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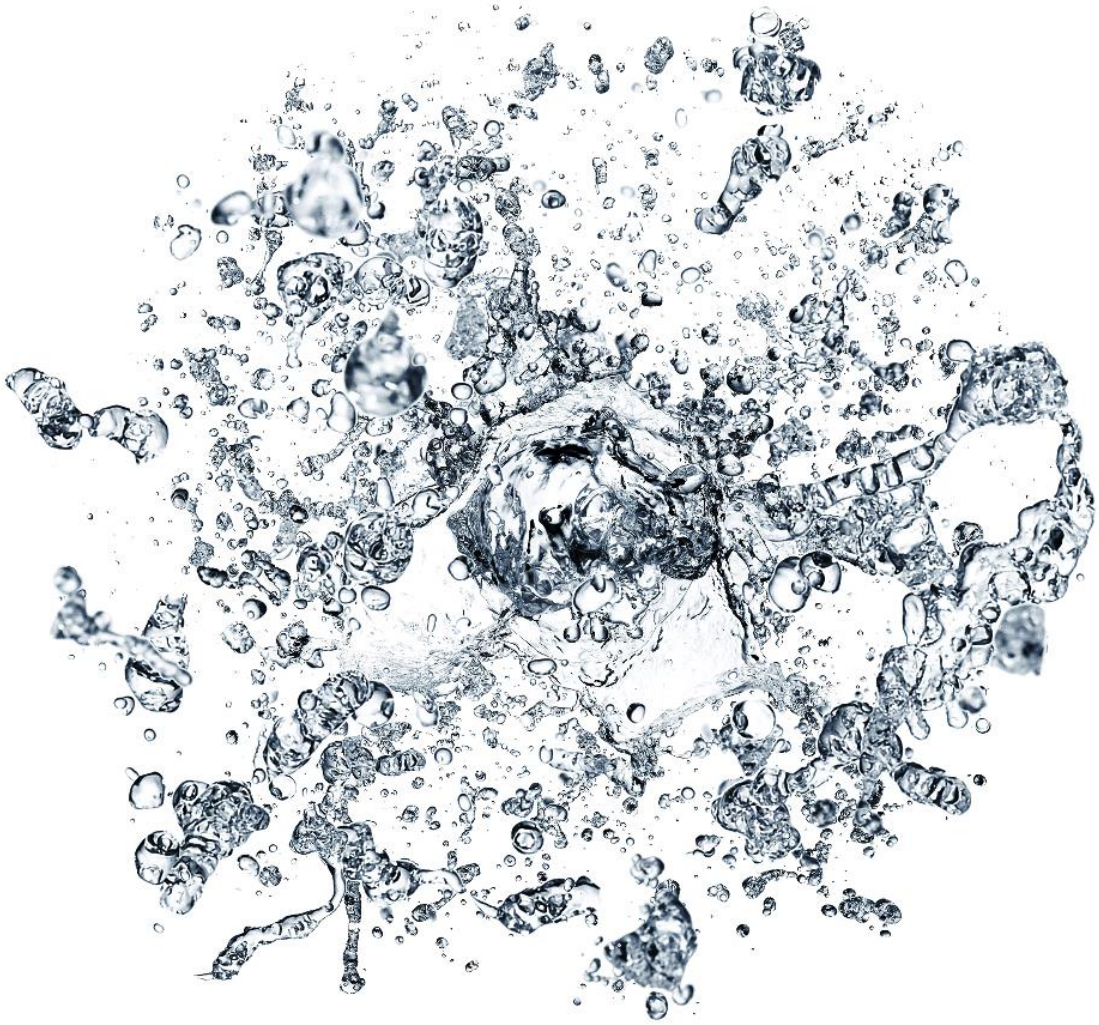


Gippsland Water – expenditure review for 2018 water price review

Report for the Essential Services Commission – FINAL REPORT

February 2018

Contents

Executive Summary

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.

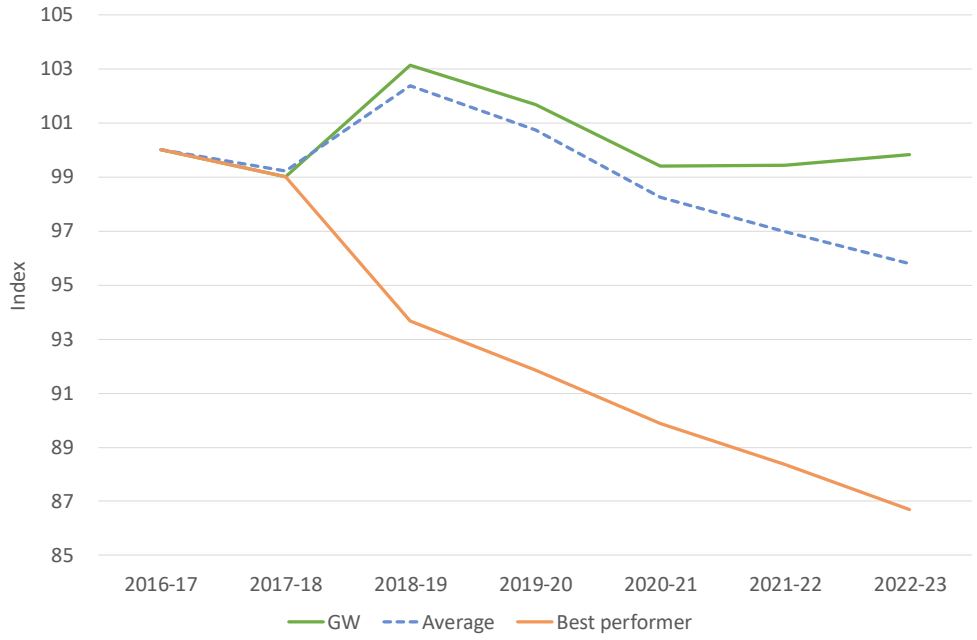
Operating expenditure (opex)

The key features of Gippsland Water's opex forecast include:

- A baseline controllable opex in 2016-17 of $68.84m, which is less than the 2013 forecast for 2016-17 ($72.88m)
- A forecast average customer growth rate of 1.2% per annum
- A cost efficiency improvement rate averaging 1.0% per annum, which is the equal lowest of all water businesses
- $16.78m of additional expenditure above the baseline in total for RP4, which is the fourth highest of the Victorian regional water businesses
- An increase in controllable opex per connection of 0.2% over the RP4 period after factoring in the additional expenditure.

The chart below shows that Gippsland Water is forecasting opex increases that are above the average for regional businesses.

Figure 0-1 Change in controllable opex per connection – index



We have recommended a reduction of **$8.20m** to Gippsland Water's RP4 forecast controllable opex, with reductions relating to labour ($5.33m) and electricity ($2.87m). The key reasons for these recommendations are outlined in Chapter 3.

Capital expenditure (capex)

Gippsland Water's proposed net capex during RP4 is similar to that of RP3, although gross capex is lower. Key aspects of the capex forecast include:

- 10 Top Major Projects total $69.79m which accounts for around 34.2% of total proposed capital expenditure
- A significant budget for renewals and growth expenditure. Renewals and growth represents 87% of the capex program.

