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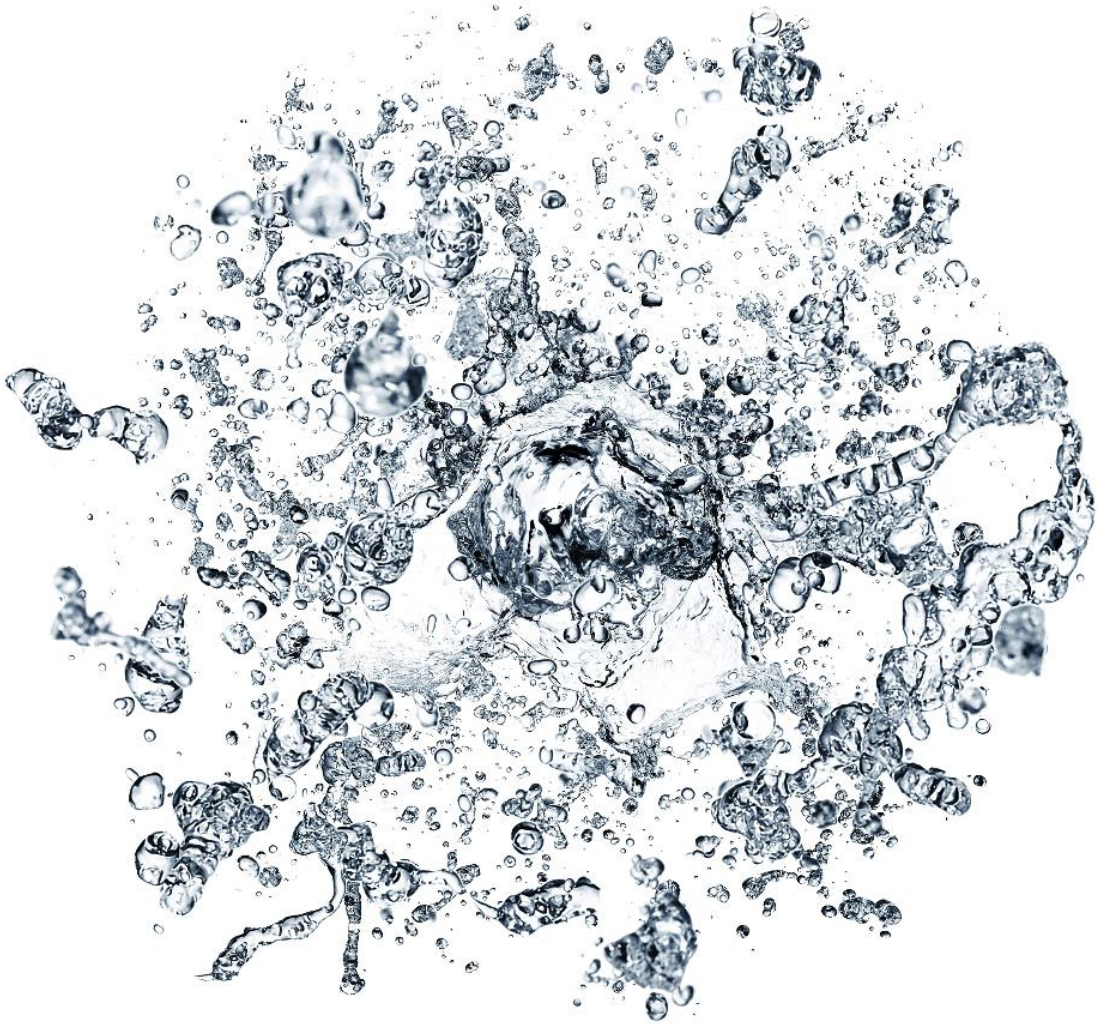

City West Water – expenditure review for 2018 water price review

Report for the Essential Services Commission – FINAL REPORT

February 2018

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The Essential Services Commission (ESC) is currently conducting a review of the proposed prices to be charged by Victoria's water businesses for the period 1 July 2018 to 30 June 2023. Deloitte has been engaged by the ESC to review the expenditure forecasts made by the metropolitan businesses and regional urban water businesses. In undertaking this review, Deloitte's key responsibilities are to:

- Assess the appropriateness of the expenditure forecasts in relation to the key objectives of the review
- Provide independent advice to the ESC regarding the appropriateness of the forecasts
- Where Deloitte's advice indicates that a proposed expenditure level is not appropriate, propose to the ESC a revised expenditure level.

Operating expenditure (opex)

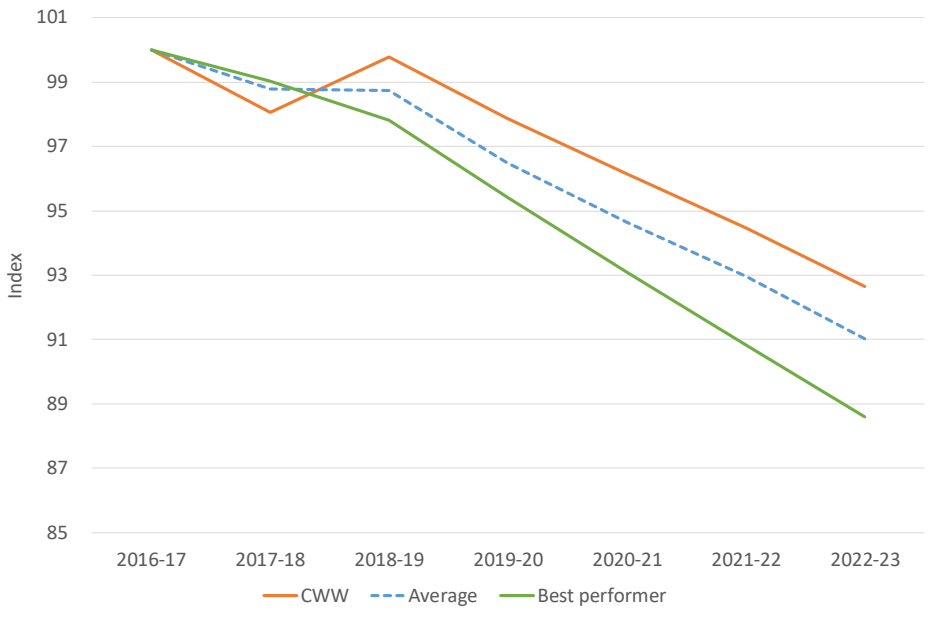
The key features of City West Water's opex forecast include:

- Baseline controllable opex in 2016-17 of $99.07m, which is 12% less than the 2013 forecast for 2016-17 ($113.93m), primarily as a result of City West Water meeting its targets under the Government Efficiency Program. There is an adjustment to the baseline of $0.73m, due to withheld payments to maintenance contractor. The adjusted baseline is $99.80m
- A forecast average customer growth rate of 2.6% per annum
- A cost efficiency improvement rate of 2% per annum
- $20.66m of additional expenditure above the baseline – the second highest of the Victorian metropolitan water businesses.

The net result of City West Water's cost efficiency improvement rate and proposed variations to the growth adjusted baseline is an average reduction in controllable opex per connection of 1.1%.

In summary, City West Water is forecasting opex increases that are above the average for metropolitan businesses (including City West Water, Yarra Valley Water, South East Water and Barwon Water), albeit it is still showing improvements in productivity.

Figure 0-1 Change in controllable opex per connection – index (metropolitan businesses)



We have recommended a reduction of **$3.04m** to City West Water's RP4 forecast controllable opex, with the cuts relating to the proposed opex for West Werribee Recycled Water Production ($1.96m) and energy ($1.09m). The reasons for these recommendations are outlined in Chapter 3.

Capital expenditure (capex)

City West Water proposed a total of $549m in capital expenditure over RP4. This is lower than the approved capex for RP3 of $750.8m, but 9% higher than actual RP3 capex expenditure of $492.4m.

Key aspects of City West Water's RP4 capex programme include:

- Top 10 Major Projects total $102.3m which accounts for around 20% of total proposed capital expenditure
- A significant budget for renewals and growth expenditure. Renewals and growth represents 75% of the capex program
- 46% of capex is forecast in the first 2 years of the period.

We have recommended a reduction of **$23.3m** from City West Water's proposed capex for RP4. We recommend that:

- The proposed budget for Sewer KPI Renewals be reduced to RP3 levels as City West Water was able to meet the KPI with previous budgets and has proposed to reduce service levels in RP4.

The reasons for these recommendations are outlined in Chapter 4.

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1 Introduction

1.1 Introduction

The Essential Services Commission (ESC) is currently conducting a review of the proposed prices to be charged by Victoria's water businesses for the period 1 July 2018 to 30 June 2023, referred to in this document as 'the next regulatory period' or fourth price submission period (RP4).

The businesses have submitted price submissions to the ESC for the RP4 period. The price submissions include forecasts of operating expenditure (opex), capital expenditure (capex) and demand, proposed service standards and prices.

1.2 PREMO framework

In RP4, the ESC is applying a new regulatory framework Performance, Risk, Engagement, Management and Outcomes (PREMO) for the first time. PREMO aims to put customer engagement at the centre of water corporation's proposals whereby service levels and expenditure must reflect outcomes that customers' value. The standard expectation here is that water corporations engage early and then re-test proposals in pricing submissions.

PREMO also provides a range of incentives on a number of levels to encourage businesses to:

- Reveal their efficient costs (and knowledge of efficiency opportunities), by rewarding businesses for both setting and achieving ambitious targets
- Avoid making ambit expenditure claims, as higher financial rewards are available for more ambitious proposals
- Prepare submissions of a high standard, to open the door for a fast-tracked regulatory process (and receive recognition for having done so).

The PREMO model incentivises businesses to self-select appropriate targets for operating parameters that make up the building block calculation. The ESC incentivises and rewards based on the relationship between the quality of the proposal and the return on equity – businesses have the flexibility to prepare their own combinations of service levels and expenditure, as long as these are fundamentally driven by delivering outcomes of value to customers.

The ESC's model also includes a fast-track process whereby the higher quality proposals are not subjected to a detailed review of expenditure (and other key items) but are instead fast-tracked to an early draft decision. In addition, of the businesses that were not fast-tracked, there is further differentiation on those businesses that only require a review on some elements of the proposal (e.g. specific items where expenditure is increasing) and those businesses that require a detailed review.

The expectations of water business proposals are further detailed in the ESC's guidance paper *2018 Water Price Review Guidance Paper November 2016* ('the Guidance Paper').

1.3 Scope of review

Deloitte has been engaged by the ESC to review the expenditure forecasts made by the metropolitan businesses and regional urban water businesses. In undertaking this review, Deloitte's key responsibilities are to:

- Assess the appropriateness of the expenditure forecasts in relation to the key objectives of the review
- Provide independent advice to the ESC regarding the appropriateness of the forecasts
- Where Deloitte's advice indicates that a proposed expenditure level is not appropriate, propose to the ESC a revised expenditure level.

In relation to opex, we have been asked to provide advice on whether the businesses are fulfilling their obligations and meeting customer service expectations as cost efficiently as possible and that forecast divergences can be readily explained. Although we have not been asked to review pricing outcomes,

which may be influenced by a number of factors in addition to expenditure, we have had regard to the factors outlined in the ESC's guidance for the level of PREMO rating that has been proposed by each business. Benchmarking has been mainly undertaken on the basis of changes from the baseline expenditure identified by businesses as prudent and efficient.

In reviewing capex, we have focussed on the major projects that comprise a significant proportion of the total capex.

1.4 Overview of approach

1.4.1 Operating expenditure

Our approach to assessing opex for each business can be summarised as follows:

1. Determine an appropriate baseline year (2016-17) by examining the actual expenditure incurred by water businesses in 2016-17 and considering: 1) how it compares to the benchmark established by the ESC in the 2013 price review and 2) removing any abnormal items (that are not already accounted for)
2. Benchmark the overall opex package against peers in particular opex changes from the baseline and opex per connection. This benchmarking has regard to the net effect of efficiency targets, growth rates and adjustments for new opex initiatives.
3. Identify any individual items that are resulting in an increase in forecast expenditure from the 2016-17 baseline and assess the prudency and efficiency of these items. Any proposed expenditure that is above the baseline needs to be fully explained and justified. The types of expenditure that could be considered reasonable in terms of being above the baseline include:
   a. New obligations from regulators or government (such as changes to the Statement of Obligations, taxes, etc.)
   b. Customer preferences – where customers are willing to pay more for improved outcomes
   c. Significant increases in costs that cannot be managed by the business.

