

**North East Water – expenditure
review for 2018 water price review**
Report for the Essential Services
Commission – FINAL REPORT

February 2018

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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)

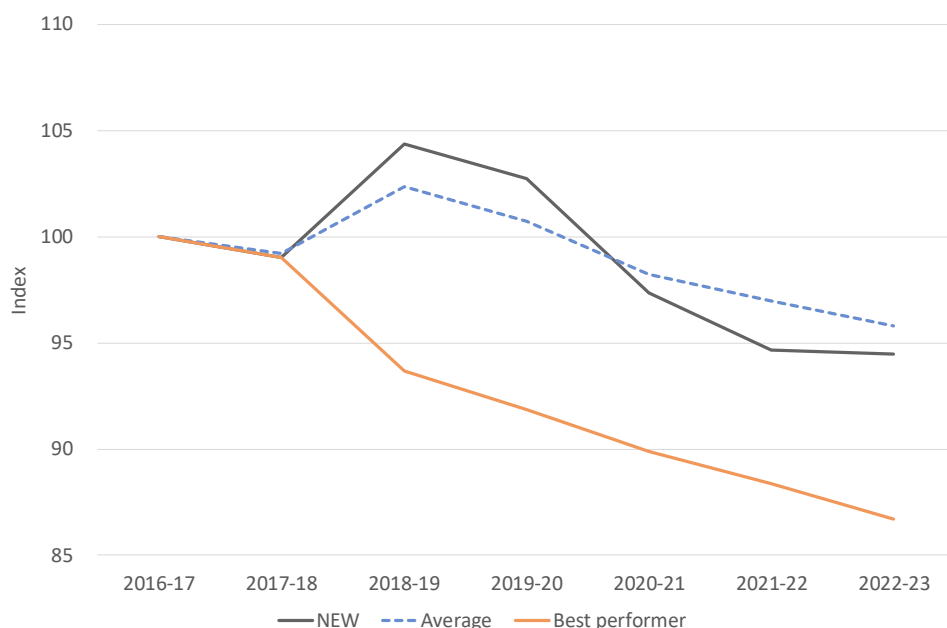
The key features of North East Water's opex forecast include:

- A baseline controllable opex in 2016-17 of \$39.77m, adjusted downward for non-recurring expenditure items incurred in 2016-17 to \$37.95m. This is more than the 2013 forecast for 2016-17 (\$36.29m)
- A forecast average customer growth rate of 1.24% per annum
- A cost efficiency improvement rate of 1.2% per annum
- \$6.96m of additional expenditure above the baseline (in total, across North East Water's proposed 8-year regulatory period), heavily weighted towards the first two years of the period due to the smart meter pilot program and high electricity costs in the short-term.

The net result of North East Water's cost efficiency improvement rate and proposed variations to the growth adjusted baseline is an average reduction in controllable opex per connection of 1.0% per annum. Note that this is calculated for North East Water's proposed 8-year regulatory period. For the purpose of comparison with other businesses, which have selected 5-year regulatory periods, North East Water's average annual reduction in controllable opex per connection is 0.9% over the next five years.

The figure below shows that North East Water is forecasting opex increases that are above the average for regional businesses in 2018-19 and 2019-20, but below for the rest of RP4 (over the 5-year regulatory period that other businesses have adopted), with North East Water becoming more competitive in later years.

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



Note: Covers only the first five years of North East Water’s proposed 8-year regulatory period

We have recommended a reduction of **\$9.33m** to North East Water’s RP4 forecast controllable opex, with the cuts relating to labour (\$7.33m) and digital metering (\$2.00m). The reasons for these recommendations are outlined in Chapter 3.

Capital expenditure (capex)

North East Water proposed a total of \$146m in capital expenditure over its 8-year RP4 (\$103.7m over the first 5 years). This is an increase over RP3 actual capex of \$95m¹, which was higher than the RP3 capex benchmark of \$80m. Key aspects of the RP4 capex programme include:

- 10 Top Major Projects total \$50.54m which accounts for around 35% of total proposed capital expenditure
- Forecast of a significant budget for compliance and renewals expenditure. Compliance and renewals represents 73% of the capex program
- A total of 48% of expenditure occurring in years 2, 3 and 4 of the 8-year period.

Based on the information provided by North East Water, we have recommended a reduction of **\$6.75m** to North East Water’s RP4 forecast. We have recommended adjustments to the following programs and projects:

- Water and Wastewater Above/Below Ground Renewal Programs
- Wodonga WWTP Capacity Upgrade and Emission Reduction
- Wodonga WWTP Major Upgrades
- Beechworth Wastewater System Upgrade.