We have recommended a reduction of **$1.55m** to Gippsland Water's RP4 forecast capex program relating to two projects:

- The forecast for the Treated Water Basin Liner and Covers has been reduced by 5%. It is expected that cost efficiency can be achieved by packaging the 10 individual liner and covers replacement project.
- A reduction of $0.87m for the sewer main renewal program to match the capex spend over RP3.

The key 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 on price paths. 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 is reviewed in detail, particularly where businesses are undertaking 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. Gippsland Water's site visit was undertaken on 12 December 2017
- Detailed review and analysis of supporting information provided
- A Draft Report was prepared and provided to Gippsland Water for comment
- A Final Report (this report) provided to the ESC to inform the draft price determinations.

Through the process review, water businesses have been given some key 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 Gippsland Water's price submission. It is structured as follows:

- Chapter 2 briefly summarises Gippsland 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 Gippsland Water's opex forecast
- Chapter 4 provides our analysis, conclusions and recommendations on key issues with respect to Gippsland 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 Gippsland Water's forecast

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

2.1 PREMO rating

Gippsland Water has rated its submission as 'Standard' under the ESC's PREMO framework.

2.2 Key drivers of expenditure

2.2.1 Community expectations and service standards

Gippsland Water provides water, wastewater and waste recovery services to domestic and commercial customers across Central Gippsland. As a part of consultation for its pricing submission, Gippsland Water's customers provided support for the following in line with the following customer values:

- Spending to ensure the reliability and consistency of service
- To not compromise level of service through cheaper bills, but to also emphasise customer affordability due to increased unemployment and hardship in the region particularly across the Latrobe Valley
- Five new guaranteed service levels related to community rebates administered by a Community Consultative Committee, compensation for longer than planned interruptions and investment in programs to support the community.

2.2.2 Demand for services

Specific regions of Gippsland Water will experience different levels of demand for services. Based on Gippsland Water's growth history, trend analysis conducted by Gippsland Water and Victoria in the Future 2016 projections, towns on the Melbourne fringe – notably Warragul and Drouin - are forecast to experience the highest number of new connections. Growth in Traralgon and Sale is also forecast at an average of 1.3% and 1.1% per annum respectively.

We note that residential customer growth has been slow in 2017-18 to date, and below forecast.

Gippsland Water has also experienced major changes to its core customer base. Due to closures of Energy Brix, Engie-Hazelwood (Hazelwood Power Station) and Carter Holt Harvey's softwood sawmill, there is a lower overall forecast for water consumption during RP4.

2.2.3 New obligations

Gippsland 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, Gippsland Water has identified the following as drivers of increased opex:

- Direct environmental expenditure
- Emission reduction and energy saving projects
- Increased environmental contribution
- Increase in capex projects
- Enterprise Agreement, which includes wage increases above assumed CPI.

2.3 Operating expenditure

2.3.1 Overview

The key features of Gippsland Water's opex forecast include:

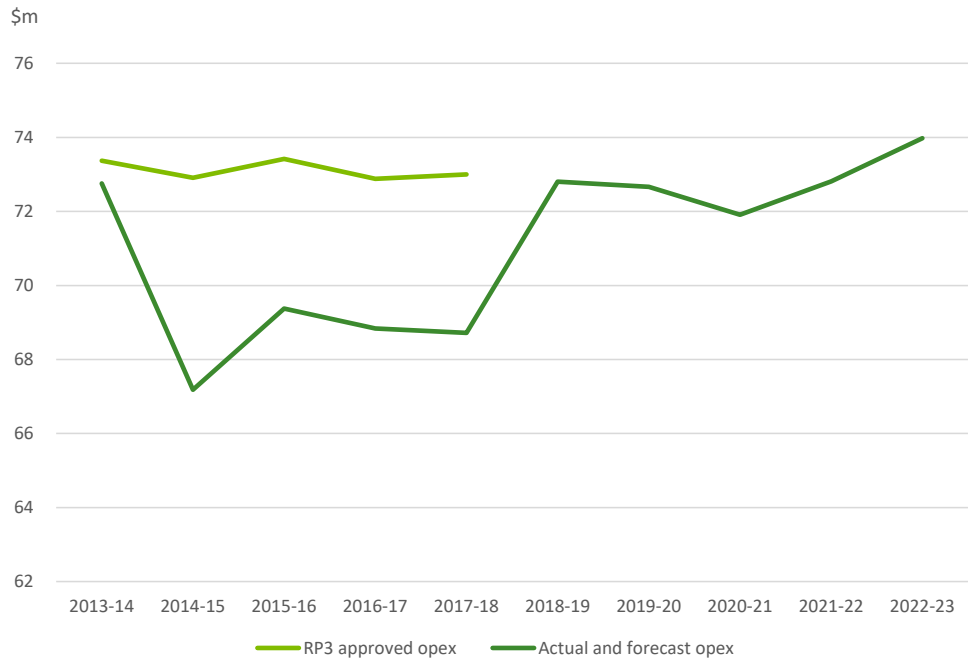
- Baseline controllable opex in 2016-17 of $68.84m, which is less than the 2013 forecast for 2016-17 ($72.88m)
- A forecast average customer growth rate of 1.2% per annum
- A cost efficiency improvement rate averaging 1.0% per annum, which is the equal lowest of all water businesses
- $16.78m of additional expenditure above the baseline, which is the fourth highest of other Victorian regional water business
- An increase in controllable opex per connection of 0.2% over the RP4 period after factoring in the additional expenditure.

2.3.2 Controllable opex forecast

The chart below shows Gippsland Water's total controllable opex across RP3 and RP4. Gippsland Water recorded significant expenditure reductions in most years of RP3, resulting in overall opex that was well below forecast. A sharp increase is forecast for 2018-19 that will reduce until 2020-21, and then increase for the remainder of RP4.

Gippsland Water's opex increase is the net effect of a cost efficiency improvement rate of 1.0%, a customer growth rate of 1.2%, and $16.78m of opex above the baseline (total for the 5 years). This results in an average increase of 0.2% per annum in opex per connection for RP4.

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



2.4 Capital expenditure

2.4.1 Overview

Gippsland Water has proposed gross capex of $208.8m over RP4. This is 7% lower than the actual net capex delivered over RP3 of $223.4m.

Key aspects of RP4 capex programme include:

- 10 Top Major Projects total $69.79M which accounts for around 34.2% of total proposed capital expenditure

- A significant budget for renewals and growth expenditure. Renewals and growth represents 87% of the capex program.

2.4.2 Capex forecast

Gippsland Water's actual and forecast water and sewerage capital expenditure is shown below.