   In assessing prudency and efficiency for each business, we have also benchmarked individual expenditure items with other water businesses where possible.
4. Identify cuts consistent with prudent and efficient expenditure.

A more detailed explanation of our approach to opex is set out in Section 3.1.

1.4.2 Capital expenditure

In forming a view as to whether capex meets the requirements in the WIRO, and consistent with advice in the ESC's Guidance Paper, we have had regard to the following questions:

1. Does proposed capex reflect obligations imposed by Government (including technical regulators) or customers' service expectations?
2. Are proposed new major capital works consistent with efficient long-term expenditure on infrastructure services?
3. Does the business have appropriate asset planning procedures?
4. Does the business have appropriate asset management systems in place?
5. Does the business have appropriate project management procedures in place to enable effective delivery of capital works?
6. Has a risk-based approach been adopted to develop the capex program? Is there clear evidence that projects are prioritised?
7. Are major projects consistent with long-term strategies and planning?
8. Is the timing for the proposed new capex reasonable?
9. Are individual project cost forecasts reasonable and do not include undue contingencies or provisions, and reflect current efficient rates for undertaking capex in the Victorian water sector?
10. Is the capex program deliverable in the timeframes proposed?

With respect to individual capex projects or programs, the ESC has requested that there be a focus on two items in particular – renewals expenditure and digital metering.

- **Renewals expenditure**. There are significant increases in renewals expenditure for some businesses (these businesses have also proposed a price rise). In some cases, this is linked to customer consultation, but for the most part this increase suggests that there are potential issues in asset management and planning. For these specific businesses, the focus of the expenditure review will be on decision making and decision-making tools.

- **Digital metering.** There are a number of proposals to roll out digital meters. Each proposal was reviewed in detail, particularly where businesses have proposed to undertake full rollouts. Each business case should have a sound basis and have undertaken adequate pilots or trials (e.g. non-residential or new developments first) to better understand costs and benefits.

In arriving at recommendations for reductions for each individual business' capital program, we have had regard to the following:

- Comparison of overall historical capex with that proposed for RP4. Where proposed capex exceeds historical projections, justification for these increases should be provided, namely in a requirement to meet new or expanded obligations or customer requests/engagement which has resulted in new service standards.
- Review of four of the Top 10 project business cases to provide an overview of the business case and project development process. It is expected that the business cases should also link to customer outcomes and service levels to justify the decision-making process and selection of individual projects. Further, where individual projects are not able to demonstrate suitable business cases, reductions to those projects will be recommended.
- A review of particular capex programs where increases above historical expenditure is proposed. Where this is not based on meeting new obligations, customer expectations, or rectifying declining performance of assets (evidenced by increased events such as spills, bursts and leaks), renewals programs will be proposed to be reduced to historical levels. Further, benchmarking of renewals programs will be used to review underlying costs for these programs across the businesses.

1.5 Process for review

Our review of opex and capex has involved the following key steps.

- Initial planning and workshop with the ESC
- An initial review of price submissions, financial model templates and associated documentation
- Benchmarking of water business submissions in relation to overall opex and capex and individual expenditure items
- A further workshop with ESC staff to identify and discuss key issues for the focus of the review
- Preparation of queries/areas for discussion which was subsequently provided to each water business prior to site visits
- A site visit of each water business with the key objective to discuss queries and gather information as required. City West Water's site visit was undertaken on 6 December 2017
- Detailed review and analysis of supporting information provided
- A Draft Report was prepared and provided to City West Water for comment
- A Final Report (this report) provided to the ESC to inform the draft price determinations.

Through the process of the review, water businesses have been given a number of opportunities to provide information to support their expenditure proposals. This included:

- Subsequent to final pricing submissions, and prior to our site visits, we wrote to each business identifying additional supporting information required
- During our site visits, businesses had the opportunity to present and provide information
- Following our site visits, there was the opportunity to provide further information on expenditure
- All businesses were provided with draft versions of our reports and recommendations and provided with 10 business days to provide further supporting information.

1.6 Structure of this report

This report describes our approach and sets out our findings from the review of City West Water's price submission. It is structured as follows:

- Chapter 2 briefly summarises City West Water's price submission with respect to expenditure forecasts and outlines key drivers of expenditure such as government obligations, service standards and demand forecasts
- Chapter 3 provides our analysis, conclusions and recommendations on key issues with respect to City West Water's opex forecast
- Chapter 4 provides our analysis, conclusions and recommendations on key issues with respect to City West Water's capex forecast.

Note that unless stated otherwise, all dollar figures shown in this report exclude the impact of inflation and are expressed in $2017-18.

2 Summary of City West Water's forecast

This chapter provides a summary of City West Water's forecast expenditure including key underpinning assumptions such as efficiency, growth, service standards and demand.

2.1 PREMO rating

City West Water has rated its submission as 'Advanced' under the ESC's PREMO framework.

2.2 Key drivers of expenditure

2.2.1 Community expectations and service standards

City West Water has over one million residential and nearly 40,000 non-residential customers.

City West Water engaged with more than 2,200 customers in the year leading up to submitting its 2018 Price Submission. Part of this engagement included a quantitative trade-off survey that invited customers to prioritise the services (and levels of service) that were most important to them. Proposals for changes to existing services and levels of service were developed and subsequently re-tested with a group of customers that had participated in the survey and other engagement activities.

As a result of its customer consultation, City West Water has proposed a set of six customer outcomes, each of which contains a range of measures:

- Services to homes and businesses are safe, reliable and efficiently delivered, encompassing various drinking water quality and service reliability measures. Notable changes from historical performance include:
    - Water and recycled water service reliability – Average time taken (from notification) to restore unplanned water supply interruption, minutes. Target of 120 versus historical average of 130 in RP3
    - Sewerage service reliability – Customers experiencing more than three (i.e. 4+) unplanned sewerage service interruptions in a year. Target of 10 versus average of 2 in RP3
- Customer service is accessible and enquiries are promptly resolved. Notable changes from historical performance include:
    - Residential customer satisfaction with response to complaint. Target of 50% versus historical average of 45%
    - Non-residential customer satisfaction with response to complaint. Target of 50% versus historical average of 30%
    - Extended customer call centre hours
- Billing and payment options are efficient and convenient, for example through providing additional online services – targeting 30% of all accounts to be registered online, versus current zero.
- Customers in hardship are supported, for example by implementing a comprehensive plan to support customers affected by family violence and adding 200 customers per annum to the Water Assist program
- The whole of water cycle is managed in an environmentally sustainable way, for example by implementing a user pays water efficiency assistance program for all customers to help them save water
- City West Water is a valued partner in servicing a growing Melbourne, for example by automating processes where possible, with various new targets for services to developers and new connections.

Under a further customer-focussed outcome – bills are affordable and charges for services are fair – City West Water is proposing a weighted average price reduction of 10.6% for all customers across the RP4 (note this is the full period adjustment, as opposed to a year on year change).

2.2.2 Demand for services

Demand for services is increasing, particularly due to significant customer growth in Wyndham and also in substantial infill development areas. Customer growth is forecast to be an average of 2.6% per annum over RP4 (based on *Victoria in Future 2016*, .id Forecasting, historical data, consultation with local governments and consultation with local developers).

City West Water is aiming to create efficiencies by maximising the operating life of assets and is delaying renewals capex. However, investment in growth assets for both infill areas (to address emerging water and sewerage network capacity constraints) and greenfield areas (to establish new networks) will be required, to ensure that City West Water's network can accommodate future system demands and meet customer expectations.

2.2.3 New obligations

City West Water has not identified any new obligations from regulators or government that require additional funding for this regulatory period.

2.2.4 Other drivers

In addition to the above, City West Water has identified the following as drivers of increased opex:

- The commissioning of the West Werribee Salt Reduction Plant (WWSRP) is expected in 2017-18, where there will be opex associated with the start of production of recycled water.
- The transition to cloud-based computer platforms means that a substantial amount of computing cost will shift from capex to opex
- Expiry of the current electricity contract and expected increases in wholesale electricity costs from 4.5c/kWh under the current contract, peaking at 9.2c/kWh in 2018-19 and levelling out at 7.5/kWh thereafter.

2.3 Operating expenditure

2.3.1 Overview

The key features of City West Water's opex forecast include:

- A baseline controllable opex in 2016-17 of $99.80m, which is 12% less than the 2013 forecast for 2016-17 ($113.93m)
- A forecast average customer growth rate of 2.6% per annum, below the historical average over the last three years (2014-15 to 2016-17) of 3.7%
- A cost efficiency improvement rate of 2% per annum
- $20.66m of additional expenditure above the baseline – the second highest of the Victorian metropolitan water businesses.

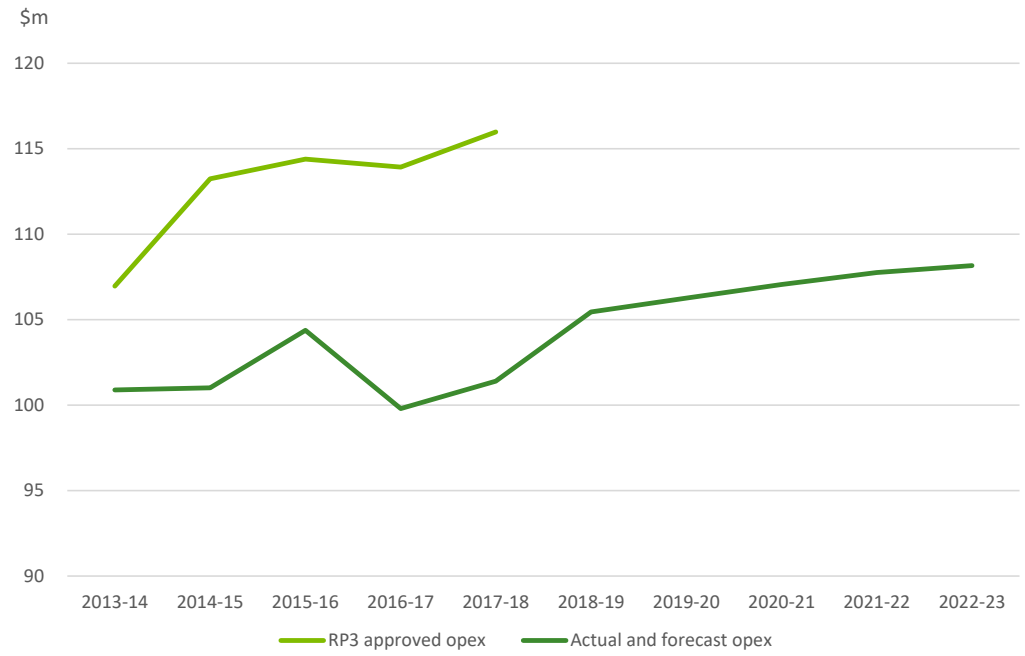
The net result of City West Water's cost efficiency improvement rate and proposed variations to the growth adjusted baseline is an average annual reduction in controllable opex per connection of 1.1%.

2.3.2 Controllable opex forecast

The chart below shows City West Water's total controllable opex across RP3 and RP4. Expenditure throughout RP3 was significantly lower than the approved opex, largely as a result of savings made under the Government Efficiency Program.

There was a decrease in opex from 2015-16 to 2016-17, however throughout RP4, City West Water's opex is forecast to increase steadily.

Figure 2-1 Controllable opex – City West Water ($2017-18)



2.4 Capital expenditure

2.4.1 Overview

City West Water proposed a total of $549m in capital expenditure over RP4. This is lower than the approved capex for RP3 of $750.8m, but 9% higher than actual RP3 capex expenditure of $492.4m.