The key reasons for these recommendations are outlined in Chapter 4.

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¹ RP3 capex is as advised by North East Water (RP3 capex in the ESC template is \$85m)

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 prudence 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 prudence 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. North East Water's site visit was undertaken on 14 December 2017
- Detailed review and analysis of supporting information provided
- A Draft Report was prepared and provided to North East 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 North East Water's price submission. It is structured as follows:

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

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

2.1 PREMO rating

North East 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

North East Water provides water and wastewater services to 50,273 customers. North East Water reached over 2,200 people in its engagement process. As a result of its customer consultation, North East Water considered 88 customer proposals and is proposing to:

- Continue providing a reliable service at an affordable price
- Move towards increased digital and online customer communication, but provide a choice
- Continue to invest in programs to increase the community's awareness about water efficiency, environment and climate change
- Be a responsible local business, through supporting those in hardship, providing jobs for young and disadvantaged people, and supporting local towns
- Maintain the capability to meet current service levels including a local customer contact centre and water supply reliability, and keep customers informed of planned and unplanned supply interruptions.

North East Water is proposing to increase prices by CPI plus 0.4% per annum over RP4.

2.2.2 Demand for services

Demand for services is increasing, and North East Water has stated that the population of the broader region is projected to steadily grow to 200,000 by 2051. North East Water engaged KPMG to forecast its customer connections, using trend extrapolation of historical data to identify historical growth patterns. The customer growth was calculated at 1.24% per annum over RP4.

2.2.3 New obligations

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

- Escalating energy prices
- The new Enterprise Agreement to be implemented 1 September 2018, which includes a wage increase of 0.7% beyond assumed CPI
- Implementation of a smart meter pilot in 2018-19 and 2019-20 and continued roll-out to enable customers to better monitor and manage their water consumption.

2.3 Operating expenditure

2.3.1 Overview

The key features of North East Water's opex forecast include:

- Baseline controllable opex in 2016-17 of \$39.77m, adjusted downward for non-recurring expenditure items incurred in 2016-17 to \$37.95m. This is more than the 2013 forecast for 2016-17 (\$36.29m)
- A forecast average customer growth rate of 1.24% per annum

- A cost efficiency improvement rate of 1.2% per annum
- \$6.96m of additional expenditure above the baseline (in total, across North East Water’s proposed 8-year regulatory period), heavily weighted towards the first two years of the period due to the smart meter pilot program and high electricity costs in the short-term.

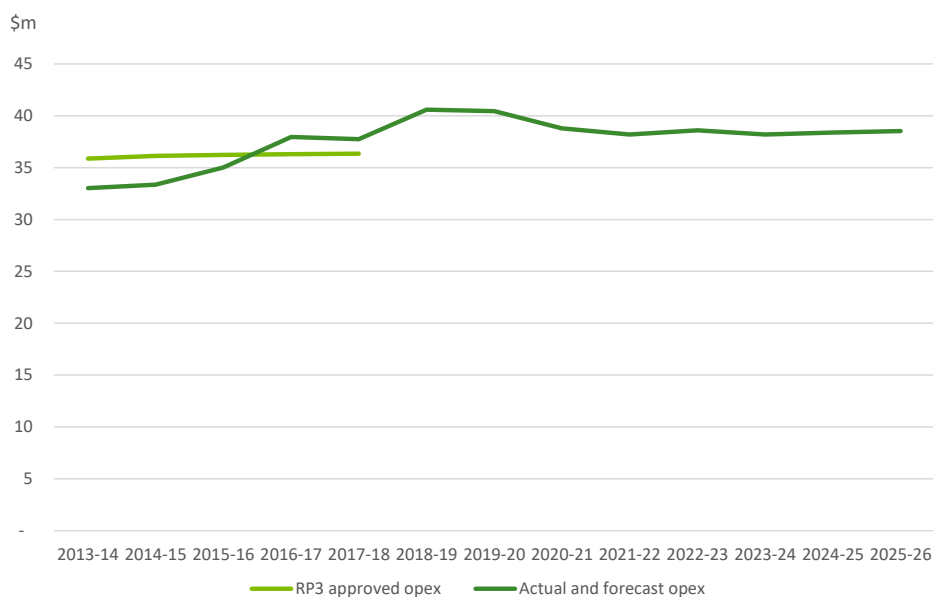
The net result of North East Water’s cost efficiency improvement rate and proposed variations to the growth adjusted baseline is an average annual reduction in controllable opex per connection of 1.0% per annum. Note that this is calculated for North East Water’s proposed 8-year regulatory period. For the purpose of comparison with other businesses, which have selected a 5-year regulatory period, North East Water’s effective cost efficiency improvement rate is 0.9%.