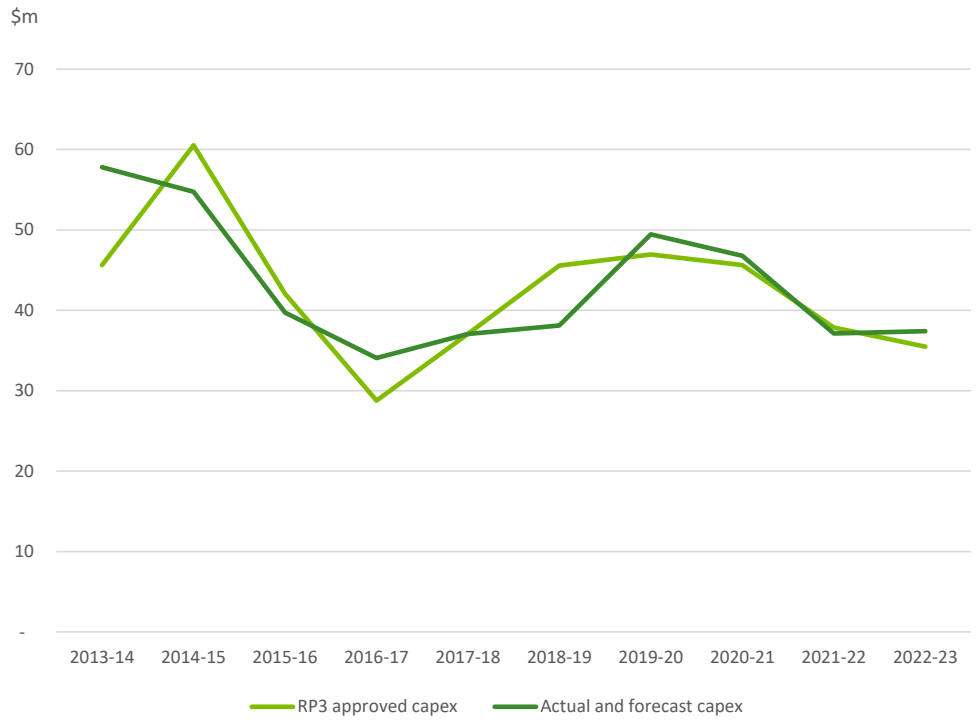
The key drivers of capital expenditure are renewal and growth. Examples of these projects include the Drouin Sewer – New Wastewater Treatment Plant ($31.45m) and the Treated Water Basin Liners and Covers Replacement program ($13.12m).

Sewerage capex has decreased from $134.2m in RP3 to a proposed $122.4m in RP4 (a 9% reduction). Sewerage Pipeline/Network is proposed to fall from $92.5m to $58.2m (37% decrease), while Sewerage Treatment will increase from $32.3m to $57.4m (77% increase).

Water capex is proposed to be relatively constant from $89.2m in RP3 to $86.5m in RP4, with decreases in Headworks and Pipeline/Networks spending, offset by increased expenditure on Treatment.

There is no forecast expenditure on recycled water for the next regulatory period.

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



3 Assessment of opex

This chapter assesses Gippsland 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, water businesses are expected 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 'ebbs 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.

The figure 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

Gippsland Water resubmitted its original excel template to the ESC. This resulted in a $1.35m reduction to its baseline controllable opex in 2016-17, and a reduction of around $250,000 per annum to proposed opex in RP4.

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.

Gippsland Water's actual total controllable expenditure was $68.84m in 2016-17. Gippsland Water made no net downward adjustment to its baseline, reflecting its view that expenditure in 2016-17 was generally representative.

In its 2013 price review, the ESC set a benchmark of $72.88m for 2016-17 ($2017-18). Gippsland Water's baseline expenditure in 2016-17 is lower than this benchmark, and Gippsland Water recorded lower opex most years of RP3 than the ESC benchmarks. Gippsland Water attributes this to tight internal budgetary controls and the removal of the carbon tax. We note that Gippsland Water's FTEs have remained almost constant across RP3, despite customer growth.

We have assessed Gippsland Water's 2016-17 baseline and we believe that it reflects an efficient baseline and that 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 regional urban water businesses change in controllable opex per connection over RP4. This figure shows that Gippsland Water (GW in the chart) is forecasting opex increases that are above the average for regional businesses.

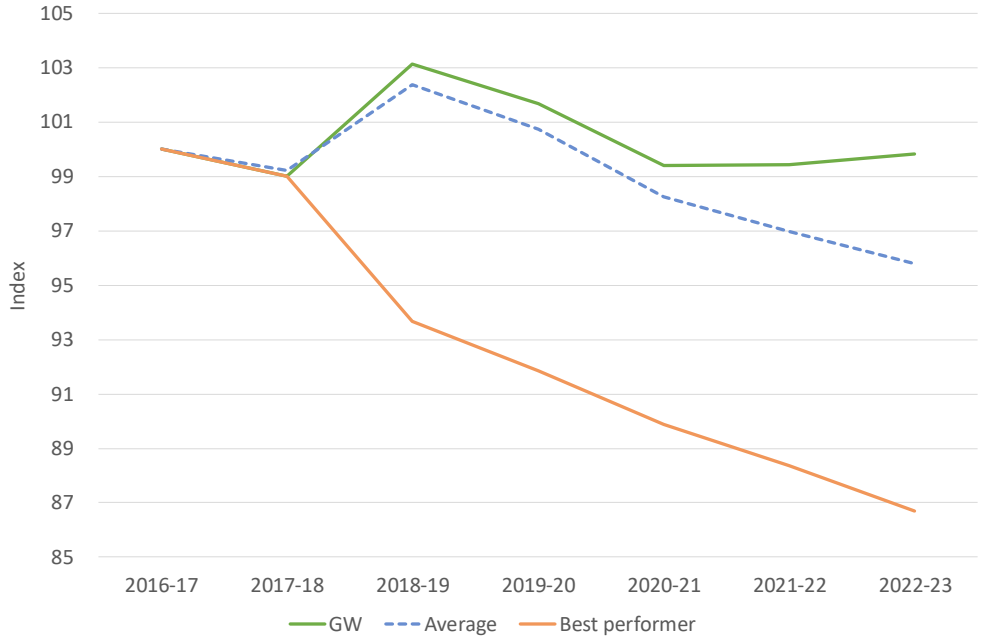


Table 3-1 compares all of the Victorian water businesses and shows that Gippsland Water is forecasting an average 0.2% per annum increase in controllable opex per connection for RP4. Only one

other regional business has forecast an increase in opex per connection in 2022-23 compared to 2016-17.