Key aspects of RP4 capex programme include:

- Top 10 Major Projects total $102.3M which accounts for around 20% of total proposed capital expenditure
- A significant budget for renewals and growth expenditure. Renewals and growth represents 75% of the capex program.
- 46% of capex is forecast in the first 2 years of the period.

2.4.2 Capex forecast

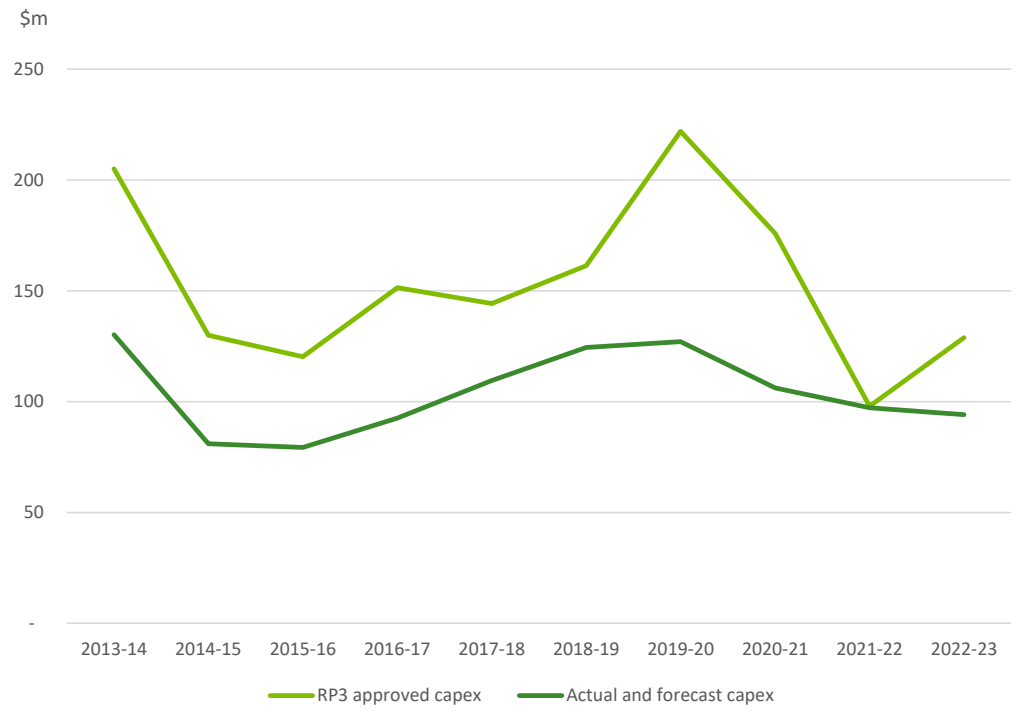
City West Water's actual and forecast water and sewerage capital expenditure is shown in Figure 2-2 below. Total net capital expenditure for RP3 was forecast to be $750.8m compared with RP3 actual net expenditure of $492.4m which represents a 34% underspend.

The key drivers of capital expenditure are renewals and growth, as demonstrated by the CBD Sewerage Strategy Stages 1 and 2 ($40.13m) and the Nicholson Street water main renewal ($8.2m), both also included in the Top 10 projects.

Capex classified under Sewerage services is forecast to increase significantly from $152.25m in RP3 to $262.52m in RP4 (a 72% increase). Expenditure classified under Water is forecast to increase from $213.59m to $234.48m (10% increase).

Capex classified under Recycled has reduced from RP3 $126.56m to RP4 $52.11m. This is primarily across Recycled Headworks and Recycled Treatment.

Figure 2-2 Capex forecast – City West Water ($2017-18)



3 Assessment of opex

This chapter assesses City West Water's forecast opex.

3.1 Overview of approach

With respect to opex forecasts, the ESC's Guidance Paper outlines that a prudent and efficient opex forecast would have the following characteristics:

- Baseline year expenditure is reflective of efficient operating costs and is used as a basis to forecast expenditure
- Forecast opex incorporates expectations for a reasonable rate of improvement in cost efficiency
- Expenditure requirements above the baseline year (adjusted for growth and efficiency improvements) are fully explained and justified.

Under the approach adopted by the ESC, opex is disaggregated into four separate elements. The elements are:

- **Baseline expenditure** – operating expenditure incurred in 2016-17, adjusted upwards or downwards to reflect any specific factors that mean that expenditure 2016-17 is not representative.
- An adjustment for **customer growth** – the ESC generally considers that increases in opex in line with customer growth are reasonable. This is a conservative assumption, and arguably generous to the water businesses, as many costs of operating water and sewerage systems are fixed or would be expected to grow at a lower rate than customer growth.
- An **efficiency improvement factor –** reflecting general productivity improvements across the economy, the ESC expects water businesses to achieve year-on-year productivity improvements. Businesses are free to propose their own individual improvements.
- **Cost increases** – for example those arising from new obligations imposed by regulators or government, major increases in costs which it is not reasonable to expect the business to absorb or manage within the ebb and flows of expenditure from year to year, or new initiatives that customers seek and are willing to pay for.

Our task is primarily to review both the baseline expenditure and the cost increases, and then to consider these in the context of the net impact of all the above factors. For example, we are more likely to consider an opex forecast to be reasonable for a business with a low efficiency improvement factor, but an intention to absorb additional expenditure items within its overall expenditure budget, rather than a business with a higher efficiency factor but cost increases for a large range of items that are not being required by regulators or sought by customers.

The concept of baseline expenditure is that it is the level of expenditure necessary to provide a defined level of service. Implicit is the assumption that the actual activities undertaken by a business from year to year to deliver services will change and there will be a number of once-off areas of expenditure in any one year that are not required every year. For example, a business may prepare a sewerage strategy in one year, prepare a water supply demand strategy in another, and do a number of once-off repairs in another year. That is, there will be a number of minor inclusions and exclusions from year to year associated with the normal ebb and flow of work requirements and changes in the industry and wider business environment. Given this, and the additional allowance provided for customer growth, it is therefore not the case that businesses should simply be able to recover increases in all opex line items. An efficient business would be expected to absorb many of these increases within their baseline and growth allowance.

Figure 3-1 below, provides a hypothetical and simplified example of the above. Data is only shown for a single year, but the same principle applies across all five years of the RP4 period. Under the example below, and all other things being equal, we would be more likely to recommend reductions to Business A's expenditure, despite it having a nominally higher efficiency factor.

Figure 3-1 Example of adjustments to baseline expenditure in ESC template

	Business A	Business B
Customer growth (%)	2.0%	1.0%
Proposed efficiency factor (%)	3.0%	1.5%
Growth-efficiency factor (%)	-1.0%	-0.5%
Cost increases ($m)	4	0.3

	Business A ($m)	Business B ($m)
2016-17 Expenditure	100.0	100.0
2016-17 Adjustments	1.0	-2.0
Baseline expenditure	101.0	98.0
Growth-efficiency adjustment	-1.0	-0.5
Growth adjusted expenditure	100.0	97.5
Cost increases	4.0	0.3
Proposed expenditure	104.0	97.8
Change compared to baseline	3.0	-0.2

The tools and approaches we have applied to consider each of the elements and the overall proposed opex package include:

- Benchmarking – of both the level of costs, and changes in costs, against historic and peer expenditure
- Comparing business forecasts to independent forecasts of changes in key expenditure items (for example labour and energy)
- Reflecting government and regulator policies and requirements
- Considering information on current service levels, customer preferences and willingness to pay
- Reviewing individual items of expenditure on a case-by-case basis.

Generally, we note that from an opex perspective, cost pressures on water businesses at this time are weak. Many cost increases that were anticipated at the commencement of RP3 largely did not eventuate. Increases to energy costs aside, inflation is currently weak, wages growth across the economy is at historically low levels, and there are few if any material changes in regulatory obligations that will increase costs. Only a small number of businesses have major capital works that will materially increase operating costs.

While we have examined the costs proposed by each business on its merits, we do hold the view that the current environment provides a strong opportunity for businesses to tightly control their costs and achieve (growth-adjusted) efficiencies. There are a range of systemic opex issues that are material for all businesses. Regardless of whether there are cost increases for these items, they have been reviewed for each business:

- **Labour costs.** Given labour costs are a significant component of opex, each businesses labour forecast has been reviewed, in particular how EBAs have been treated, Victorian Government wages policy, salary progressions, vacancy rates and other expectations from the government.
- **Energy costs.** Energy costs are expected to increase for all businesses particularly in the first year or two of RP4, however the magnitude of the increase is presently uncertain. Given this inherent uncertainty, our review provides indicative adjustments only. Final adjustments will be made by the ESC between its draft and final reports based on actual contract quotes.
- **Emission reduction programs.** Businesses have been asked by the Victorian government to reduce emissions from energy use via various means and most have proposed to do so. We have reviewed these proposals and checked that reductions in energy use are accounted for (capex and opex must be aligned), appropriate feed in tariffs are used, and any Government funding support is reflected.

- **Savings in RP3.** A number of businesses appear to have made temporary savings in RP3, but have not maintained them through the end of RP3, and are not forecasting to maintain them for RP4. We have identified where this is the case.

3.2 Errors and adjustments to the submitted template

We note that City West Water resubmitted the original ESC financial excel template to the ESC after identifying errors in its original submission. This resulted in no material changes to proposed opex.

3.3 Assessment of baseline expenditure

As outlined above, the first step in our approach to assessing baseline expenditure is to define efficient expenditure in the base year of 2016-17.

City West Water's actual total controllable expenditure was $99.07m in 2016-17. City West Water has made a net upward adjustment to its baseline of $0.73m. This is due mostly to withheld payments to a maintenance service provider, which did not meet some of its contracted performance targets.

In its 2013 price review, the ESC set a benchmark of $113.93m for 2016-17 ($2017-18). City West Water's baseline expenditure is significantly lower than this benchmark, as a result of City West Water achieving significant savings from the Government Efficiency Program.

We have assessed City West Water's 2016-17 adjusted baseline and we believe that it reflects an efficient baseline and therefore consider no further adjustment is necessary.

3.4 Benchmarking opex to other water businesses

A key component of our methodology is to benchmark the opex outcomes of the water businesses. Figure 3-2 below compares the metropolitan urban water businesses change in controllable opex per connection over RP4.

This figure shows that City West Water is forecasting opex increases that are above the average for metropolitan businesses.

Figure 3-2 Change in controllable opex per connection – index (metropolitan businesses)

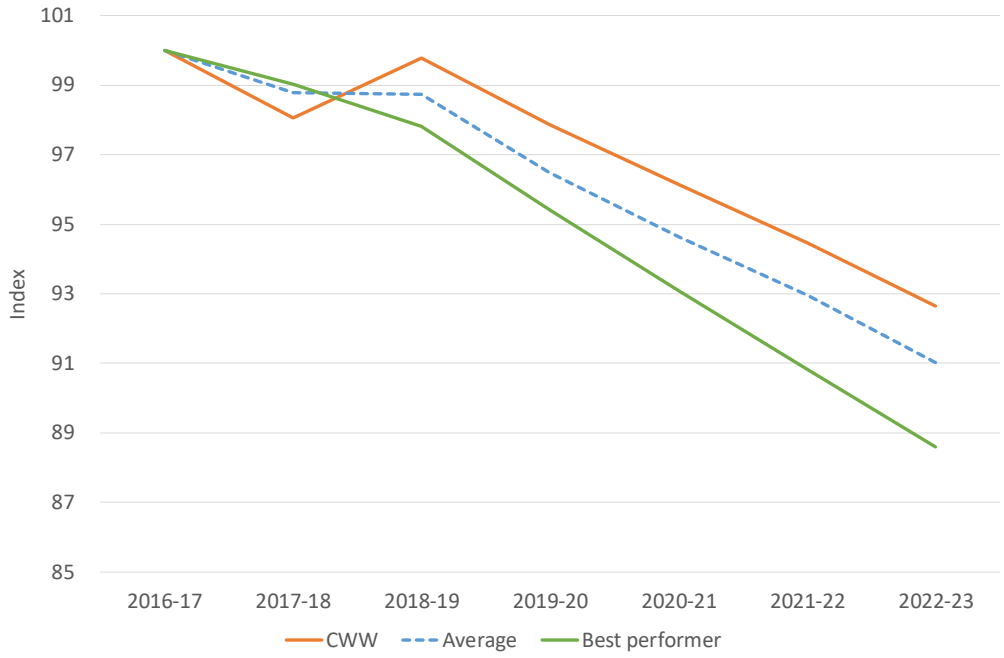


Table 3-1 below compares all of the Victorian water businesses on efficiency targets, forecast variations to baseline, and effective efficiency. City West Water's proposed efficiency target is the lowest of the metropolitan businesses (including Yarra Valley Water, South East Water and Barwon Water) although is

higher than all but two of the regional businesses. City West Water's reduction in controllable opex of 1.1% per annum is lower than the other metropolitan businesses. City West Water's forecast variations above the baseline are the second highest of the metropolitan businesses, with Barwon Water forecasting higher variations.

