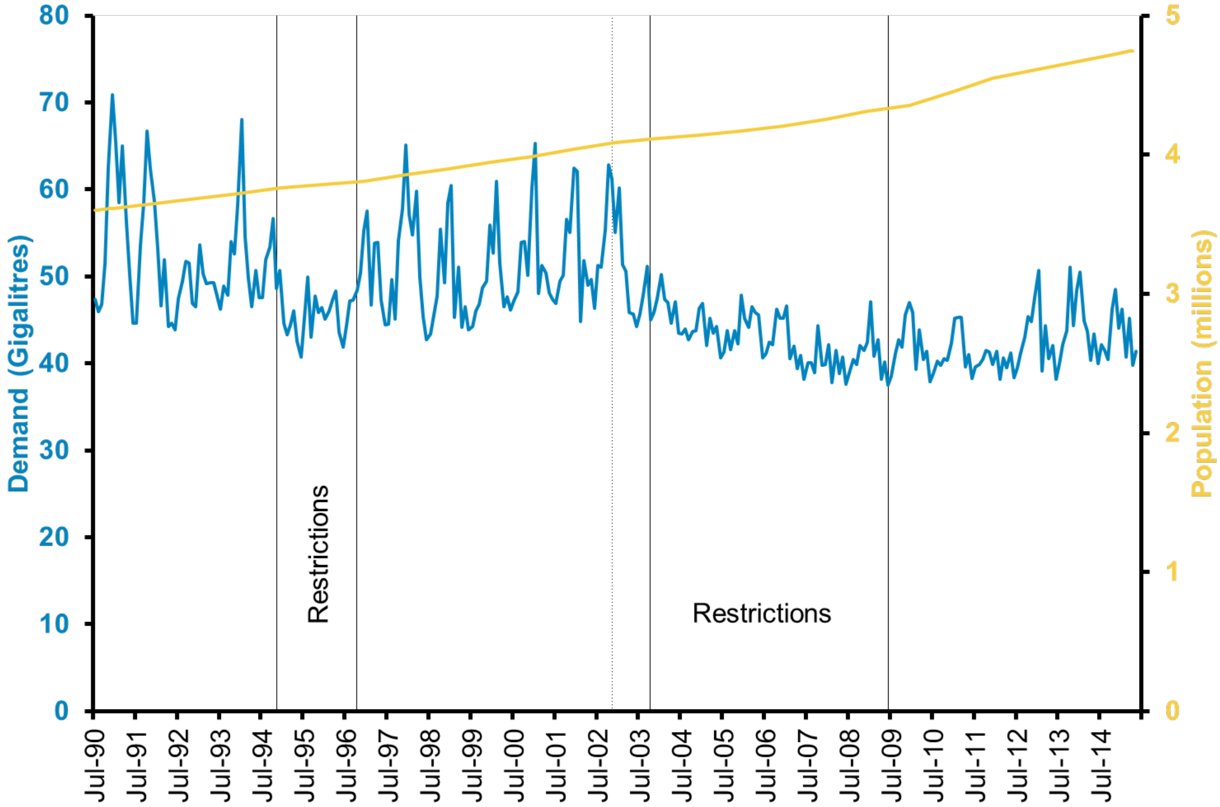
Figure 12-2 shows that compared with the early 2000s our customers are using about 100 GL a year less, a drop of about 16%. While total water use has dropped, our customer base has risen by about 15% to about 4.8 million people over that same period. As a result, on a per person basis, total water demand has fallen by more than a quarter to about 307 litres per person a day (LPD). This is well below the water usage level of 329 LPD in Sydney Water's Operating Licence.

The main drivers for the decrease in water use are:

- adoption of water wise behaviours and water efficient technologies (including dual flush toilets and efficient showerheads) by customers
- water conservation initiatives such as Sydney Water's water efficiency and leak reduction programs and government regulation such as BASIX
- structural changes in water use in the non-residential sector
- the drought from about 2003 to 2009 and the lack of significant bounce back following the lifting of drought related water restrictions.

These issues were all covered extensively in our last price submission in September 2011[114].

Figure 12-2 – Monthly total water use to May 2015 and population served with water



Total water use increased in 2012–13 and 2013–14 in response to the hot and dry weather. In 2014–15 demand has dropped again with a return to more average weather conditions. Based on actual demand to the end of May 2015 we expect total demand in 2015–16 to be about 515 GL[115], a 3% drop compared with 2013–14.

12.2.2 Forecast demand and dwelling growth

Total demand over the next price path is expected to rise from about 515 GL in 2014–15 to 544 GL in 2019–20. Of this total, billed metered demand is expected to increase from 456 GL in 2014–15 to 483 GL by 2019–20 (see Table 12-1).

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[114] Sydney Water, *Submission to IPART's Review of Prices for Sydney Water Corporation's water, sewerage, stormwater, and other services*, 16 September 2011.

[115] Preliminary figure is based on actual demand from July 2014 to May 2015 and forecast demand for June 2015.

Table 12-1 – Forecast demand (GL)

Demand component	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
Billed metered demand						
Residential	340	347	353	358	362	367
Non-residential[a]	115	115	115	115	115	116
Total billed metered	456[b]	463[b]	468	473	477	483
Billed unmetered & non-revenue	60	60	60	60	61	61
Total demand	515	523	528	533	538	544

a: includes unfiltered demand

b: total differs from sum of residential and non-residential due to rounding

The main driver of the forecast growth in demand is residential property growth. Between 2015–16 and 2019–20 about 96,000 new dwellings are expected to be connected to our water network (see below). Residential water demand is forecast to roughly grow in proportion to residential property growth.