Figure 3-2 Change in controllable opex per connection – index

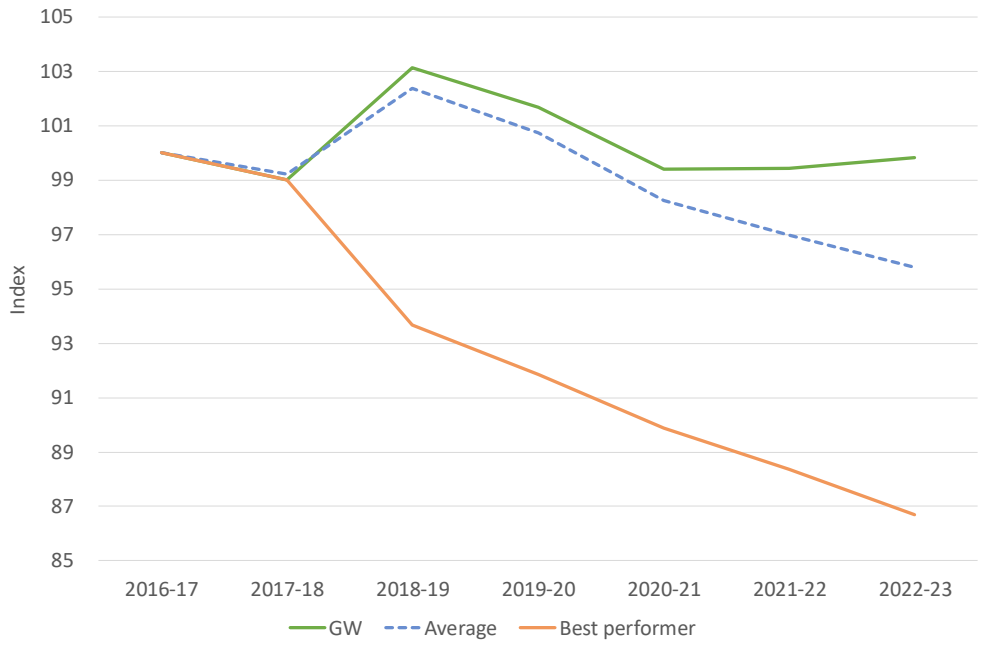


Table 3-1 Comparison of Victorian water businesses change in controllable opex

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%

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)
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

In its revised template Gippsland Water has identified $16.78m of forecast variations to baseline expenditure in total for RP4. The changes consist entirely of increases in labour and energy costs.

- Labour, $10.59m
- Energy, $6.19m

These items are explored further below.

3.5.1 Labour

Gippsland Water has forecast labour cost increases above the baseline of $10.59m over RP4. This reflects:

- EBA wage increases of 3% across RP4. Gippsland Water's current EBA, which provides for 3% increase in wages, expires on 12 October 2019. Gippsland Water has assumed that this 3% increase will continue beyond this time.
- An increase of 12.2 FTE in 2017-18 (5%) and 2 FTE in 2018-19, with no substantial increase in FTE across the rest of RP4. The 2017-18 increase is largely due to the assumed filling of all vacancies.

A comparison of Gippsland Water's labour forecast to other water businesses shows that Gippsland Water is forecasting the second highest labour increases of all water business during RP4. Gippsland Water's forecast variation represents 2.9% of its total controllable opex.

Table 3-2 Comparison of labour forecast for RP4 of the Victorian water businesses

Water business	Forecast variations to baseline opex (total RP4 $m)	Total controllable opex (total RP4 $m)	Labour variations as a % of total controllable opex
Wannon	11.85	201.8	5.9%
Gippsland	10.59	364.2	2.9%
Goulburn Valley	5.90	220.2	2.7%
North East	3.62	196.6	1.8%
Barwon	7.90	453.3	1.7%
GWMWater	2.85	161.1	1.8%
Central Highlands	3.80	266.0	1.4%

Water business	Forecast variations to baseline opex (total RP4 $m)	Total controllable opex (total RP4 $m)	Labour variations as a % of total controllable opex
East Gippsland	0.32	90.4	0.4%
South Gippsland	0.12	95.8	0.1%
City West	-	534.7	0.0%
South East	-	622.6	0.0%
Yarra Valley	-	674.4	0.0%
Coliban	-	301.3	0.0%
Westernport	-	66.5	0.0%
Lower Murray – urban	-0.37	103.2	-0.4%

As outlined above, proposed expenditure should only be added to the baseline where the water business can demonstrate that it is required (e.g. new obligation, customer preference or cost that cannot be managed). All Victorian water businesses are owned by the State Government and are subject to the same wages policy, which is overseen by DELWP and DTF. We would therefore expect to see a similar application of this wages policy across all water businesses.

We note that for most if not all water businesses, wage increases established under current EBAs (which are typically in the range of 2.5% to 3.25%) are well above inflation, and are also higher than average growth in wages across the economy. While commentators (including Deloitte Access Economics' own forecasts) expect wages growth to slowly increase over time, most businesses' forecasts of wages growth are higher than those projected for the broader economy for the next few years.

We accept that water businesses are legally obliged to comply with wage increases set out in EBAs. At the same time, our view is that passing through to customer prices wage increases which, it appears, will for several years be well above wage increases in the broader economy, is unlikely to be prudent and efficient. We also consider that pass through of these costs to customers would be inconsistent with the PREMO framework, which requires businesses to demonstrate that they have actively sought to reprioritise expenditure to mitigate the cost and price impacts of any new obligations. There are a range of factors that we consider could mitigate EBA increases, for example:

- EBAs don't necessarily cover all staff in the business
- Businesses have options for delivering services that can reduce the cost impact of EBAs, such as contracting or outsourcing
- We understand that EBAs often have provisions that require increases above inflation to be accompanied by improvements in productivity.

We also note that most businesses have effectively 'absorbed' their above-CPI wage increases within their overall opex forecasts through productivity increases or other cost reductions, meaning that these increases are not passed on to customers. We believe this is a prudent and efficient approach and accordingly we have generally recommended reductions in opex forecasts for those businesses that have proposed wage-driven variations above their growth-adjusted baseline.

In assessing Gippsland Water's $10.59m labour cost increases as a result of its EA we note:

- Across the economy more broadly, average wage increases are currently at or below CPI

- Although all businesses are experiencing an increase in labour costs as a result of wage increases above CPI, six businesses are absorbing any increases above the baseline, and two more have proposed marginal increases.
- Gippsland Water had the highest labour costs per FTE of any of the regional businesses in 2016-17 and will also have the highest in 2022-23.

Therefore, we are of the view that real wage increases should not be included as additional expenditure in Gippsland Water's forecasts. This adjustment is shown in Table 3-5.

We understand Gippsland Water's increased labour costs from new FTEs (12.2 in 2017-18 and 2.0 in 2018-19) is based on the assumption that all current vacancies will be filled in 2017-18. While making an effort to fill vacancies is a reasonable objective, we note that all businesses will have vacancies at any point in time. As existing vacancies are filled, other staff will leave and new vacancies will arise. It would therefore appear unrealistic to assume that all vacancies will be filled.

However, we recognise that Gippsland Water's FTE numbers are the same in 2016-17 as in 2013-14, despite a 4.3% increase in customer numbers. Beyond the proposed 5% increase in FTEs in 2017-18, staff numbers are proposed to increase by only two across RP4. Some above-baseline allowance for increased FTEs therefore appears reasonable.

We consider that it is highly unlikely that there will be no vacancies in 2017-18, but also that some FTE increases over time would appear reasonable, on the basis that:

- Gippsland Water's forecasts reflect no vacancies
- A 2% vacancy rate is not unreasonable.

We have therefore provided for an increase of 7.2 FTE in 2017-18 (down from 12.2) and 2.0 in 2018-19.

The impact of holding real wages per FTE constant, and a reduction in FTEs, is shown below.