Table 3-1 Comparison of controllable opex for RP4 of the Victorian water businesses

Water business	Efficiency target	Growth rate (% per annum)	Forecast variations to baseline	Reduction in controllable opex per connection
	(avg. % per annum)		(total RP4 $m)	(avg. % per annum)
Westernport	2.7%	1.9%	0.00	2.6%
Yarra Valley	2.5%	1.7%	8.61	2.2%
South East	2.3%	2.3%	9.58	1.8%
Goulburn Valley	3.1%	1.3%	10.12	1.5%
Barwon	2.3%	1.6%	22.67	1.3%
Lower Murray – urban	1.0%	1.1%	0.26	1.2%
City West	2.0%	2.6%	20.66	1.1%
Coliban	1.5%	1.7%	8.55	1.0%
North East	1.2%	1.2%	6.24	0.9%
East Gippsland	1.2%	1.3%	1.91	0.9%
GWMWater – urban	1.5%	0.5%	8.73	0.8%
Central Highlands	1.6%	1.6%	12.71	0.6%
South Gippsland	1.5%	1.5%	7.03	0.0%
Gippsland	1.0%	1.2%	16.78	-0.2%
Wannon	1.0%	0.8%	25.41	-1.8%

Note: GVW forecast variations are adjusted for its $2.3m p.a. efficiency dividend

3.5 Individual opex items

City West Water has identified $20.66m of forecast variations to baseline expenditure in total for RP4. Key items to be reviewed as part of that increase include:

- Cloud computing ($11.80m)
- West Werribee Recycled Water Production (including energy) operation ($6.86m)
- Energy market exposure ($2.00m).

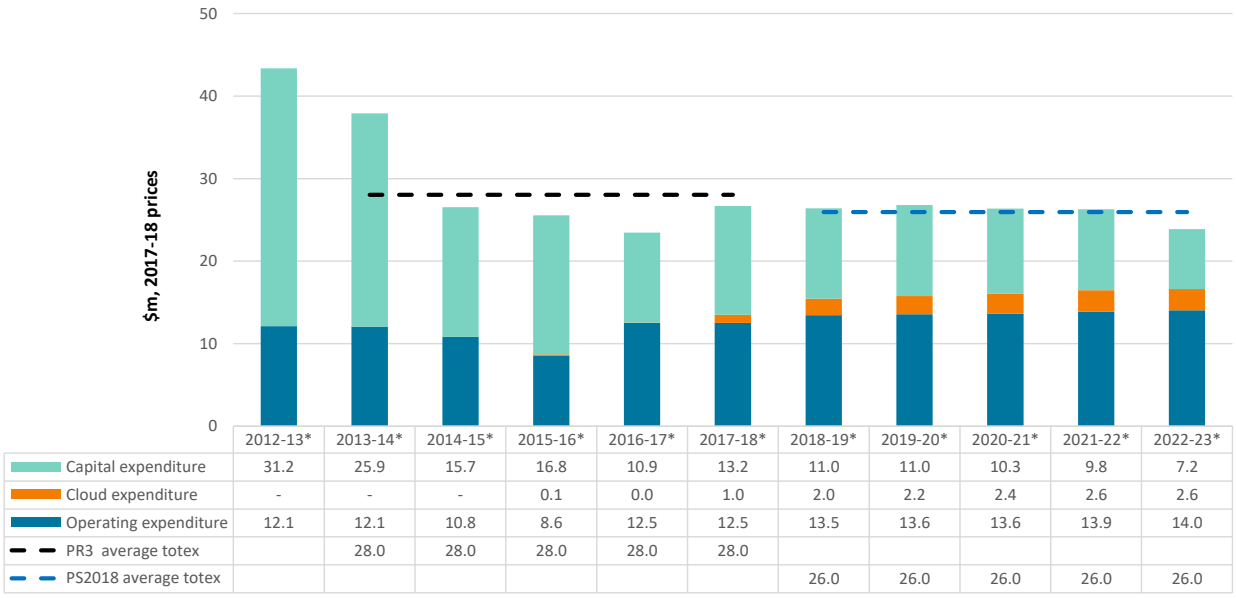
These items are explored further below.

City West Water did not propose any adjustments for changes in labour costs over RP4, consistent with the approach taken by Yarra Valley Water and South East Water. As such, we have not investigated this item further.

3.5.1 Cloud computing

City West Water has forecast $11.80m of expenditure in RP4 above the 2016-17 baseline for cloud computing opportunities. City West Water has noted that the opex for this item replaces what would previously have been capex for IT housed on-site. City West Water states that this is consistent with the Victorian Government's Information Technology Strategy. The figure below from City West Water's submission summarises its IT totex across RP3 and RP4. While we note that average totex is falling from one period to the next, with the exclusion of 2013-14, which appears to be an outlier, there is no change in average IT totex from RP3 to RP4.

Figure 3-3 City West Water IT totex, $2017-18 (millions)



	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Capital expenditure	31.2	25.9	15.7	16.8	10.9	13.2	11.0	11.0	10.3	9.8	7.2
Cloud expenditure	-	-	-	0.1	0.0	1.0	2.0	2.2	2.4	2.6	2.6
Operating expenditure	12.1	12.1	10.8	8.6	12.5	12.5	13.5	13.6	13.6	13.9	14.0
PR3 average totex		28.0	28.0	28.0	28.0	28.0					
PS2018 average totex							26.0	26.0	26.0	26.0	26.0

In RP3, City West Water proposed significant capital expenditure ($51m, $2013-14) for its Arrow program – a major IT and business process reform project with the aim of achieving business efficiencies, including reducing operating expenditure.

The Arrow Program was expected to generate ongoing opex savings mainly via Release 2 (asset management due to be completed by the beginning of 2014) and Release 3 (customer billing, due for completion toward the end of 2014). These savings were incorporated into prices for RP3 and are outlined in Table 3-2 below.

Table 3-2 Opex savings expected to be delivered in RP3 as forecast in the 2013 submission ($2011-12)

Financial year	2014-15	2015-16	2016-17	2017-18
Opex savings from Arrow Program ($m)	1.52	3.08	4.25	4.55

Source: PwC and Beca 2013 Expenditure Review for ESC

Release 2 was delayed, but is now in place, and Release 3 has since been cancelled. As such, the forecast opex savings from Arrow have not been realised (some savings resulting from Release 1, financials, may be realised).

Given these delays, City West Water has partly written down the investment in Arrow Release 2 (meaning that future customers will not face price increases to recover the full cost of the investment) and also

artificially reduced its opex to the level that it would have been if both Release 2 and Release 3 progressed as planned and the savings set out above had been achieved.

Rather than proceeding with Release 3 of the Arrow Program, City West Water has elected to proceed with a number of alternative initiatives, including the three that form part of the $11.80m of expenditure above the 2016-17 baseline:

- $5.1m of cloud computing opex for maintaining essential IT capability such as payroll/HR, disaster recovery, a digital IT service desk & OH&S software (accompanied by $17.9 proposed capex)
- $3.7m of cloud computing opex for information management and data security (accompanied by $8.1m proposed capex)
- $3.0m of cloud computing opex for billing, customer records management and customer data management (accompanied by $7.2m proposed capex).

In benchmarking City West Water's IT costs with other Victorian metropolitan water businesses, it is evident that City West Water has relatively high IT totex, compared to the best performers. In Figure 3-4 and Figure 3-5 below, we compare City West Water's totex and IT totex per connection respectively, with that of the other metropolitan businesses.

City West Water's current IT totex per connection is about equal to that of South East Water, and twice as high as Yarra Valley Water. Over the next two regulatory periods, City West Water's IT totex is projected to remain relatively steady, falling by 8% in total across the 10 years. This is more than Yarra Valley Water, but less than the reductions in totex forecast by South East Water and Barwon Water.

Figure 3-4 Comparison of forecast IT totex

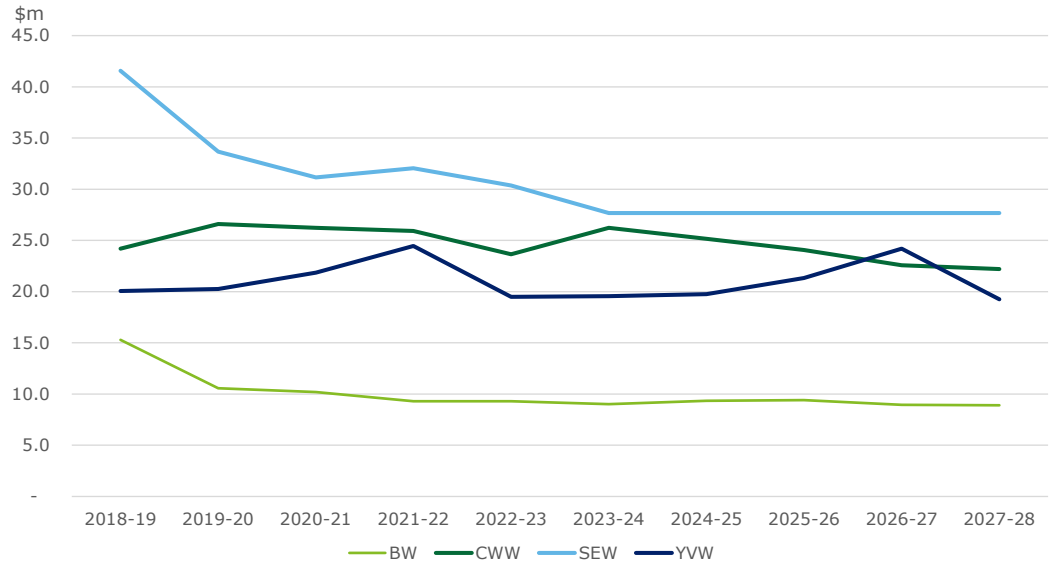
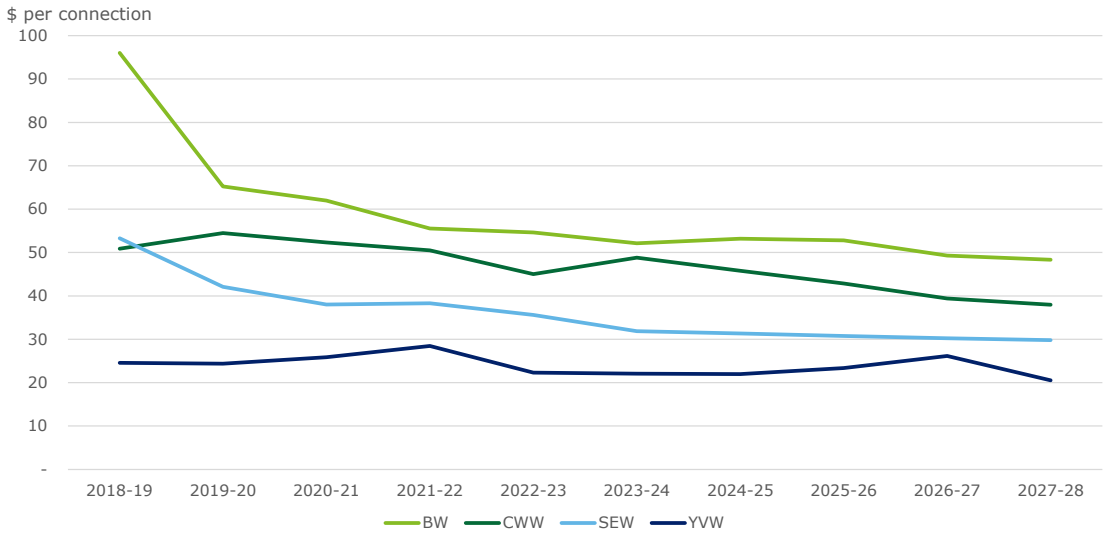


Figure 3-5 Comparison of forecast IT totex per connection



In benchmarking City West Water's IT costs with the other metropolitan businesses, City West Water's totex per connection is more than double that of the best performer, however we note that this is likely to be significantly driven by economies of scale (Barwon Water's IT totex per connection is by far the highest), and can also be affected by different businesses' IT cost allocation methodologies and IT investment lifecycle.