Residential property forecasts are based on the NSW Department of Planning and Environment's 2010–11 Metropolitan Development Program (MDP) and the Illawarra Urban Development Program. They are informed by using appropriately zoned land, vacant land stock and building construction analysis and consultations with local councils and developers. For more information on the service forecast methodology for property, dwellings and meters see Appendix 8.

We are expecting more connections over 2016–20 because of:

- dwelling growth stimulated by state government housing and infrastructure funds, precinct acceleration, and city centre and urban reactivation programs
- new policies increasing the number of affordable rental housing, dual occupancy smaller lots, secondary dwellings, boarding houses, group homes, and seniors living options
- the greenfields in the growth centres starting to produce dwellings
- housing approvals being the highest they have been for a decade
- an increasing number of residential development applications.

Forecast growth in residential and non-residential property numbers is shown in Table 12-2.

Table 12-2 – Forecast dwellings served

	2015–16	2016–17	2017–18	2018–19	2019–20
Single dwellings	1,069,458	1,078,548	1,088,308	1,098,548	1,109,059
Dwellings in multi-residential properties	693,603	707,492	721,500	735,676	750,020
Total	1,763,061	1,786,040	1,809,808	1,834,223	1,859,079

Note: figures exclude dwellings in WIC Act developments which are not directly serviced by Sydney Water (eg Central Park Sydney in Chippendale)

Non-residential demand is expected to grow only slightly. New non-residential properties are mainly non-residential strata units which have relatively low water use. The slight growth in demand from new non-residential units is partially offset by reduced demand from other non-residential segments. For example, agricultural customer numbers are decreasing, resulting in decreasing demand from this sector.

12.2.3 Average demand per property

The overall growth in demand masks a complex interaction of competing forces in terms of average demand per property.

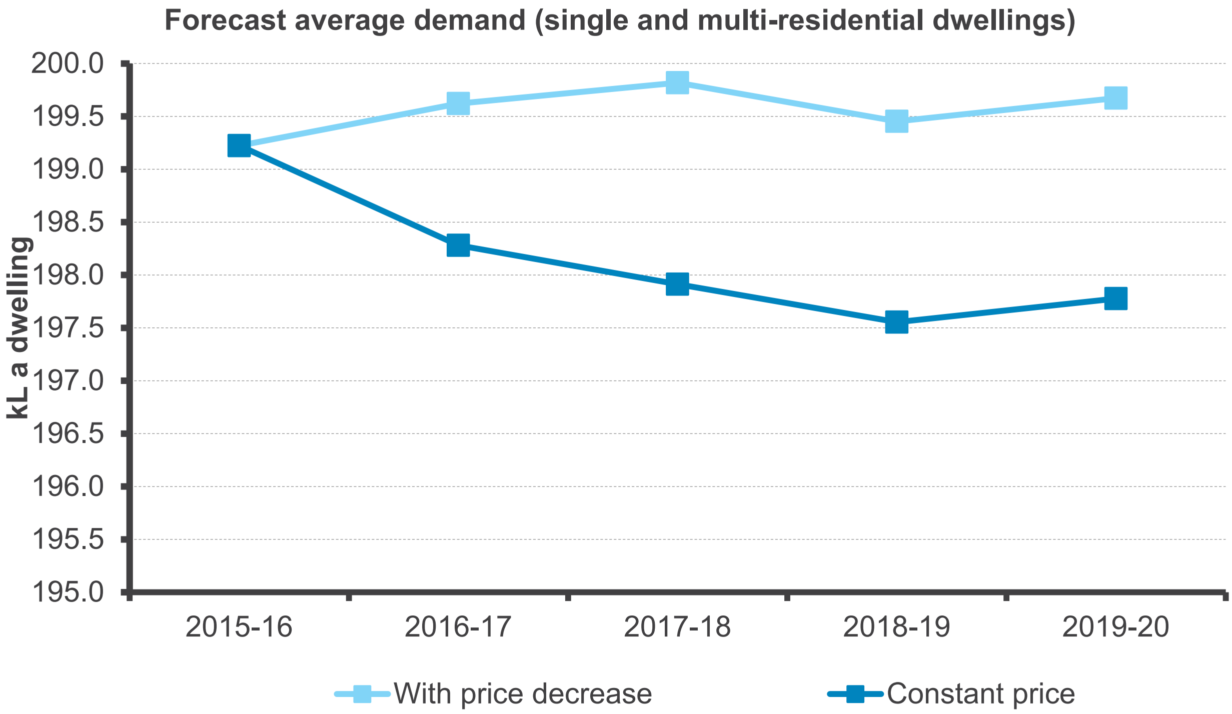
In general, there is a declining structural trend in average demand per dwelling, as the number of BASIX-compliant dwellings and the number of multi-residential dwellings increases as a propotion of total housing stock. Customers in both these types of property have lower average demand.

However, for the first time, Sydney Water is offering substantial reductions in the water usage price. As we explain later in this chapter and in Appendix 8, we assume that a cheaper price is likely to lead to an increase in demand. This offsets the general trend downwards in average demand per property, in the first two years of the period (2016–17 and 2017–18).

A final complication is the effect of the leap year, where an extra day's demand raises total demand and average demand for that year. This effect occurs in 2019–20, as shown by the increase in the final year.

The effect of these competing forces is shown in Figure 12-3.