Table 3-3 Gippsland Water forecast controllable opex and recommended adjustments ($m)

Opex item	Actual	Price submission forecast						Total
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	RP4
Ave cost/labour ($'000)	115.60	115.60	115.60	115.60	115.60	115.60	115.60	**578.01**
No FTEs	232.8	240	242	242	242	242	242	
Total labour cost			27.98	27.98	27.98	27.98	27.98	**139.88**
Gippsland Water proposed labour cost			28.15	28.55	28.96	29.51	30.04	**145.21**
Reduction			0.17	0.57	0.99	1.53	2.06	**5.33**

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

3.5.2 Electricity and emissions offset

Gippsland Water has forecast expenditure for electricity to increase by a net amount of $6.19m in RP4 compared to the 2016-17 baseline. This reflects an increase in each year of the period, with the highest annual increases forecast for 2018-19 and 2019-20 respectively.

Overall, this reflects an increase of 1.7% of total proposed controllable opex, the fourth highest percentage across the Victorian water businesses. The table below presents a comparison of Gippsland Water's forecast energy variations relative to the baseline to the other water businesses over RP4.

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 operating expenditure (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%

There are two main elements that feed into Gippsland Water's proposed variation for electricity:

- Forecast increases in the price of electricity
- Reduction in electricity consumption from the installation of behind-the-meter electricity generation capacity.

Some key aspects the electricity forecast are outlined below.

- Gippsland Water's current contract to purchase electricity expires on 30 June 2018.
- It forecasts retail electricity prices for its large sites (which accounted for approximately 80% of electricity expenditure in the base year) using ASX energy futures data for 2018-19, 2019-20 and 2020-21, and assumes these remain constant for the remainder of the period. It assumes retail electricity prices for small sites (which accounted for the remaining 20% of electricity expenditure in 2016-17) will remain constant in real terms, other than a small

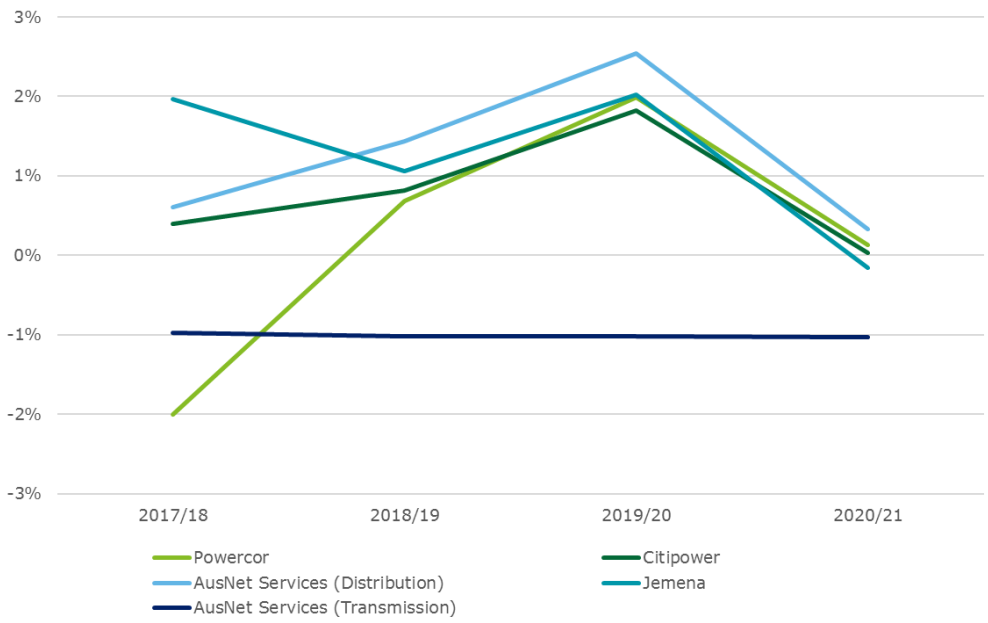
increase in the network charges component. In addition to the 'black' cost of electricity, Gippsland Water forecasts the cost of various green schemes assuming a Large-scale Generation Certificate cost of approximately $81/MWh and Small-scale Technology Certificate cost of approximately $40/MWh throughout RP4.

- Gippsland Water has stated it expects to finalise electricity contract prices by February 2018.
- Electricity consumption and expenditure is forecast separately for each large and small site, and added together to provide total values.
- Gippsland Water has proposed a number of behind-the-meter electricity generation installations including solar PV at Moe WTP, Maffra WTP, Moe WWTP, Warragul WWTP, Warragul WTP, Traralgon Head Office, and a hydro turbine inlet at Traralgon Water, at a combined cost of $4.18m. These are forecast to reduce electricity consumption by 2,600 MWh per year.

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 3-3 below.

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



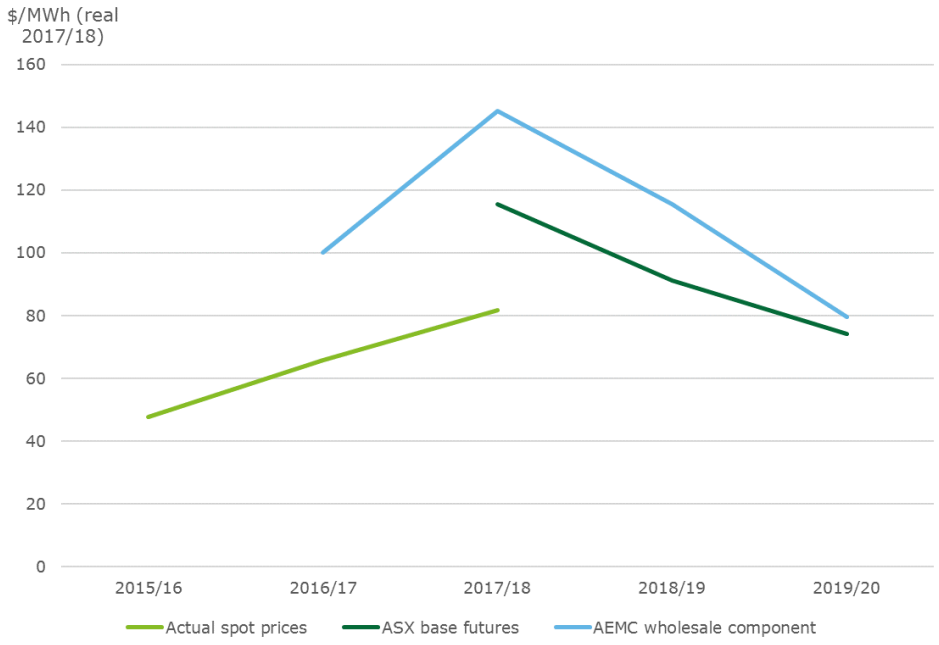
Source: Deloitte analysis of AER decisions

[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.

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. Gippsland Water is in the AusNet Services distribution network, which has small real revenue increases from 2017-18 onwards (slightly greater than 1% average). The change in price for particular customer types may differ from this overall trend, however it is broadly in line with Gippsland Water's forecasts.

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 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 3-4, along with actual average spot prices up to December 31 2018.

Figure 3-4 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 Gippsland Water's proposal, we have considered the evidence provided by Gippsland Water and recent forecasts of network and wholesale price movements. We first address the variation proposed for the first two years of RP4, followed by the remaining three years.