City West Water's IT totex show an improvement in productivity throughout RP4 and RP5. In its price submission, City West Water also identified a number of efficiencies that it expects to achieve from its IT expenditure, including:

- Improvements in the efficiency of asset planning, maintenance and replacement programs
- Increasing the operational efficiency of its customer service employees and customer service more broadly.

Given that overall totex is not increasing, and is in fact showing a slight decrease, we have not recommended any adjustments to City West Water's opex for this item.

3.5.2 West Werribee Recycled Water Production (WWSRP)

City West Water has forecast $6.86m of opex in RP4 above the 2016-17 baseline associated with the start of the production of recycled water from the WWSRP (average of $1.37m p.a.). These costs do not include labour, which is expected to amount to $0.19m per year, but is being absorbed by City West Water. A breakdown of costs into their main categories is shown in Table 3-3 below.

The WWSRP was constructed as part of the West Werribee dual water supply project. There was no opex associated with recycled water production in the 2016-17 base year, as commissioning of the WWSRP was delayed.

City West Water's consultation with customers indicated that they would prefer City West Water to maintain, but not extend, recycled water coverage, and for recycled water to be provided at a cheaper price than potable water. Specifically, customers also supported the continued use of existing facilities but did not wish the cost of new recycled water schemes to be borne by the general customer base. City West Water's current demand forecasts indicate that the WWRSP will not operate at full capacity until 2036.

City West Water has indicated that the proposed opex for the WWSRP is significantly lower than forecast opex from RP3 (originally forecast at $4.7m per annum), owing to a better understanding of the demand for recycled water, and City West Water taking over ownership and operation of the plant. City West

Water provided a detailed breakdown of forecasts costs for WWSRP, shown in Table 3-3 below. These costs amounted to slightly less than the proposed variation in the ESC template ($6.44m rather than $6.68m in total over RP4). Subsequently, City West Water proposed some adjustments to the proposed opex, with reduced facility maintenance costs reflecting a reduction in security costs and a minor error in calculating cleaning costs. This reduces the total costs for RP4 down to $4.90m.

Table 3-3 Breakdown of forecast costs for WWSRP

Cost item	Total across RP4 ($m)	
	Initial submission	Revised submission
Asset operations	1.10	1.10
Laboratory charges	0.60	0.60
Chemicals	0.40	0.40
Facility maintenance	2.68	1.14
Energy (fixed)	0.57	0.57
Energy (variable)	0.43	0.43
Condition monitoring	0.15	0.15
Preventative maintenance	0.29	0.29
Responsive maintenance	0.23	0.23
Total	**6.44**	**4.90**

City West Water's cost estimates are based mainly on benchmarks from its Altona Salt Reduction Plant (ASRP), with adjustments for site specific issues (e.g. the WWSRP site also includes an aquifer storage and recovery facility).

We note that in undertaking a bottom-up estimate of the operating costs for forecasting expenditure City West Water appears to be taking a conservative approach to forecasting opex for the site. However, we also note that most of the items are based on benchmarks from a comparable site, and City West Water has also identified some reductions in costs from its initial estimate due to more efficient operations.

As such we recommend the adoption of City West Water's revised submission for opex for the WWSPR of $4.90m in total across RP4. This is a reduction of $1.96m in total over RP4. These adjustments are outlined in Table 3-5.

3.5.3 Wholesale electricity market movements relative to base year (excluding WWSRP)

Excluding energy costs for the recycled water production at the WWSRP (as detailed in Table 3-3), City West Water has forecast electricity expenditure to increase by a total of $2.0m in RP4 compared to the 2016-17 baseline. The primary reason for this opex above the baseline is:

- City West Water's fixed rate contract for electricity is due to expire at the end of 2017-18. Under the current contract, wholesale electricity costs are 4.5c/kWh.
- Using the ASX electricity futures market (accessed 7 July 2017), City West Water has forecast that wholesale electricity costs will increase to a peak of 9.2c/kWh in 2018-19 and fall slightly to 7.5c/kWh from 2019-20 onwards.
- City West Water noted that the trend in these prices corresponds to the current uncertainty in the wholesale energy market.
- Costs reflect reduced energy demands from City West Water's renewable energy and energy efficiency initiatives which are part of its greenhouse gas pledge.

Due to relatively low pumping and treatment operations, City West Water is a relatively low energy consumer compared to other Victorian water businesses. Further, a comparison of City West Water's energy forecast to other water businesses shows that City West Water is forecasting a relatively low proportional energy cost increase of all the water businesses for RP4 with its forecast variations

representing 0.6% of its total controllable opex. However, of the metropolitan businesses, City West Water has the second highest proportional energy cost increase. Notably, energy costs make up a higher proportion of opex for both Yarra Valley Water and South East Water, and although both have higher efficiency targets, both have proposed to absorb energy cost increases within their growth-adjusted baseline.

Table 3-4 Comparison of energy forecast for RP4 of the Victorian water businesses

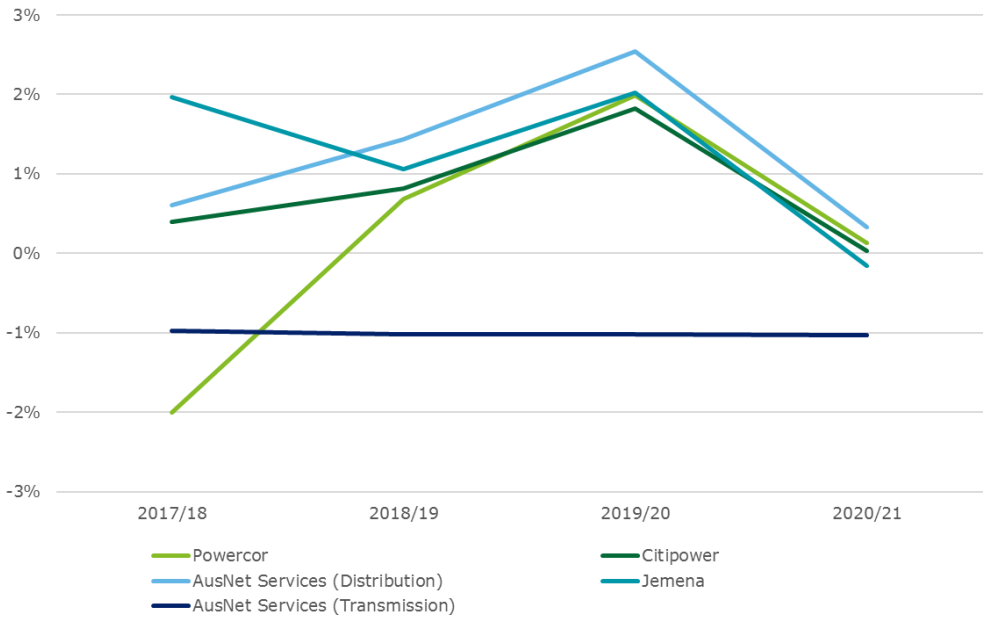
Water business	Energy costs as a % of 2016-17 controllable opex ($m)	Forecast variations to baseline opex (total RP4 $m)	Total controllable opex (total RP4 $m)	Energy variations as a % of total controllable opex
Wannon	7.6%	5.1	201.8	2.5%
Central Highlands	7.4%	5.5	266.0	2.1%
Coliban	6.6%	5.5	301.3	1.8%
Gippsland	4.7%	6.2	364.2	1.7%
Lower Murray – urban	8.3%	1.6	103.2	1.6%
Barwon	4.7%	5.0	453.3	1.1%
Goulburn Valley	9.6%	1.7	220.2	0.8%
North East	10.1%	1.3	196.6	0.7%
City West	1.5%	3.0	534.7	0.6%
GWMWater	7.9%	0.8	161.1	0.5%
South Gippsland	4.5%	0.2	95.8	0.2%
East Gippsland	5.1%	0.1	90.4	0.1%
South East	3.3%	-	622.6	0.0%
Yarra Valley	4.0%	-	674.4	0.0%
Westernport	4.2%	-	66.5	0.0%

Electricity prices in Victoria have risen significantly over the last year, driven largely by increases in wholesale electricity prices. There is considerable uncertainty around how prices will change over RP4, due to a range of factors including policy uncertainty, fuel prices including coal and natural gas, and the potential entry and exit of generation capacity. This makes it difficult to accurately forecast electricity prices for the purposes of the price submission.

In Victoria, transmission network services are provided by AusNet Services, and distribution network services are provided by one of the five distribution network service providers (DNSPs, AusNet Services, CitiPower, Powercor, Jemena and United Energy) in different parts of the state. Network prices are determined by the Australian Energy Regulator (AER). The AER made final decisions on revenue allowances for the five DNSPs in May 2016 for the 2016-20 period[1], and made a final decision for AusNet Services (transmission) in April 2017 for the 2017-22 period. The annual change in smoothed revenue allowances for each of the network businesses is presented in Figure 3-6 below.

[1] The AER made a mathematical error in the inflation calculation in these decisions. It has proposed to revoke the decisions and substitute new determinations correcting the error by March 1 2018. We don't expect this to have a material impact on electricity prices.

Figure 3-6 Annual change in expected revenue (smoothed, real $2017/18)



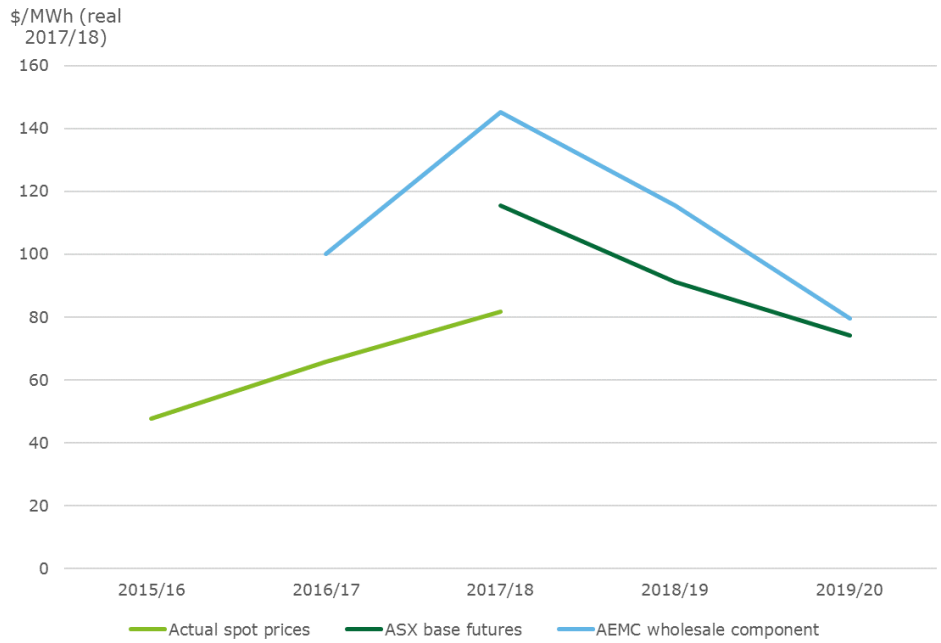
Source: Deloitte analysis of AER decisions

Overall, the revenue allowances for the network business is relatively flat, with small real increases for most of the DNSPs, and a small real decrease for AusNet Services Transmission. City West Water is in the Citipower, Powercor and Jemena networks, all of which have small real revenue increases from 2018-19 onwards (less than 1% average). The change in price for particular customer types may differ from this overall trend, however this does not provide strong evidence of real price increases in the network component of prices.