2.3.2 Controllable opex forecast

The chart below shows North East Water’s total controllable opex across RP3 and RP4. North East Water achieved \$2m in savings over RP3, mostly due to an underspend in the first half of RP3. However, opex increases from 2016-17, peaking in 2018-19, before a slight reduction over the rest of RP4.

North East Water’s opex increase is the net effect of a combined cost efficiency improvement rate of 1.2%, customer growth rate of 1.24%, and \$6.96m of opex above the baseline (total for the 8 years). This results in a reduction in controllable opex per connection of 1.0% per annum over North East Water’s proposed 8-year regulatory period, or 0.9% over the next five years.

Figure 2-1 Controllable opex – North East Water (\$2017-18)



Note: North East Water proposed an 8-year regulatory period

2.4 Capital expenditure

2.4.1 Overview

North East Water proposed a total of \$146m in capital expenditure over its 8-year RP4 (\$103.7m over the first 5 years). This is an increase over RP3 actual capex of \$95m², which was itself higher than the RP3 capex benchmark of \$80m.

Key aspects of RP4 capex programme include:

- 10 Top Major Projects total \$50.54m which accounts for around 35% of total proposed capital expenditure

² RP3 actual capex is as advised by North East Water (RP3 capex in the ESC template is \$85m)

- Forecast of a significant budget for compliance and renewals expenditure. Compliance and renewals represents 73% of the capex program
- A total of 48% of expenditure occurring in years 2, 3 & 4 of the 8-year period.

2.4.2 Capex forecast

North East Water’s actual and forecast water and sewerage capital expenditure is shown in Figure 2-2.

The key drivers of capital expenditure are compliance and renewals, as demonstrated by the Wodonga WWTP Major Upgrade project (\$8.05m) and the Beechworth Wastewater System Upgrade (\$6.03m), both also included in the Top 10 projects.

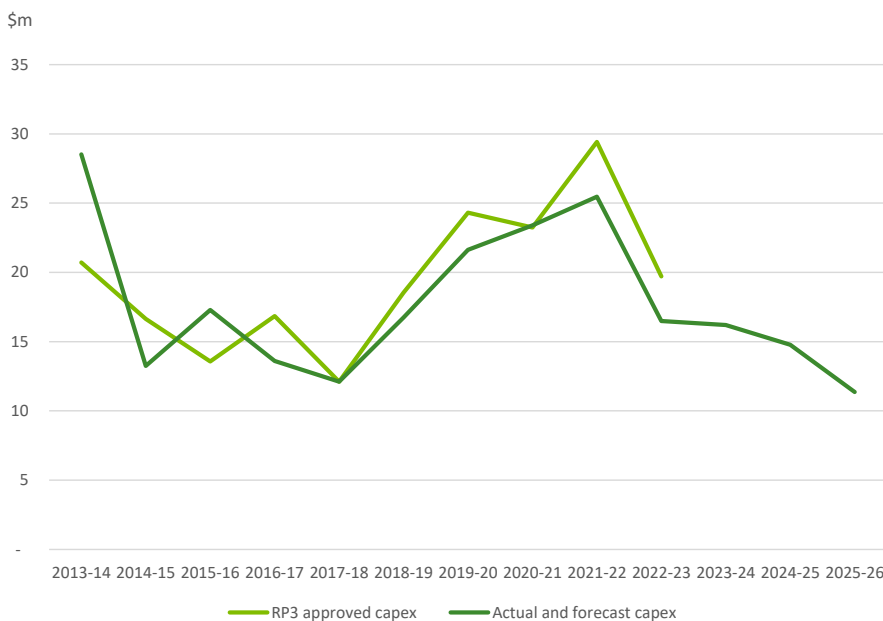
Capex classified under Sewerage services is forecast to increase from RP3 \$30.55m to RP4 \$56.79m (over 5 years) or \$77.58m over the proposed 8-year period. The increase in Sewerage services is comprised of increases in both Pipeline/network and Treatment.

Capex classified under Water is decreasing slightly constant from RP3 \$54.21m to RP4 \$46.95m over 5 years or \$68.51m over the proposed 8-year period.