[2] AEMC, 18 December 2017, *Final Report 2017 Residential Electricity Price Trends*
[3] Jacobs, 21 September 2017, *Retail electricity price history and projected trends*

Gippsland Water's proposed retail price forecast for 2018-19 and 2019-20 reflect an average effective price increase on 2016-17 prices of 61% and 55% respectively (based on reported expenditure and consumption at existing sites). This is based on forecast peak energy prices which are approximately 2.6 and 2.4 times higher in those years than 2016-17 prices, and forecast off-peak energy prices which are approximately 3.5 and 3.0 times higher than 2016-17 prices. Although we consider it likely that prices will be higher than 2016-17 in these years, we consider these price rises high. Our preliminary recommendation is that some variation is approved, but not the full amount. As outlined earlier, we note that Gippsland Water expects to finalise electricity prices based on actual contracts in February 2018, and recommend that the variation is recalculated based on those prices, including green schemes. We also note that preliminary indications are that contract prices may be slightly lower than those included in the price submission, although this is yet to be confirmed.

For 2020-21 onwards, we do not consider there is strong evidence to support a continued price increase that could not be managed, particularly considering the investment Gippsland Water has proposed for emissions reductions. We note that most of the proposed capex is to be spent in the first two years of RP4, taking effect by 2020-21. Given this proposed expenditure, and recent evidence regarding electricity price forecasts, we recommend that the variation should not be approved for the remainder of RP4. This results in a reduction of $2.9m in total for RP4 from Gippsland 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.

3.5.3 Other Operating expenditure

We have reviewed Gippsland Water's other expenditure, but other than wages we have not made any changes to its forecasts. We note that it is difficult to benchmark Gippsland Water against other regional water businesses due to the existence of a small number of major customers and its major recycled water facility, however we have taken into account that:

- In benchmarking undertaken by Third Horizon, Gippsland Water compared satisfactorily against its peers across most indicators
- Base year (2016-17) opex was below the ESC benchmarks for RP4
- Chemical cost increases appear reasonable given quoted costs and lower than normal levels in 2016-17 due to a wastewater treatment outage at Moe/Newborough
- IT cost increases are not unreasonable
- Unlike some other businesses, Gippsland Water has not sought increases to deal with many of the 'ups and downs' in expenditure. For example, Gippsland Water has not included any allowance for potential costs associated with undertaking ecological risk assessments for its wastewater treatment plants.

Gippsland Water has provided us with the calculations underlying its corporate cost allocation to its recycling facility and agribusiness. We have not undertaken a detailed review of its allocation model, however the methodology appears thorough and largely based on standalone or average cost allocations (as distinct from allocating only incremental costs). We therefore have made no adjustments to the allocations.

3.6 Recommended changes to forecast opex

The table below summarises the changes to opex above baseline expenditure. We have recommended a reduction of $8.20m to Gippsland Water's RP4 forecast controllable opex as per the table below.

Table 3-5 Gippsland Water forecast controllable opex and recommended adjustments ($m)

Opex item	Actual	Price submission forecast					Total
	Baseline 2016-17	2018-19	2019-20	2020-21	2021-22	2022-23	RP4
Proposed controllable opex ($m, original proposal)	70.19	73.05	72.91	72.15	73.05	74.22	**365.38**

Opex item	Actual	Price submission forecast					Total
	Baseline 2016-17	2018-19	2019-20	2020-21	2021-22	2022-23	RP4
Corrections to template	-1.35	-0.24	-0.24	-0.24	-0.24	-0.24	**-1.20**
Proposed controllable opex ($m, revised template)	68.84	72.80	72.67	71.91	72.81	73.98	**364.17**
Recommended adjustments							
Labour		-0.17	-0.57	-0.99	-1.53	-2.06	**-5.33**
Electricity				-0.94	-0.94	-0.99	**-2.87**
Total recommended adjustments		**-0.17**	**-0.57**	**-1.93**	**-2.48**	**-3.05**	**-8.20**
Recommended opex		**72.64**	**72.09**	**69.99**	**70.34**	**70.92**	**355.98**

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

4 Capex

4.1 Overview of capex

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

- Our approach to the assessment of capex
- 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.

4.2 Our approach to the assessment of capex

Our approach to assessing capital expenditure is 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 of each businesses' forecast capital expenditure.

4.3 Overall assessment of capital planning and asset management

Gippsland Water has proposed gross capex of $208.8m over RP4. This is 7% lower than the actual gross capex delivered over RP3 of $223.4m. The proposed capex budget is split between 42% water infrastructure and 58% wastewater infrastructure. Drouin Wastewater Treatment Upgrade is the largest major project with a budget of $31.45m (15% of total gross capex).

Gippsland Water appears to have continued with the traditional approach of capital planning, which is common with most water companies reviewed. The proposed major projects and programs were developed to address the needs to maintain level of service, support growth or meet compliance. These drivers ultimately meet customer needs. However, none of the major projects or programs were developed as a direct result of the customer consultation process. It would appear that the proposed major projects and programs would have been included in RP4 apart from their increased customer consultation.

Gippsland Water has demonstrated a more proactive asset management approach with the Water Basin Covers and Liners Program. The condition of the covers and liners were visually assessed by divers and samples were also assessed by the laboratory to determine the useful remaining life. The need to replace the liners and covers are well supported and documented.

Generally, Gippsland Water's asset management approach, with regard to buried infrastructure, is on par with industry standards. That is, renewals programs are primarily based on nominal asset replacement life and specific indications of failures which influence the composition of projects and capex allocation.

We asked Gippsland Water to provide supporting documents for major projects and programs including the Drouin Wastewater Treatment Plant Upgrade, Treated Water Basin Liners and Cover Replacements and the Coongulla Water Interconnect to Heyfield project. The supporting information relating to the water and sewer renewals programs is generally limited.

4.4 Major projects

The following table provides an overview of the Top 10 projects (by capex), showing the primary driver and forecast expenditure over RP4. Based on the information provided by Gippsland Water, the following projects and programs were reviewed:

- Drouin Wastewater Treatment Plant Upgrade
- Treated Water Basin Liners and Cover Replacements
- Coongulla Water Interconnect to Heyfield project
- Moe and Churchill Basin Liner and Covers
- Water Main Renewal
- Sewer Main Renewal.

Table 4.1 Gippsland Water forecast capex

Capex item	Primary Driver	Price submission forecast expenditure ($m)						
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4	% of total
Drouin Sewer – New Wastewater Treatment Plant	Growth	1.93	12.20	15.41	1.93	0.00	31.45	15.43%
Sale Sewer – Outfall Sewer Pump Station	Growth	5.00	4.69	0.00	0.00	0.00	9.69	4.76%
Warragul Water – Western Ring Main to South Basin	Growth	0.00	0.36	0.36	4.09	4.09	8.88	4.36%
Coongulla Water – Interconnect to Heyfield	Improvement / Compliance	0.10	0.36	5.21	0.05	0.00	5.72	2.81%