Wholesale prices are harder to forecast accurately, with a wide range of forecasts produced by different bodies over the past year. The Australian Energy Market Commission (AEMC) recently published a wholesale electricity price forecast (including spot prices, hedging, ancillary services and market fees) in its annual report on residential electricity price trends, based on analysis prepared by Frontier Economics.[2] It forecasts wholesale prices to peak in 2017-18, before decreasing, falling below the real 2016-17 price by 2019-20. This forecast movement in wholesale electricity prices is broadly in line with the price of current Victorian ASX base energy futures which are approximately $115 for the remainder of 2017-18, decreasing to $74.2 by 2019-20. These values are presented in Figure 3-7, along with actual average spot prices up to December 31 2018.

[2] AEMC, 18 December 2017, *Final Report 2017 Residential Electricity Price Trends*

Figure 3-7 Wholesale electricity prices and electricity futures in Victoria



Source: Deloitte analysis of: AEMO data collected through NEOExpress, AEMC 2017 Residential Electricity Price Trends data, and ASX energy futures data accessed 17/01/2018

However, some publicly available reports provide quite different outlooks from the AEMC report. A September 2017 report prepared for the Australian Energy Market Operator (AEMO) by Jacobs forecast wholesale market prices to continue to increase to a peak in 2019-20, with retail prices following a similar trajectory.[3] The divergence of views on wholesale costs reflects the overall uncertainty in the market, as well as quickly changing market conditions and expectations. In our analysis, we have placed more weight on the AEMC outlook as this is the more recent analysis.

In reviewing City West Water's proposal, we have considered the evidence provided by City West Water, and recent forecasts of network and wholesale price movements. We note that City West Water's proposed electricity price increases for 2018-19 and 2019-20 (which reflect a price increase of approximately 66% and 33% on 2016-17 prices respectively) are at the upper end of price increases proposed by water businesses. Nevertheless, our preliminary recommendation is that these be approved, subject to updated contract offers before the final decision.

However, based on market forecasts we do not consider there is strong evidence to support a continued price increase beyond 2019-20. In addition, we note that in comparison to City West Water, energy costs make up a higher proportion of opex for both Yarra Valley Water and South East Water, both have higher efficiency targets, and both have proposed to absorb energy cost increases within their growth-adjusted baseline. As such, we consider that City West Water should also be capable of managing energy cost variations within its growth-adjusted baseline. We therefore recommend that additional expenditure should not be approved for the remainder of RP4. This results in a reduction of $1.09m in total for RP4 from City West Water's proposal.

We note that the ESC intends to make a decision on allowable energy cost increases using updated contract offers post the finalisation of our reports. Therefore, our recommendations are indicative only.

[3] Jacobs, 21 September 2017, *Retail electricity price history and projected trends*

3.6 Recommended changes to forecast opex

This table below summarises the changes to opex above baseline expenditure. We have recommended a reduction of **$3.04m** to City West Water's RP4 forecast controllable operating expenditure as per the table below.

Table 3-5 City West Water forecast controllable opex and recommended adjustments

Opex item	Actual	Price submission forecast					Total
	Baseline 2016-17	2018-19	2019-20	2020-21	2021-22	2022-23	RP4
Proposed controllable operating expenditure ($m)	99.80	105.46	106.26	107.06	107.76	108.16	**534.69**
Recommended adjustments							
West Werribee Recycled Water Production (including energy)		-0.37	-0.34	-0.39	-0.41	-0.46	-1.96
Wholesale electricity market movements relative to base year (excluding WWSRP)				-0.36	-0.36	-0.36	-1.09
Total recommended adjustments		**-0.37**	**-0.34**	**-0.75**	**-0.77**	**-0.82**	**-3.04**
Recommended operating expenditure		**105.09**	**105.92**	**106.31**	**106.99**	**107.34**	**531.65**

Notes: Controllable opex excludes licence fees, environmental contribution and bulk water costs.

4 Assessment of capex

This chapter of the report sets out our assessment of City West Water's capex proposal for RP4 including:

- An overall assessment of capital planning and asset management approach
- A summary of major projects with a significant impact on the capex proposal and assessment of each project
- A summary of our recommendations.

4.1 Our approach to the assessment of capex

Our overall approach to assessing capex is briefly set out in section 1.4.2 while this section provides some specific detail on the requirements of the ESC Guidance Paper. In relation to capital expenditure, the Guidance Paper includes the following instructions to businesses:

- Avoid including speculative capital expenditure. That is, where projects are not fully scoped, costed or internally approved (for example, though an approved business case) businesses should consider including only development costs, development costs with a notional allowance for construction, or not at all (relying instead on adjustments for uncertain and unforeseen events)
- Include only capital expenditure that that would be incurred by a prudent service provider acting efficiently to achieve the lowest cost of delivering service outcomes, taking into account a long-term planning horizon (**prudent and efficient forecast capital expenditure**). Prudent and efficient capital expenditure has the following characteristics:
  - is based on a P50 cost estimate
  - has an optimised contingency allowance
  - for renewals, is based on a reasonable rate of improvement in cost efficiency
  - has the risk of project delays and cost overruns managed through contractual arrangements
- Identify expenditure by major service category and by cost driver – renewals, growth and improvements/compliance – including current and forecast expenditure
- Identify expenditure by either major projects (top 10), capital programs (ongoing work) or other capital expenditure (smaller projects or programs)
- Provide supporting information for projects / programs including:
  - Project name, scope, and major service and asset category
  - Justification for project including cost driver
  - Start and completion dates (for projects)
  - Total capital cost itemising government and customer contributions by each year
  - Historical annual costs and explanations for increases / decreases in average annual expenditure (for programs)
  - Objectives of project as aligned with customer outcomes
  - Business case outlining options considered and approach to identifying optimal solution
  - Risk assessment approach
  - Incentive / penalty arrangements (for projects)
  - Tendering arrangement (for projects)
  - List of projects included in program for next regulatory period with business cases and options analyses (for programs)
- Justify the total forecast capital expenditure with reference to the characteristics of prudent expenditure identified above, taking into account forecast demand, benchmarking, and the substitution possibilities between capital expenditure and operating expenditure.

We have applied these specific requirements to our assessment approach to each businesses' forecast capital expenditure.

4.2 Overall assessment of capital planning and asset management

City West Water has proposed a total of $549m capex over RP4. Approved total capex for RP3 was $750.8m. However the actual spend over RP3 was $492.4m, which was approximately 34% underspent.

The majority ($174.9m) of the underspend was attributed by City West Water to a "Shift in growth to infill areas").

City West Water had four projects classified as major projects by the ESC for RP3. As of December 2016, only one of the four projects had been delayed. Two of the projects had been completed on time with the remaining project being on schedule.

The top 10 major projects represent less than 20% of the total proposed capex for RP4. The majority of the proposed capex is budgeted for major programs. Sewer and water main renewal, including CBD sewerage strategy, takes up almost 40%of the total capex.

Overall we found the supporting documents provided by City West Water to be detailed and the proposed programs and projects are generally well justified.

4.3 Major projects

The following table provides an overview of the top ten projects and programs (by capex), showing the primary driver and forecast Capex over RP4.

Table 4.1 City West Water forecast capex ($m)

Capex item	Primary Driver	Price submission forecast capex						
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4	% of total
CBD sewerage strategy Stage 2 (Lonsdale Street)	Growth	5.00	20.00	2.90	-	-	27.90	5.08%
Billing and collection system replacement	Renewal	-	-	7.70	6.00	1.30	15.00	2.73%
CBD sewerage strategy Stage 1 (Spencer Street)	Growth	12.20	-	-	-	-	12.20	2.22%
Ravenhall outlet sewer	Growth	-	-	0.40	5.00	4.80	10.20	1.86%
Tarneit West outlet sewer (Section 1)	Growth	-	-	0.30	4.30	4.00	8.70	1.58%
Nicholson Street water main renewal	Renewal	6.00	2.20	-	-	-	8.20	1.49%
Greek Hill water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains and Melbourne-Geelong Pipeline interconnection)	Growth	4.90	1.40	-	-	-	6.20	1.13%
West Werribee sewage pump station upgrade	Compliance	4.00	1.60	-	-	-	5.60	1.02%
Mt Atkinson outlet sewer	Growth	-	2.20	2.70	-	-	4.90	0.89%
Greek Hill recycled water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains)	Growth	2.00	1.40	-	-	-	3.40	0.62%
Subtotal - Top 10 Projects		**34.10**	**28.80**	**14.00**	**15.30**	**10.10**	**102.30**	**18.63%**
Water KPI renewals	Renewal	16.20	16.90	18.50	17.20	15.30	84.10	15.32%

Capex item	Primary Driver	Price submission forecast capex						
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4	% of total
Sewer growth – developer works	Growth	12.80	17.60	16.30	6.90	11.80	65.50	11.93%
Sewer KPI renewals	Renewal	10.10	10.90	11.30	13.30	10.60	56.10	10.22%
Meter services and meter procurement	Growth	8.10	8.00	8.00	8.20	8.30	40.50	7.38%
Water risk renewals	Renewal	0.60	7.20	11.70	9.00	9.30	37.80	6.89%
Sewer hydraulic compliance	Compliance	3.00	4.00	3.50	5.40	5.40	21.20	3.86%
Water growth – developer works	Growth	5.30	3.60	3.60	3.80	3.80	20.10	3.66%
Recycled water growth - developer works	Growth	5.50	3.40	3.20	3.60	2.90	18.70	3.41%
Maintaining essential IT capability	Renewal/ Improvement	4.20	5.10	1.80	3.00	3.80	17.90	3.26%
Sewer risk renewals	Renewal	3.10	3.10	3.10	3.10	3.10	15.50	2.82%
Subtotal - Top 10 Programs		**68.90**	**79.80**	**81.00**	**73.50**	**74.30**	**377.40**	**68.74%**
Other Projects and Programs							69.30	12.62%
Total							**549.00**	

4.4 Water KPI Renewals expenditure

4.4.1 Description of project

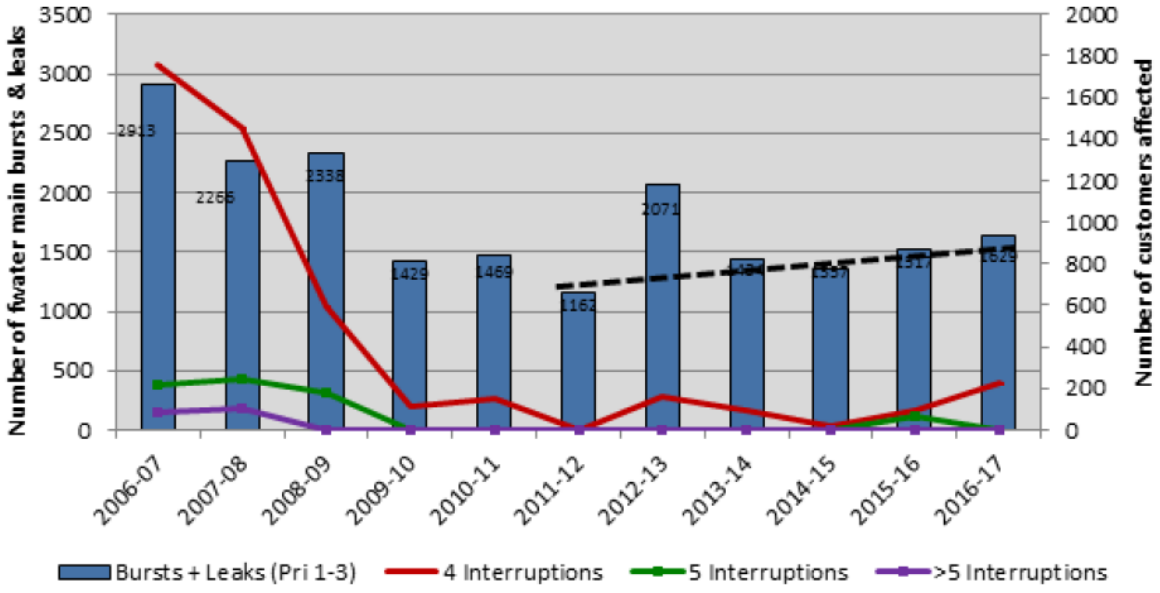
City West Water proposed a 5-year Water KPI renewal program of $84.1m which is a 38% increase compared to the Water KPI renewal program for RP3 ($61.1m). We note that the P50 estimate for the program is $98.6m, which indicates that City West Water is taking some level of risk on the proposed capex.