Figure 12-3 – Average demand per property



12.2.4 Forecasting water use

Figure 12-4 shows actual water use and demand forecasts that have been prepared for previous price determinations. The yellow line is the latest forecast prepared for this pricing submission using the updated forecasting model. The updated model uses the same approach as endorsed by IPART and industry experts from our 2011 submission. However, the models have been updated using the latest water use data and higher property growth forecasts. Based on these models total demand over the next price path is expected to rise from about 515 GL in 2014–15 to 544 GL in 2019–20).

In the 2005–08 and 2008–12 price periods, actual water use was consistently below forecast demand. The two main reasons for this were:

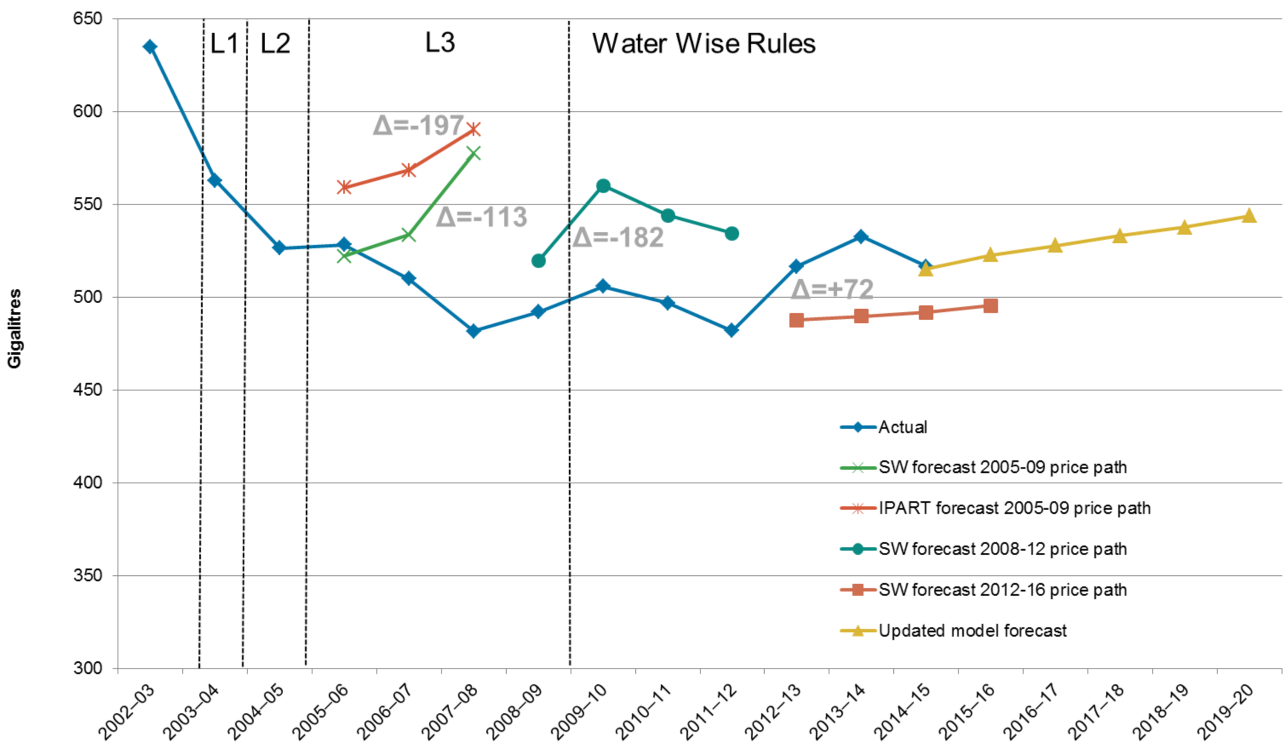
1. restrictions lasted longer than we assumed would be the case when we prepared our forecasts
2. demand did not bounce back as much as we expected once drought restrictions were removed in June 2009 and replaced with Water Wise Rules.

In contrast, actual water use over the first two years of the current price period (2012–16) has been 72 GL higher than we forecast in 2011. These two years were relatively hot and dry and were preceded by a relatively cool and wet year in 2010–11. The combination of a cool, wet year followed by hot, dry years gives the impression of a strong recent upward trend in water use suggesting bounce back of demand from water restrictions. In fact, much of the increase may be due to temporary weather effects. The impact of weather on water use is discussed further below.

Another factor that has contributed to the underestimation of demand is the higher than forecast demand by some large industrial users. This is also unrelated to bounce back from restrictions.

The forecast for 2014–15 from the updated model closely corresponds with the (preliminary) actual figure for 2014–15.

Figure 12-4 – Total water demand – forecast vs actual data 2002–20



Notes: Two forecasts are shown for the 2005 determination. The green line is the forecast as submitted by Sydney Water, the red line is an alternative forecast prepared by IPART's consultants and adopted by IPART in its determination. The actual for 2014–15 is a preliminary number based on actuals up to 31 May 2015 and a forecast for June 2015. The delta sign (Δ) shows the deviations between forecast and actual. A negative deviation means actual demand was less than forecast, a positive sign that it was higher than forecast.
L1 = Level 1 restrictions, L2 = Level 2 restrictions, L3 = Level 3 restrictions