There is no capital expenditure proposed for recycled water across the period.

Various capex projects have been ‘ring-fenced’ from the capital program due to uncertainty about the need over RP4.

Figure 2-2 Capex forecast – North East Water (\$2017-18)



Note: North East Water proposed an 8-year regulatory period

3 Assessment of opex

This chapter assesses North East 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.

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

We note that North East Water resubmitted the original excel template to the ESC. This resulted in changes to historical FTE numbers but no 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.

North East Water's actual total controllable expenditure was \$39.77m in 2016-17. North East Water has made a net downward adjustment to its baseline of \$1.82m. This is due mostly to expenses transferred from the capital program (e.g. the filter media replacement for the Wodonga water treatment plant, and decommissioning expenses for the Bakers Gully Dam in Bright and Commissioner's Creek Dam in Yackandandah). There is also an adjustment for community engagement including Deliberative Forum expenses associated with their Price Submission, although we note that North East Water has indicated that the Deliberative Forums are to be held at least annually.

In its 2013 price review, the ESC set a benchmark of \$36.29m for 2016-17 (\$2017-18). Even after adjustment for non-recurring expenditure items, North East Water's baseline expenditure is 5% higher than this benchmark. This appears to be mainly due to significant increases in FTEs following North East Water's Technical Services Review in 2015 and Workforce Analysis Review in 2016:

- The Technical Services Review was intended to replace lost resource capacity due to departures, allow for an appropriate transition post impending retirement of two senior staff, and the need to transition from a focus on capital development to a focus on planning, growth and development. In 2016-17, six new FTE positions were added as a result of the review.
- The Workforce Analysis Review was intended to establish the appropriate employee numbers required to support North East Water's long term goals. In 2016-17 and 2017-18, seven new FTE positions were added as a result of the review.

We note that these increases are somewhat tempered by a previous review completed by North East Water in 2012, which involved aligning the organisational structure with North East Water's strategy, and resulted in a slight decrease in FTEs (1.7 FTE between 2012-13 and 2013-14).

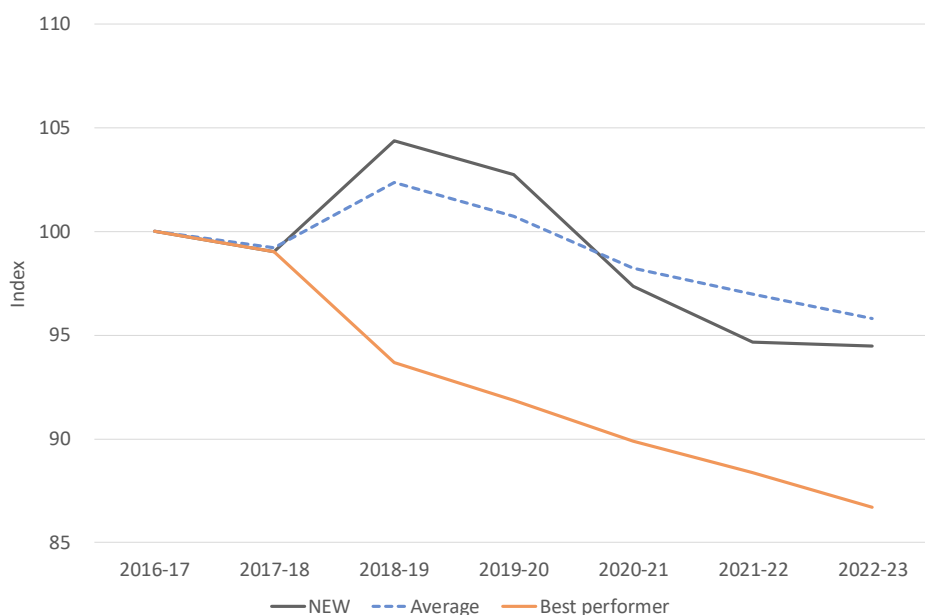
Although North East Water significantly increased its FTEs in RP3, its current labour costs and labour costs per FTE are comparable with other regional urban water corporations. As such, we have assessed North East Water's 2016-17 adjusted baseline and we believe that it reflects an efficient baseline 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. North East Water has proposed an 8-year regulatory period. As such, our analysis and recommendations relate to this period. However, given that all other businesses have adopted 5-year regulatory periods, the majority of our benchmarking analysis is for this 5-year period, with material differences between North East Water's 8-year results and its figures for a notional 5-year period identified where relevant to the analysis.