Capex item	Primary Driver	Price submission forecast expenditure ($m)						
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4	% of total
Saline Waste Outfall Pipeline – Stages 4 and 5 Upgrade	Improvement / Compliance	0.00	0.00	0.00	0.10	4.60	4.70	2.31%
Warragul Sewer – North East Branch Augmentation (to Sutton Street)	Growth	0.00	0.31	0.33	0.24	3.57	4.45	2.18%
Mirboo North Water – Rising Main Replacement	Renewal	0.15	2.76	0.05	0.00	0.00	2.96	1.45%
Moe Water – Treatment Plant Basin Liner and Cover Replacement*	Renewal	Refer to Treated Water Basin Liners and Cover Replacement Program						
Churchill Water – Sanders Treated Water Basin Liner and Cover Replacement*	Renewal	Refer to Treated Water Basin Liners and Cover Replacement Program						
Sale Sewer – Convert Sewer Pump Station No. 2 to Underground Facility	Improvement/ Compliance	0.00	0.05	0.20	1.69	0.00	1.94	0.95%
Subtotal - Top 10 Projects		**7.18**	**20.73**	**21.56**	**8.10**	**12.26**	**69.79**	**34.25%**
Treated Water Basin Liners and Covers Replacement*	Renewal	3.46	2.37	3.80	1.45	2.04	13.12	6.44%
Sewer Reticulation Renewals Program	Renewal	1.23	1.23	1.33	1.33	1.33	6.43	3.16%
Water Reticulation Renewals Program	Renewal	1.23	1.23	1.23	1.23	1.23	6.13	3.01%
GWF Membrane Replacement and Major Works Program	Renewal	0.85	0.85	1.36	1.28	1.28	5.62	2.76%
Water Treatment Plant Enhancement Program	Renewal	1.12	1.12	1.12	1.12	1.12	5.60	2.75%
Subtotal - Top 5 Programs		**7.89**	**6.80**	**8.84**	**6.41**	**7.00**	**36.90**	**18.11%**
Other projects								
Other programs							**97.11**	**47.65%**
Total (net)							**203.78**	

*Note that Gippsland Water listed Moe Water Treatment Plant Basin and Churchill Water Sanders Treated Water Basin Liner and Cover Replacement as individual projects. The whole basin liner and cover replacement program is reviewed as a program and the capex summarised under the program.

4.5 Renewals expenditure

4.5.1 Description of project

Gippsland Water has more than 1,500 kilometres of water reticulation pipes. For the last three years, on average, Gippsland Water has renewed 6km of water reticulation pipe each year. Gippsland Water

proposes a total of $6.13m over five years renewing approximately 33.5km of water main. Gippsland Water had an actual water main renewal capex of $6.29m for RP3 (6.4-6.9km per year)

Gippsland Water has more than 1,100 kilometres of reticulation gravity sewer pipes. For the last three years, on average, Gippsland Water has relined 5km of sewers each year. Gippsland Water proposes a total of $6.43m over five years renewing approximately 22.8 km of the sewer. Gippsland Water had an actual sewer main renewal capex of $5.56m for RP3 (4.7km per year).

4.5.2 Analysis

Gippsland Water is essentially maintaining the status quo with the proposed water and sewer main renewal program. The rate of renewal of water and sewer main remain at a similar level to RP3. Gippsland Water did not include annual sewer blockage or water burst / leak data in their pricing submission.

Based on the ESC Water Performance Report, Gippsland Water typically had 28-36 water supply interruptions per 100km of main which is middle of the pack compared to other water businesses. There is no clear trend showing an increase in the frequency of the interruptions.

The sewer blockage record shows that Gippsland Water has the third lowest sewer blockage rate among the Victorian water authorities. The data shows an increase in the blockage rate but Gippsland Water is currently meeting KPIs, which suggests that the current maintenance program is effective.

4.5.3 Recommendation

Given there is no real change to the level of renewals expenditure for water main renewal, it is recommended that the proposed Water Main Renewal budget of $6.13m be approved to proceed.

Gippsland Water proposed a 16% increase in the sewer renewal budget. Given that there is no evidence in the need for an increase, we recommend the Sewer Main Renewal budget of $6.43m is reduced to the RP3 level of $5.56m.

4.6 Drouin Sewer – New Wastewater Treatment Plant

4.6.1 Description of project

The township of Drouin has experienced major growth over the last five years with a significant future growth projected for the surrounding area. The existing Drouin Wastewater Treatment Plant is a lagoon-based system with a nominated capacity of 10,000EP. The current population of Drouin exceeds 11,000 with an ultimate projected population of 36,000.

A high-level strategic options study investigated four options including:

- Combined plant with South East Water to service Longwarry and Drouin
- New STP for Drouin and Warragul
- A number of satellite plants to service the growth area around Drouin
- Plant upgrade at existing Drouin site.

Option analysis shows that upgrading the plant (the existing Drouin site) is the preferred option with the lowest Net Present Value.

A further option study investigated the treatment options including:

- SBR - Sequential Batch Reactor
- MBR – Membrane Bioreactor
- Granular Activated Sludge and filtration
- MABR – Membrane Aerated Bioreactor.

The options analysis concluded that the Membrane Bioreactor (MBR) was the preferred option.

Gippsland Water is proposing a total budget of $31.45m for the upgrade of the Drouin WWTP. It will cater for the rapid growth of the town and provide a more reliable service. Gippsland Water has obtained approval by the Treasurer, after endorsement by the Minister for Water.

4.6.2 Analysis

Gippsland Water provided the Business Case submitted to the state government for justification of the project. The business case was approved by Treasury.

The existing Drouin WWTP is a lagoon-based treatment system which is common for the rural community. Lagoon based treatment systems have the benefit of low energy input and low operating cost. However, it requires a relatively large land area compared to other mechanically-based treatment processes. The Drouin WWTP also has a mechanical sidestream plant utilising Dissolved Air Floatation and Filtration (DAFF) to manage wet weather flows.

Given the increased load and volume from recent and projected population growth, Gippsland Water has identified an increased risk that the Drouin WWTP may fail to provide effective treatment to protect the environment and public health. Gippsland Water has determined that an upgrade to the existing treatment plant is necessary to ensure service level and environmental obligations are met.

The high-level strategy and options assessment concluded that providing a dedicated Drouin WWTP represented the most cost-effective option compares to the alternatives such as sharing a facility with Longwarry or Warragul.

The treatment process option assessment evaluated seven different common treatment processes, including traditional activated sludge, activated sludge and membrane bioreactor, Modified Ludzack Ettinger (MLE), Sequence Batch Reactor and hybrid options. Four options were shortlisted and further evaluated. The multi-criteria analysis concluded that the activated sludge and membrane bioreactor option has the highest weighted score based on environmental, social-economic, level of service and financial criteria.

The level of information and assessment appears to demonstrate sound reasoning and thinking associated with the project need and the selected option. The options considered, and the MBR option selected, are generally considered to be suitable for this application. Furthermore, the selected process is not unfamiliar to Gippsland Water, being similar to the Gippsland Water Factory.

Gippsland Water also provided a timeline for the delivery of the project which appears to provide a reasonable and includes sufficient allowance for planning and project delays.

The proposed contracting approach would appear to be somewhat conservative, with Gippsland Water developing the detailed design before engaging contractors for delivery. This approach is likely result in a reduced risk of cost overruns from the current proposed budget, but may also result in an initial conservative estimate.