The City West Water's proposed renewal program is based on a number of key assumptions:

- In order to prevent customers experiencing 5 or more interruptions over a 12-month period, the renewal program must ensure that the number of customers on 4 unplanned interruptions must be prevented from exceeding 200 in the previous 12 months (statistical interpretation)
- To ensure that customers on 4 unplanned interruptions do not exceed 200, water reticulation main failures (leaks and bursts) need to be limited to no more than 1,650 per year
- The effectiveness of the renewal program is assumed to stay the same for each of the 5 years of the pricing submission period. This means that for each kilometre of water reticulation main renewed, there will be four (4) fewer failures for the year following renewal.

City West Water reported that historical records and data analysis demonstrated a reduction of 2.8 failures per km of water main renewed. In its forecasts for the Water KPI Renewals business case, City West Water has assumed that every km of water main renewed will result in a reduction of 4 failures – i.e. a significantly higher level of efficiency than current renewal program performance.

Figure 4-1 City West Water Recorded Bursts and Leaks



Source: City West Water Response to Deloitte Draft Report

As noted above, the proposed renewal program is significantly greater in scope than that delivered over the last five years. City West Water is proposing to deliver the additional budget by:

- Relaxation of the delegation of Authority to expedite approval
- Packaging of works through tender procurement to include design work to reduce reliance on City West Water internal design resources
- Increasing the number of contractors under the schedule of rates contract.

4.4.2 Analysis

The bursts and leaks record shows some indication of a rising trend. City West Water has demonstrated the methodology that it adopted in forecasting the renewal requirement is evidence-based, and not based only on age and material type.

City West Water has also provided details of the procedure for identifying water mains for renewal. Water mains for renewal are required to meet a number of criteria, e.g. had 2 or more interruptions in 12 months, before they are identified for renewal. The procedure avoids renewing water mains simply due to the main having exceeded the nominal asset life (we note that the proposed renewal program implicitly assumes that the assets will far exceed their nominal asset lives).

4.4.3 Recommendation

We have not recommended any adjustments to the capex forecast for this program. The increase in expenditure appears to be justified in the approach and based on the evidence provided by City West Water, particularly in maintaining current service levels.

4.5 Sewer Growth – Developers Work

4.5.1 Description of project

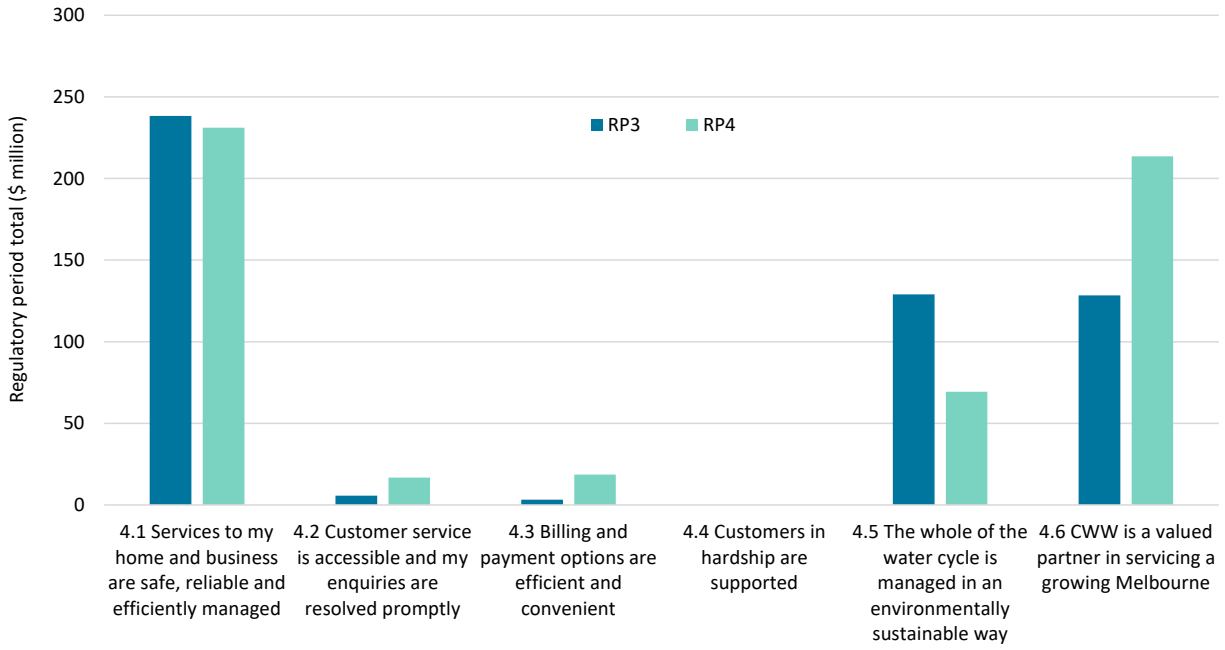
City West Water has proposed a total of $65.5m for the Sewer Growth – Developers Work program for RP4. This is a significant increase (around 130%) compared to the RP3 expenditure of $28.4m, which had an allocated budget of $51.5m.

The increase in expenditure has been justified by City West Water with reference to the need for additional expenditure to manage growth in greenfield areas. Despite greenfield growth picking up since 2015-16, greenfield asset investment has been delayed due to the need to manage the apartment boom in the inner city and activity centres.

This program assists in addressing Outcome 6 – "CWW is a valued partner in servicing a growing Melbourne" and is linked to service outcomes concerning managing water into the future with respect to future proofing the growing population (one of the services customers valued the most)

City West Water plans to significantly increase its budget directed towards Outcome 6 from RP3 to RP4, as shown in Figure 4-2.

Figure 4-2 Capex allocation by service outcome, RP3 versus RP4



The sewer growth program delivers sewer mains to new residential and non-residential developments in the growth areas of City West Water's service area. The assets to be delivered under this program will be constructed by developers.

4.5.2 Analysis

City West Water plans to continue its sewer growth program from RP3. The outlined budget for RP4 increases the budget from $51.5m (for RP3) to $61.5m (for RP4). In RP3, City West Water only spent 55% ($24.8m) of its budget on sewer growth, citing a shift in growth to infill areas, leading to the delay of growth capex.

City West Water provided detailed information for the projected growth in population. City West Water also provided information demonstrating significant planned expenditure and developer contributions over the next two years amounting over $20m of projects. As demonstrated in RP3, growth related capex can be subject to significant uncertainty, however, we consider that City West Water's expectations for growth, informed by its analysis of population growth and current development plans, are reasonable.

We note that the uncertainty of development growth could lead to significant changes in the actual implementation of the budget for Sewer Growth – Developer Works. We understand that City West Water will receive developer contributions for the majority of the capex works under this program – RP3 estimates indicate that around 65% of growth expenditure will be funded by developers. A similar outcome in RP4 would significantly reduce the impact on water prices for City West Water's general customer base.

4.5.3 Recommendation

We do not recommend any adjustments to expenditure for to this capex program.

4.6 Sewer KPI Renewal

4.6.1 Description of project

City West Water is forecasting a total Sewer KPI Renewal of $56.1m for RP4, which is a 71% increase compared to RP3. City West Water is also proposing to reduce the level of service compared to the previous pricing period.

Customer surveys indicated that customers are comfortable with a lower level of service of no more than three repeat interruptions per year, instead of the current service performance of no more than 2 repeat interruptions. City West Water has adopted the outcome of the customer survey and revised the KPI to "No customer having more than three repeated interruptions in a 12-month period".

The City West Water sewer renewal program is based on a number of key assumptions:

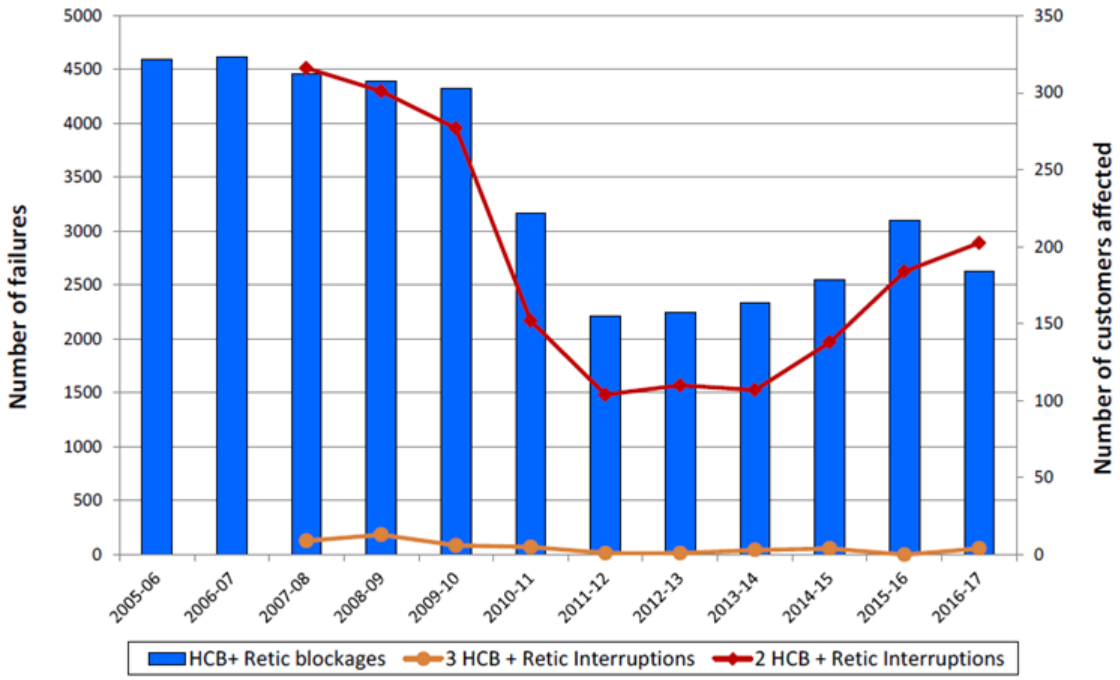
- In order to prevent customers experiencing 3, or greater than 3, repeat interruptions over a 12-month period, then the number of customers on 2 repeat interruptions must be prevented from exceeding 210 (combined number) in the previous 12 months (modelling interpretation)
- Sewer reticulation main and house connection branch (HCB) failures (blockages and collapses) need to be held to no more than 3500 per year (i.e. 1,000 & 2,500 failures are caused by sewer reticulation mains and HCBs respectively – as demonstrated in Figures 2 and 3). To keep customers from exceeding 2 repeat interruptions, the number of customers affected should not exceed 60 and 150 for sewer reticulation mains and HCBs respectively
- The effectiveness of the renewal program is assumed to stay the same for each of the 5 years of the pricing submission period. This means that for each kilometre of sewer reticulation main renewed and for every three HCBs renewed, there will be one (1) less failure for the year following renewal.