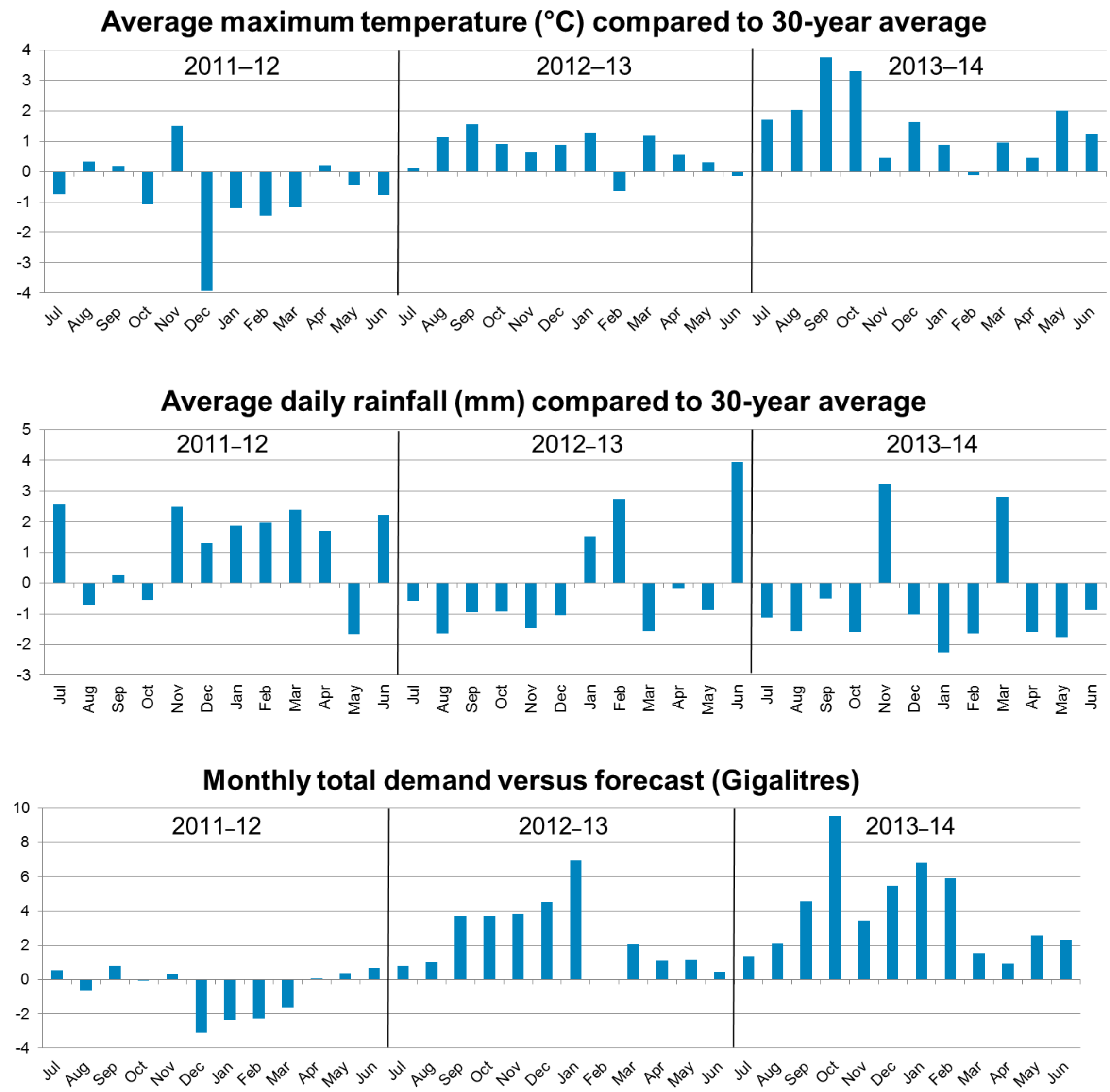
12.2.5 Weather impacts

Water demand forecasts are based on average weather conditions and we estimate that deviations of weather from average conditions can lead to variations in demand of up to 5% in any one year. The first two years of the current determination have been at the extreme end of possible variations from average weather which has contributed to the higher than forecast demand.

According to the Bureau of Meteorology's Monthly Weather Reports, the January to June 2014 period was the warmest on record and was the driest start to the year for the last 27 years.

The impact of these 'non-average' weather conditions on water use is illustrated in Figure 12-5. This Figure shows the deviation of maximum temperatures and rainfall from their long–term averages from 2011–12 to 2013–14 as well as the deviation of water use from the forecast for that same period. During 2012–13 and 2013–14, maximum temperatures were above average almost every month while rainfall, with the exception of a few spikes, was below average in most months. This resulted in higher than forecast demand during these two years. In contrast, 2011–12 tended to be relatively cool and wet, particularly during the second half of the year, resulting in actual demand being lower than forecast.

Figure 12-5 – Temperature, rainfall and water demand from 2011–12 to 2013–14



Note: Weighted average weather data from the Sydney Airport and Prospect Dam weather stations. The 30-year average is taken over the 30 years to June 2010.

12.3 Updating the demand forecasting model

12.3.1 Residential models

In collaboration with Dr Vasilis Sarafidis, an expert econometrician from Monash University, we have developed a modelling framework which was first used in 2011 for our price proposal for 2012–16. The approach is based on detailed segmentation of the residential customer base and panel data regression models of demand in each segment.

The model has been updated to better understand the drivers behind the higher than expected demand for water over this price path. We engaged Dr Sarafidis again to estimate the models. The results indicate that the updated model is robust and can replicate the fluctuations in demand in the last three years on the basis of weather conditions.