4.6.3 Recommendation

Based on the information provided, we believe that Gippsland Water has demonstrated that this project is both a prudent and efficient investment. Gippsland Water has investigated multiple options at regional strategy level and treatment process level to identify the most efficient and economical option that will meet the need to provide safe and effective wastewater treatment.

4.7 Treated Water Basins Cover and Liner Replacement

4.7.1 Description of project

There are a total of 24 treated water basins across Gippsland Water's supply network. The majority of the basins have liners and floating covers to protect drinking water quality. Recent visual condition assessment has shown that the covers have varying level of defects including cracks, tears and root intrusions.

Samples of liners and covers taken from storage basins were tested to determine the remaining useful life. 11 basin covers and liners were concluded to have less than three years of useful life remaining. Gippsland Water therefore proposes to have the liner and covers renewed for a total of 10 basins over the next 5 years.

4.7.2 Analysis

Gippsland Water's RP4 pricing submission listed each basin liner and cover replacement as individual projects. As all these projects are very similar in nature, all of the liner and cover replacement projects

are grouped together and assessed as a renewal program. There was no liner and basin cover program in RP3.

Gippsland Water is proposing a $13.1m basin cover and liner replacement program. Gippsland Water provided a Treated Water Basin Cover and Liner Replacement Options Assessment Report. The assessment costed three covering options for each of the 16 basins reviewed including,

- 15-year floating cover
- 25-year floating cover
- fix cover (50 years)

The 15 and 25-year floating cover option are the same floating cover. The 15-year option assumes run to failure with no maintenance. The 25-year option assumes regular maintenance to extend the life of the floating cover. The fix cover option includes multi-span fixed roof elevated above the water surface. Regular maintenance is included in the cost estimate to achieve 50-year design life.

The option of a floating cover with regular maintenance to achieve a 25-year design life was the preferred option for the majority of the basins reviewed. The recommendation is based on NPV of the three options assessed. The 25-year floating cover has the lowest NPV compares to the other options.

Open storage basins are common for regional authorities to provide cost-effective water storage facilities to maintain the security of supply and balance storage. Covers and liners are essential to protect water quality for supplying to customers.

4.7.3 Recommendation

The proposed basin liner and cover renewal program are well documented and supported. We note that the condition assessment and option evaluation has demonstrated that the project is necessary and the more cost-effective option has been nominated. Based on the information provided, we support the maintenance program nominated in the options analysis report to ensure that the targeted 25-year design life can be achieved.

However, we expect that there are some efficiency gains will be available if Gippsland Water packages the entire liner and cover renewal program for procurement. This will allow suppliers to provide competitive prices and reduce the overall cost of the program. Hence, we consider a conservative 5% reduction for the liner and cover renewal program is appropriate, which brings the budget of the program to $12.46m.

4.8 Coongulla Water Interconnect to Heyfield

4.8.1 Description of project

Coongulla is currently supplied by the Coongulla WTP which draws from Lake Glenmaggie as its raw water source. Treating water from Lake Glenmaggie has a number of challenges – the water in the lake can be affected by runoff after bushfires upstream and by recreational activities such as boating and water skiing on the lake.

Gippsland Water proposes to build a new pipeline from the Heyfield water treatment plant to Coongulla by 2021 to reduce the ongoing costs and challenges associated with Coongulla's water supply. The water treatment plant at Coongulla will then be decommissioned.

4.8.2 Analysis

Gippsland Water provided a comprehensive options assessment report for the construction of the Heyfield - Coongulla pipeline. Options include

- Option 1: Transfer main linking Heyfield and Glenmaggie/Coongulla (Three pipeline alignment sub-options)
- Option 2: Transfer main direct to Coongulla WTP – CWS
- Option 3: Upgrade Coongulla WTP
- Option 4: Cart Water as Sole Supply
- Option 5: Transfer main direct to Coongulla WTP – CWS (via East, 2 pipeline alignment option)

The option evaluation process utilised the triple bottom line approach (TBL). The option of under lake pipeline (Option 2), upgrade Coongulla WTP (Option 3) and carting water (Option 4) scored significantly lower than the Option 1 and Option 5 which are pipeline options connecting between Coongulla and Heyfield. The NPV and TBL scores for Option 1 and Option 5 are within margin of error. Option 5A was selected as the preferred option with slightly higher TBL score and lower NPC.

The report documented the challenges in meeting the water quality requirements with the existing Coongulla WTP and the benefit of the pipeline, which will be able to utilise the excess capacity of the Heyfield WTP.

It is clear that a long term reliable water supply is required to supply the township of Coongulla to replace the existing Coongulla WTP. The existing WTP does not have the capacity to provide effective treatment when the raw water quality is poor. We believe that Gippsland Water has demonstrated that all strategic options to supply Coongulla have been evaluated and the proposed pipeline option between Heyfield and Coongulla is the most cost effective option.

4.8.3 Recommendation

No reductions are recommended for this project.

4.9 Summary of recommendations

Our recommendations for adjustments to Gippsland Water's capex forecast over RP4 are set out below. A small adjustment is proposed for the following two projects:

- Treated Water Basin Liner and Covers is reduced by 5%. It is expected that cost efficiency can be achieved by packaging the 10 individual liners and covers replacement project.
- A reduction of $0.87m for the sewer main renewal program to match the capex over RP3.

Table 4.2 Gippsland Water forecast capex

Capex item		Price submission forecast ($m)					
		2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4
Drouin Sewer – New Wastewater Treatment Plant	Proposed	1.93	12.20	15.41	1.93	0.00	31.45
	Recommended	1.93	12.20	15.41	1.93	0.00	31.45
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
Treated Water Basin Liners and Covers Replacement	Proposed	3.46	2.37	3.80	1.45	2.04	13.12
	Recommended	3.29	2.25	3.61	1.38	1.94	12.46
	Net change	-0.17	-0.12	-0.19	-0.07	-0.10	-0.66
Coongulla Water – Interconnect to Heyfield	Proposed	0.10	0.36	5.21	0.05	0.00	5.72
	Recommended	0.10	0.36	5.21	0.05	0.00	5.72
	Net change	0.00	0.00	0.00	0.00	0.00	0.00
Sewer Reticulation Renewals Program	Proposed	1.23	1.23	1.33	1.33	1.33	6.43
	Recommended	1.11	1.11	1.11	1.11	1.11	5.56
	Net change	-0.12	-0.12	-0.22	-0.22	-0.22	-0.87
Water Reticulation Renewals Program	Proposed	1.23	1.23	1.23	1.23	1.23	6.13
	Recommended	1.23	1.23	1.23	1.23	1.23	6.13
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

Capex item	Price submission forecast ($m)					
	2018-19	2019-20	2020-21	2021-22	2022-23	Total RP4
Total proposed (reviewed)	7.95	17.39	26.98	5.99	4.6	62.91
Recommended capex (Reviewed)	7.66	17.15	26.57	5.7	4.28	61.36
Recommended adjustments from proposed	**-0.29**	**-0.24**	**-0.41**	**-0.29**	**-0.32**	**-1.55**
Total proposed gross capex	38.1	49.4	46.8	37.1	37.4	208.8
Recommended gross capex	**37.8**	**49.2**	**46.4**	**36.8**	**37.1**	**207.3**

Limitation of our work

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