The analysis includes a number of statistical correlations, and appears to rely heavily on the assumption that every kilometre of sewer main renewed and three house connection branches renewed will reduce the number of failures by 1.

Figure 4-3 shows the recorded reticulation sewer and HCB blockages. Data shows a trend of increasing blockages and more number of customers having 2 or more consecutive interruptions within a 12-month period. However, the trend in relation to 3 consecutive interruptions is not clear.

City West Water attributed the reduction in blockages in 2016-17 to the significant increase in sewer renewal expenditure in 2015-16 ($7.2m) relative to 2014-15 ($4.2m).

Figure 4-3 City West Water Recorded Retic and House Connection Branch Blockages



Source: City West Water Response to Deloitte Draft Report

We note that City West Water was able to achieve the reduced KPI of no more than three repeat interruptions over a 12-month period in each of the last five years.

As noted above, the proposed sewer renewal program is 71% higher than the previous 5 years. City West Water is proposing to deliver the additional budget by:

- Relaxation of the delegation of Authority Levels to expedite approval
- Packaging of works through tender procurement to include design work to reduce reliance on City West Water internal design resources
- Increase the number of contractors under schedule of rates contract
- Increase preventative maintenance such as sewer cleaning to reduce blockages.

4.6.2 Analysis

The blockage records show some signs of an increasing trend. However, we note that City West Water was able to meet the revised KPI over the RP3.

City West Water provided detailed information explaining the methodology adopted for developing the budget for Sewer KPI Renewal. The methodology is evidence-based including analysis of historical records evaluating the relationship between the length of sewer renewed and blockage reduction.

The procedure for identifying sewer for renewal is based on a number of criteria, e.g. having 3 failures in the previous 12 months, which ensure that renewal budget is invested on replacing the sewer that has the highest risk of having future failures.

We consider that the process and procedure of the Sewer KPI Renewal program is reasonably robust (based on 13 years of historical data). We also note that customers have indicated their support for relaxing the standard, of no more than two sewer blockages in a year to no more than three. However, we consider that it is difficult to reconcile the significant increase in expenditure proposed (71% above RP3 levels) in the context of this relaxation in the service standard.

4.6.3 Recommendation

We recommend that the capex allocation for Sewer KPI renewal program be reduced to the level of previous pricing period of $32.9m. This recommendation is set out in Table 4.2.

4.7 Water Risk Renewals water main network/reticulation (beyond acceptable risk)

4.7.1 Description of project

City West Water has proposed to increase the budget for risk-based water main renewal from $26m during RP3 to $38.75m in RP4.

The following are the water mains that were identified as high risk.

- Nicholson Street, Carlton – DN450 CI 1886
- Royal Parade, Parkville - DN750 WI 1889
- High and Extreme Risk Reticulation Renewals identified through the ARMM (100-225mm, CI, AC, MS)
- St Georges Road, Carlton - DN 600 CI 1883
- Victoria Street, Melbourne - DN 450 CI 1886
- Victoria Street, Melbourne - DN 500 CI 1883
- Pascoe Vale Road, Moonee Ponds - DN 300 CI 1924
- Hyde Street, Footscray - DN 300 CI 1883
- Carnarvon Road, Strathmore - DN 750 MS 1910
- Arden Street, North Melbourne - DN 400/450 CI 1860.

4.7.2 Analysis

The justification for the capex forecast is based on condition assessment and risk score. The risk assessment methodology is well documented, and the majority of the proposed renewal appears to be well supported. The majority of the proposed renewals are large diameter distribution mains, and most of them are over 100 years old.

Although City West Water has proposed to utilise external resources to deliver the additional works, it is expected that additional internal resources will be required to manage the external contracts. This is not reflected in the number of FTE staff.

4.7.3 Recommendation

We have not recommended any adjustments to the capex forecast for this program.

4.8 Sewer Hydraulic Compliance

4.8.1 Description of project

City West Water has forecast capex of $21.2m in total during RP4 for its Sewer Hydraulic Compliance Project.

The purpose of the project is to design and construct works required to satisfy the EPA compliance standard, whereby sewers must contain flows resulting from a 1 in 5-year Average Recurrence Interval (ARI) storm event.

In determining the need for the expenditure, City West Water completed hydraulic modelling of a number of sewerage catchments, which identified the parts of the sewer network that does not comply with the requirement of containing a 1 in 5-year ARI wet weather event.

The business case for the Sewer Hydraulic Compliance program provided information on Youell Street, Stony Creek and Taylor's Creek. Extracts of the modelling report for Youell Street, Stony Creek and Taylor's Creek catchments were also provided.

4.8.2 Analysis

The proposed budget of $21.2m represents a 650% increase over the previous regulatory pricing period ($2.8m). The supporting documents did not specifically comment on the reason for the significant increase in cost and scope. It can only be speculated that previously sewer network models were not utilised to identify system deficiencies.

The justifications for the proposed works are well documented for Youell Street, Stony Creek and Taylor's Creek Catchment. The deficiencies in the network and need for expenditure are supported by the hydraulic model results.

4.8.3 Recommendation

We have not recommended any adjustments to the capex forecast for this program.

4.9 Meter services and procurement

4.9.1 Description of project

City West Water has proposed capex of $40.5m for meter services and procurement for RP4, compared to RP3 spend of $30.5m.

This program covers the installation of new property service water connections, fire service connections and installation of water meters for predominately new developed properties to satisfy customer demand.

The majority of the budget increase is justified by the change of responsibility of property connections in brownfield developments. Prior to 1 July 2017, the property connection was the responsibility of the property owner. It is now the responsibility of City West Water to provide the required property connection with the cost recovered from the customer making the application for connection. Hence, the increase in the budget for this program should have a corresponding increase in revenue.

4.9.2 Analysis

The significant increase in the budget is justified by the change in the responsibility of construction of the property branch. The corresponding increase in new connection charges covers for the increase in cost under the meter services program.

4.9.3 Recommendation

We do not recommend any adjustments to expenditure for this program.

4.10 CBD Sewer Renewal

4.10.1 Description of project

This project forms part of the Melbourne CBD Strategy that was developed to service the growth in the CBD. The entire strategy comprises of four stages. Part of Stage 1 and all of Stage 2 are proposed to be completed during this pricing period.

The proposed work includes

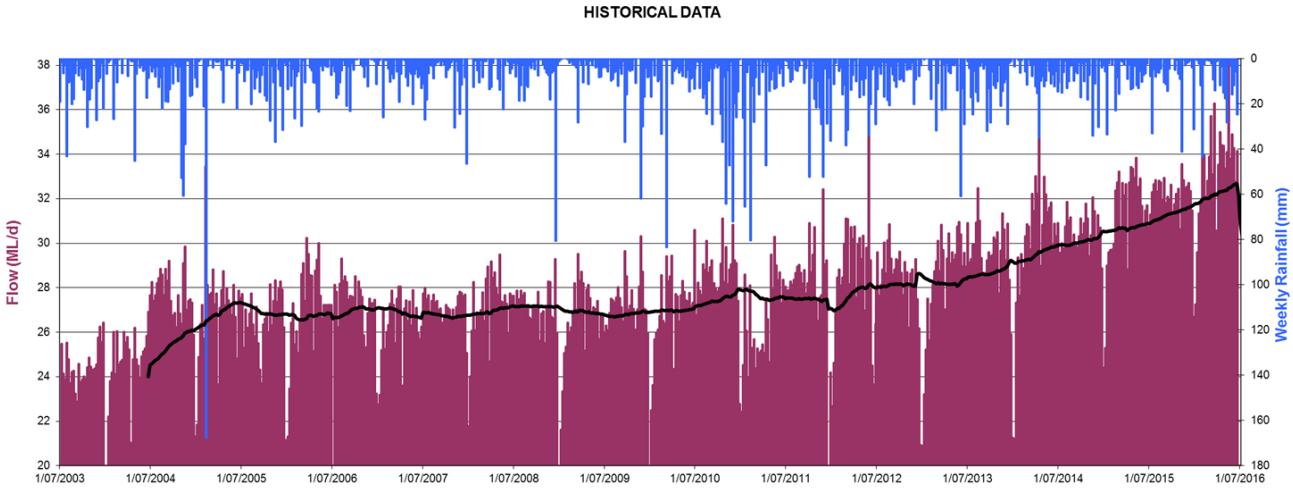
- Stage 1 – Augmentation of the Spencer Street Sewer between Flinders Lane and Little Lonsdale Street, $24.1m ($12.2m within RP4)
- Stage 2 – New outlet sewer along Lonsdale Street between Spencer Street and Elizabeth Street and diversion of Swanston Street sewers to new Lonsdale Street outlet sewer, $27.9m

City West Water provided a "CBD Sewerage Strategy" report to support the overall project which includes a total of 4 stages of work.

4.10.2 Analysis

Historical flow records show a clear trend of increasing sewer load in the CBD.

Figure 4-4 Historical Melbourne CBD Sewer Catchment Flow



Source: City West Water CBD Sewer Strategy

The business case documented three alignment options, which were evaluated and costed. The preferred alignment is approximately 20% cheaper than the other two options considered for the project. The preferred option appears to be the shortest in total length. The option assessment discussion did lack some detail to demonstrate the benefit of the preferred option. However, in our view this would not be expected to change the preferred option.

4.10.3 Recommendation

We have not recommended any changes to the proposed capex for the CBD Sewer Renewal for RP4.

4.11 Summary of recommendations

Our recommendations for adjustments to City West Water's capex forecast over RP4 are set out below. We recommend a reduction of $23.3m from City West Water's proposed capex. We recommend that:

- The proposed budget for Sewer KPI Renewal be reduced to RP3 level as City West Water was able to meet KPI with previous budgets
- No changes are recommended for the remaining of the proposed Capex programs and projects including the Water KPI Renewal, Sewer Growth program, Meter Services and Meter procurement, Water Risk Renewal and CBD Sewer Renewal Stage 1 and 2.

Table 4.2 City West Water forecast capex ($m)

Capex item		Price submission forecast					
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4
Water KPI Renewal	Proposed	16.20	16.90	18.50	17.20	15.30	84.10
	Recommended	16.20	16.90	18.50	17.20	15.30	84.10
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
Sewer growth – developer works	Proposed	12.80	17.60	16.30	6.90	11.80	65.40
	Recommended	12.80	17.60	16.30	6.90	11.80	65.40
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
	Proposed	10.10	10.90	11.30	13.30	10.60	56.20

Sewer KPI renewals	Recommended	6.58	6.58	6.58	6.58	6.58	32.90
	Net change	-3.52	-4.32	-4.72	-6.72	-4.02	-23.30
Meter services and meter procurement	Proposed	8.10	8.00	8.00	8.20	8.30	40.60
	Recommended	8.10	8.00	8.00	8.20	8.30	40.60
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
Water risk renewals	Proposed	0.60	7.20	11.70	9.00	9.30	37.80
	Recommended	0.60	7.20	11.70	9.00	9.30	37.80
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
CBD sewerage strategy Stage 2 (Lonsdale Street)	Proposed	5.00	20.00	2.90			27.90
	Recommended	5.00	20.00	2.90			27.90
	Net change	0.00	0.00	0.00			0.00
Sewer hydraulic compliance	Proposed	3.00	4.00	3.50	5.40	5.40	21.30
	Recommended	3.00	4.00	3.50	5.40	5.40	21.30
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
Total proposed (Reviewed)		55.80	84.60	72.20	60.00	60.70	333.30
Recommended capex (Reviewed)		52.28	80.28	67.48	53.28	56.68	310.00
Recommended adjustments from proposed		**-3.52**	**-4.32**	**-4.72**	**-6.72**	**-4.02**	**-23.30**
Total proposed		124.46	127.10	106.12	97.28	94.14	549.11
Recommended capex		**120.94**	**122.78**	**101.40**	**90.56**	**90.12**	**525.81**

Limitation of our work

General use restriction

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