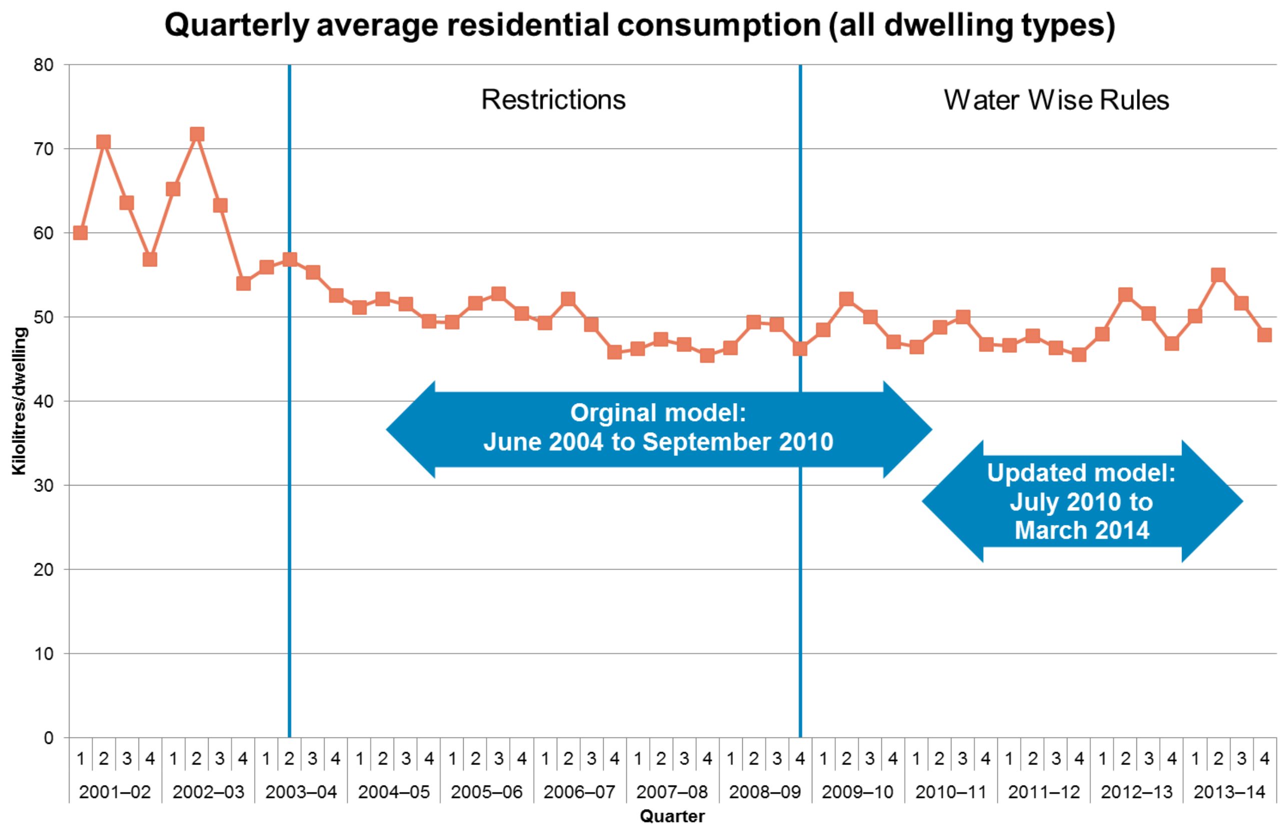
A summary of the update is provided below. It is described in more detail in Appendix 8.

Updated model estimation period

The previous model was estimated using water usage data from July 2004 to September 2010. Drought restrictions were in place for most of that period. More weight was therefore attached to water usage behaviour observed during the period with restrictions. It is likely that drought restrictions severely limited the extent to which consumers could react to extreme weather conditions. Therefore, the model may have underestimated people's response to periods of hot, dry weather once restrictions were lifted, such as in 2012–13 and 2013–14.

To address this, the new model sampled data from July 2010 to March 2014. This excludes data from the period with restrictions. This period also excludes the first year following the lifting of restrictions in June 2009 (see Figure 12-6). This is because it is estimated that it takes about one year for the full effect of lifting water restrictions to be fully realised in people's behaviour.

Figure 12-6 – Periods used to estimate the original and updated residential demand models



Customer segmentation

Residential customers were segmented on the basis of property type (eg houses and units), BASIX status (pre-BASIX vs post-BASIX), availability of a recycled water supply, tenancy (owner-occupied or tenanted) and participation in Sydney Water's demand management programs. Houses were further segmented on the basis of their lot size. This resulted in a total of 60 segments. A separate panel regression model was estimated for each one of these segments.

Explanatory variables

Explanatory variables included in the regression models are: the water usage price, seasonal variables, weather variables and variables to capture participation in a Sydney Water demand management program. The new model does not include variables for water restrictions as all data used to estimate the model is post restrictions. The model includes two additional weather variables that were not included in the old model:

- the number of days during the meter reading period with temperature greater than 30 degrees celsius
- the number of days during the meter reading period with rainfall greater than 2 mm.

Both variables appear to be significant in most cases. This will help in better controlling for extreme weather conditions.

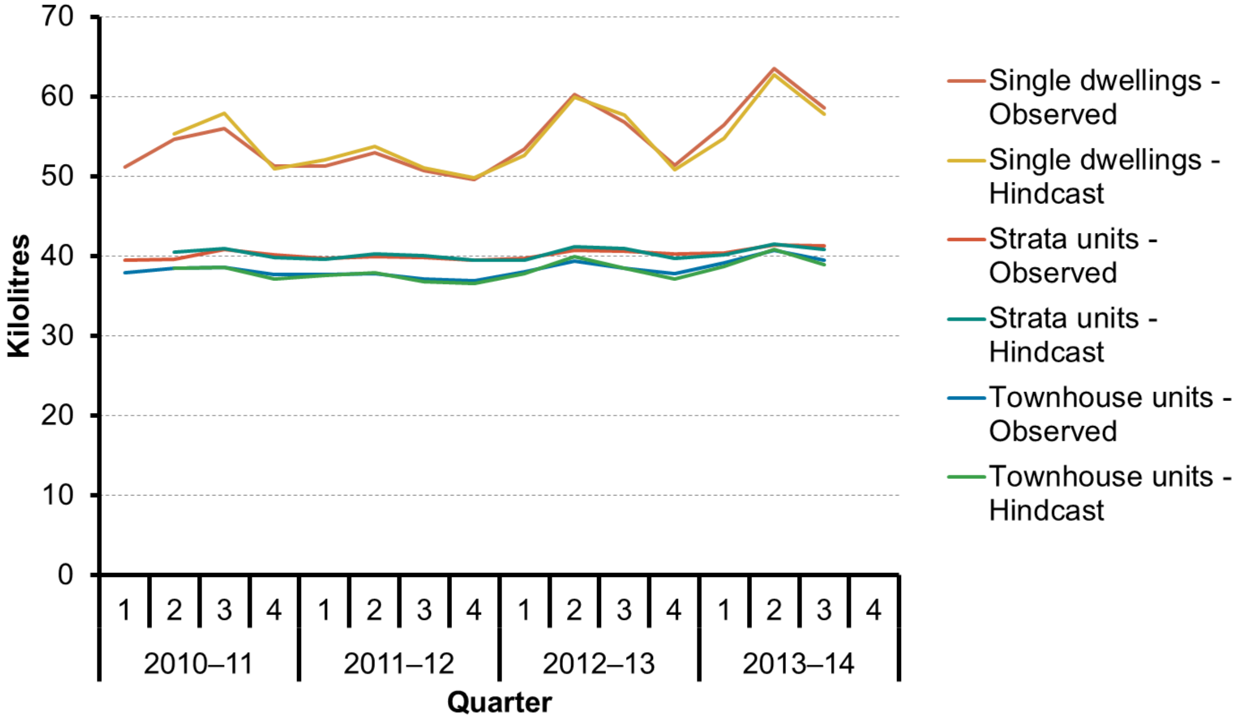
Model results – actual demand vs model hindcast

Figure 12-7 shows observed and predicted demand for the two main residential segments: single dwellings and strata units, the latter split into common metered units and individually metered townhouse units. The model closely replicates observed demand.

The update does not provide evidence of any further bounce back over the last three to four years. The model, which does not include any variables to capture bounce back, can replicate the increase in demand in 2012–13 and 2013–14. In other words, weather variables are sufficient to explain these increases. When a time trend variable was included in the model to capture any bounce back it was not statistically significant.

This is not to say that no bounce back occurred when restrictions were first lifted in June 2009. As discussed in our pricing proposal for 2012–16, we did find some bounce back occurred. However, while the old model may have underestimated potential bounce back somewhat, the updating of the model showed no evidence of any further bounce back over the last three to four years; the variations in demand over that period can be explained in terms of weather variations only.

Figure 12-7 – Quarterly average demand – Observed and model hindcast



Refer to Appendix 8 for more detail on the model specifications.

12.3.2 Peer review

A peer review of the updated model was undertaken by Dr Richard Tooth of Sapere Research Group Limited who concluded that "the approach adopted appears adequate and robust for the purpose of the forecast". The full peer review report is available on request.

12.3.3 Non-residential water use

The non-residential forecast models are based on time series analysis of the following segments of non-residential customers:

- Industrial
- Commercial
- Government
- Agricultural
- Industrial strata units
- Commercial strata units
- Every Drop Counts participants.

The last segment refers to properties that have participated in Every Drop Counts (EDC), Sydney Water's water efficiency program for the non-residential sector. We kept these properties separate from the other segments as they tended to have a very different demand profile. In particular, average demand by EDC participants was trending down much more sharply than average demand by other properties of the same type. In addition, we developed separate forecasts for the six highest use customers.

We used time series regression analysis to estimate changes in average demand for each segment over time and their response to weather and the lifting of restrictions. We presented the results of this analysis to IPART for the 2012–16 price determination.

We updated the non-residential models in 2013 as part of the development of Sydney Water's long-term forecasting model. We used the same segmentation and time series analysis approach. However, we combined Industrial and Commercial strata units into a single segment Non-residential strata units. We also estimated separate models for each segment in each delivery system which meant the total number of models increased from 13 to 72. Each model was estimated using data up to June 2012.

Some simplifications were made during the re-estimation of the models. In particular, the original analysis found that there was a very small downward trend in average demand in some segments which appeared to be flattening out. This downward trend was extrapolated to forecast demand. For the update, we assumed a constant average demand for the forecasting period. The purpose of the time series analysis was mainly to quantify the historical trend and estimate the seasonal pattern and responsiveness to weather. The models were used to estimate a weather corrected average demand by segment and water delivery system which was used to forecast demand.

We also found that consumption by some of the large users was higher than was assumed for the original model and assumptions for these users were updated.

The updated model performs well. The model overestimated metered non-residential demand by about 0.2% in 2012–13 and underestimated demand in 2013–14 by about 1.2% – see Appendix 8.

12.4 Price elasticity

Sydney Water proposes a decrease in the water usage price over the next determination period. The effect of a price decrease on demand can be estimated using the price elasticity of demand. This measures the sensitivity of demand to a change in price. More precisely, it is the percentage change in demand divided by the corresponding percentage change in price. For example, if a 10% increase in price results in a decrease in demand of 2%, then the price elasticity of demand is -0.2 (-2%/10%). In this particular example the demand is said to be inelastic, as the proportional change in demand is less than the proportional change in price.

In addition to the estimates from the updated demand model, two more estimates of the price elasticity of residential water demand in Sydney are available. All were prepared by Sydney Water in collaboration with Dr Vasilis Sarafidis. The first is from a study conducted in 2010[116], the second was estimated using the demand forecasting model developed for our price proposal for 2012–16 price determination (see Sydney Water's 2011 submission).

To estimate the effect of the proposed price decrease Sydney Water has decided to use the elasticities as estimated by the 2010 study instead of those from the updated model. The 2010 estimates are based on a period with large changes in the real price whereas the updated model is based on a period where real prices were virtually constant. For this reason the estimates from the 2010 study are considered more robust.

Simple economic theory suggests that price effects are symmetrical. That is, if a 10% increase in price results in a, say, 2% decrease in demand then a 10% decrease in demand should result in a 2% increase in demand. If this is not the case, price effects are asymmetric. If price effects are asymmetric, the available price elasticities may not be appropriate to estimate the effect of the proposed price decrease as they are based on a period during which prices increased only.

The potential for asymmetrical price effects in the demand for water has been raised in the economic literature. That is, the price elasticities may be lower (in absolute terms) for price decreases than for price increases. The rationale for this asymmetry is based on the work done in behavioural economics. In relation to water demand, one suggestion for consumers being less responsive to a price decrease has been the nature of water demand as a complementary input to the existing technology stock[117]. That is, as technologies using water, such as washing machines

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[116] B. Abrams, S. Kumaradevan, V. Sarafidis and F. Spaninks. "An Econometric Assessment of Pricing Sydney's Residential Water Use", *The Economic Record*, 88 (280), 2012, pp 89–105.

[117] See, R. Correia and C. Roseta-Palma. *Behavioural Economics in Water Management: An overview of behavioural economics applications to residential water demand*, Preliminary version, April 2012. Instituto

and dishwashers improve in efficiency, even if water prices were to increase, consumers may be no worse-off. Consumers can complete the same tasks in the home with much less water, yet maintain the same total bill. In such circumstances, consumers are unlikely to be responsive to any price decreases.

To date, we are unaware of any empirical evidence on asymmetric elasticities available for water – possibly due to the rareness of water price decreases. Nevertheless, there is empirical evidence available from studies done of the energy, petrol, gas and transportation markets.

Sydney Water has reviewed these studies and the results are provided in Appendix 8. Based on this review we have halved the price elasticities from the 2010 study, which are based on a period with increasing prices only, to estimate the effect of the proposed price decreases. This gives a price elasticity of -0.124 for single dwellings and -0.025 for multi-residential dwellings.

Using these price elasticities, we estimate that a decrease in the water usage price from its current (2014–15) level of $2.232 per kL to $2.00 ($2014–15) – a 10% reduction – would result in a 3.5 GL a year increase in residential demand by the end of the price path. The estimated impact in the first year is less, about 2.4 GL. This is because the elasticities that were used are long-term elasticities. The 2010 price elasticity study found that in the first year following a price change, only about 70% of the long-term effect will be realised.

No price elasticity estimates are available for the non-residential sector and no price effects have been estimated for this segment. Therefore, we effectively assume that the price elasticity of demand for this segment is zero.

The estimated increase in water use resulting from a reduction in usage prices is summarised in Table 12-3. These estimated increases are included in the forecasts provided in Table 12-1.

Table 12-3 – Estimated increase in billed metered demand due to lower usage prices (ML)

	2016–17	2017–18	2018–19	2019–20
Single dwellings	2,162	3,113	3,139	3,176
Multi-dwellings	202	294	299	306
Total	2,364	3,407	3,439	3,482

Universitario de Lisboa, Lisbon, Portugal; and J Sleich, *How low can you go? Price responsiveness of German residential water demand*, EAERE Conference 2009.

12.5 Key risks and uncertainties

Weather is the main driver of uncertainty in forecasting water demand. In the short term, weather can lead to greater deviations from forecast demand than factors such as dwelling growth. The forecast assumes long–term average weather conditions apply. If the actual weather is substantially different to assumed average weather conditions, then actual demand is likely to be different from forecast demand.

Actual demand could be higher or lower than forecast, by up to 5% in any one year. Over the four-year determination period those effects should average out. However, the risk remains that most of a single determination period could be above or below average, meaning the effect does not average out fully.

Demand could fall because of continued improvements in water efficiency in existing dwellings and changes in customer behaviours. The effect of improvements in water efficiency in new BASIX dwellings is captured in the model. However, the effect of improvements in existing dwellings are not included, which could lead to an overestimate of demand. Also, the model does not capture existing houses that are knocked down and replaced with new houses that are covered by BASIX, which may also contribute to an overestimate of demand in existing dwellings.

The new forecast assumes higher population and associated property growth rates than the previous forecast. Should this growth not be realised then demand will grow less than forecast.

We do not consider further bounce back of demand from restrictions a substantial risk for the next determination period. It is now six years since restrictions were lifted and it is reasonable to assume that customers have settled into post-restrictions water use behaviours. Also, as discussed above, the model update did not find evidence for further bounce back over the last three to four years.

12.6 Chargeable wastewater volumes

Residential and non-residential properties that are connected to Sydney Water's wastewater system pay a fixed service charge. Some non-residential properties are also liable for a wastewater usage charge, if the volume of wastewater discharged is above a certain allowance. The volume above the allowance is called the chargeable wastewater volume. The allowance is set by IPART and discharge volumes below it only attract the fixed charge. The volume of wastewater discharged by a non-residential property is calculated by multiplying the metered water consumption by a property-specific discharge factor.

For example, a customer uses 120 kL over a period of 91 days and has a discharge factor of 78%, giving a calculated discharge of 93.6 kL (78% of 120 kL). The free allowance set by IPART for 2014–15 is 0.959 kilolitres per day (kL a day) giving a total free allowance of 87.3 kL (91 days times 0.959 kL a day). The discharge exceeds the free allowance and so the customer will be charged wastewater usage for the amount by which they exceed the allowance. The chargeable wastewater volume is 93.6 – 87.3 = 6.3 kL which is rounded to 6 kL to calculate the total charge. In

2014–15 the charge is $1.20 per kL meaning this customer would be charged a total of $7.20 (6 x $1.20) in wastewater usage charges.

12.6.1 Modelling the impact of changes to the daily allowance

In its 2012 Determination of Sydney Water's prices, IPART determined that the daily allowance would gradually decrease from its then value of 1.37 kL a day (500 kL a year) to 0.822 kL a day (300 kL a year) in 4 steps as follows:

- 2012–13: 1.233 kL a day (450 kL a year)
- 2013–14: 1.096 kL a day (400 kL a year)
- 2014–15: 0.959 kL a day (350 kL a year)
- 2015–16: 0.822 kL a day (300 kL a year).

To estimate the impact of these changes on the chargeable wastewater volume (CWWV), Sydney Water developed a model. The model is based on a database of quarterly metered water consumption of non-residential properties and other relevant data (eg discharge factors for each property). The model is used to calculate the impacts of the decreasing allowance on the CWWV of each property using their historical water consumption. These impacts are calculated on a property-by-property and quarter-by-quarter basis because aggregate measures of consumption such as average or total consumption cannot be used to reliably estimate these effects. This is because the free allowance creates a threshold in the calculations which cannot be aggregated.

We have updated the model for this submission. The main change is that the model is now driven by a database consisting of the historical meter readings of all non-residential properties over the four year period from 2010–11 to 2013–14, whereas the previous model relied on one year of meter readings only (2010–11). We have also simplified the model to make it easier to use.

The model forecasts the CWWV for a particular year by applying the daily allowance for that year to the four years of historical meter readings of each property. To allow for property growth, the results for the existing properties, which are included in the database, are averaged. This average is then multiplied by the forecast number of new properties to forecast the CWWV for new properties.

Appendix 8 provides more detail on the approach used to forecast the CWWV.

12.6.2 Assumptions

The approach assumes that, on average, demand by non-residential properties will be similar to their demand in the four years included in the database. That is, there is no systematic upward or downward trend in demand and the four years are sufficient to average the year-to-year variations that are due to temporary factors, such as weather. This seems reasonable. While non-residential demand has fluctuated over the last four years, those fluctuations coincide with temporary weather conditions and do not seem indicative of an underlying trend.

Our CWWV forecast to 2019–20 also assumes that there will be no further changes to the daily allowance post 2015–16 or to the discharge factors. That is, the allowance is assumed to remain constant at 0.822 kL a day (300 kL a year) from 2015–16. Based on these assumptions, we forecast the CWWV to be effectively constant at about 66.4 GL per year over the next determination (see Chapter 5). The forecast growth in the CWWV is very low because most of the new non-residential properties are non-residential strata units which have relatively low water use and hence very low CWWV volumes. This limited growth is largely compensated by decreases in segments such as agricultural where the number of properties is decreasing.

12.6.3 Key risks and uncertainties

Chargeable wastewater volume is a function of water use, the discharge factor and the daily allowance. The major risks and uncertainties therefore are:

- demand being higher or lower than forecast
- changes to the daily allowance
- changes to the discharge factors.

The forecast of chargeable wastewater volume by new properties also depends on the forecast property growth which is uncertain.

We expect non-residential water consumption to grow very little over the forecast. Demand by non-residential customers has been relatively stable apart from fluctuations that are likely to be caused by weather conditions and therefore temporary.

Changes to the daily allowance however could have a very significant impact on the chargeable wastewater volume. The allowance is set by IPART and is outside of Sydney Water's control. We have prepared an alternative forecast which assumes that the daily allowance will gradually decrease to 0.274 kL a day (100 kL a year) by 2019–20. The forecast CWWV under this scenario as well as estimates of the number of non-residential customers that would be affected by such a change are presented and discussed in Chapter 5.

Changes to discharge factors can also have a major impact on the chargeable wastewater volume. The current forecast assumes no changes to discharge factors. However, as for the daily allowance, if necessary the impact of any proposed changes to the discharge factor could be estimated using the model.

12.6.4 Peer review

The CWWV model has been reviewed by Dr Richard Tooth. The review concluded that "the risks to the forecast appear to be small and the forecast appears to be adequate and sufficiently robust for the required purpose". The full review report is available on request.

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