Figure 3-2 below compares the regional urban water businesses change in controllable opex per connection over RP4. The figure shows that North East Water ('NEW' in the chart) is forecasting opex increases that are above the average for regional businesses in 2018-19 and 2019-20, but below for the rest of RP4 – this trend continues for the next 3 years of North East Water's 8-year regulatory period, with North East Water becoming more competitive in later years.

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



Note: Covers only the first five years of North East Water’s 8-year regulatory period

Table 3-1 compares all of the Victorian water businesses and shows that North East Water is forecasting a reduction in its controllable opex per connection of 0.9% per annum over the next five years, putting it at in the bottom half of all of the businesses. Over NEW’s proposed 8-year RP4 period, its reduction in controllable opex per connection is 1.0% per annum.

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%

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)
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%

Notes: NEW results are for the first five years of its 8-year regulatory period. Over eight years NEW's average annual reduction in controllable opex per connection is 1.0%. GVW forecast variations are adjusted for its \$2.3m p.a. efficiency dividend

3.5 Individual opex items

North East Water has identified a net increase of \$6.96m of forecast variations to baseline expenditure in total for its 8-year RP4 period (\$6.24m of this occurs in the first five years). Key factors in the increase include:

- Labour, \$7.33m increase (\$3.62m over five years)
- Electricity, \$2.11m decrease (\$1.33m net increase over five years)
- Asset decommissioning, \$1.60m (\$1.00m over five years)
- Other expenditure, \$3.16m increase (\$3.12m over five years).

These forecast variations are offset by efficiencies identified by North East Water of \$3.38m.

The above items will be explored further below, taking into account the forecast efficiencies identified.

3.5.1 Labour

North East Water has forecast labour cost increases above the baseline of \$7.33m over RP4 (\$3.62m over the first five years). This can be broken down into:

- \$2.16m in operational labour
- \$5.17m in administration costs (wages and on-costs).

North East Water has noted that wage increases are required by Government, and real increases in costs above the growth and efficiency-adjusted baseline should be reflected in customer prices.

A comparison of North East Water's labour forecast to other water businesses shows that North East Water is forecasting the second highest proportional labour increase of all the water businesses for RP4 (see Table 3-2). North East Water's forecast variation represents 1.8% 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%

Water business	Forecast variations to baseline opex (total RP4 \$m)	Total controllable opex (total RP4 \$m)	Labour variations as a % of total controllable opex
Barwon	7.90	453.3	1.7%
GWMWater	2.85	161.1	1.8%
Central Highlands	3.80	266.0	1.4%
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%

Note: NEW results are for the first five years of its 8-year regulatory period

As outlined above, proposed expenditure should only be added to the baseline where the water corporation 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:

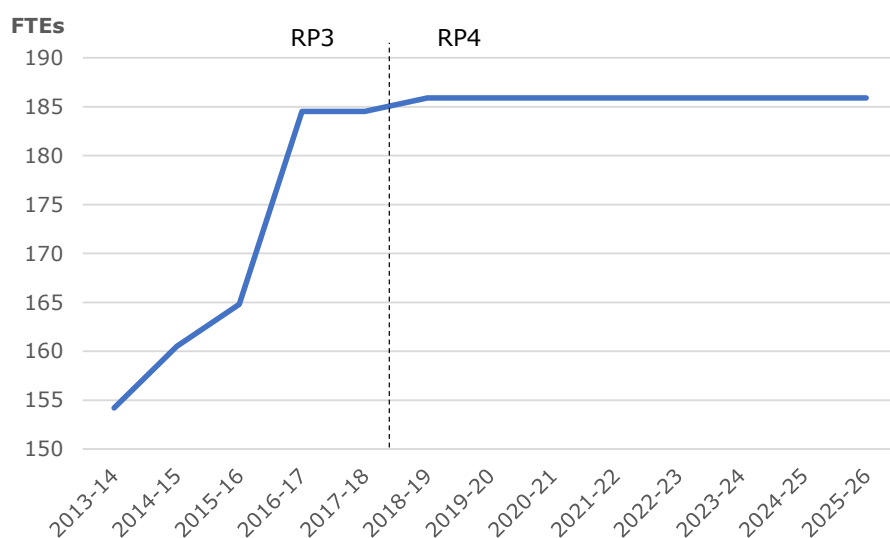
- EBAs don't necessarily cover all staff in the business
- Businesses have options for delivering services that can reduce the cost impact of EBAs, such as contracting or outsourcing
- We understand that EBAs often have provisions that require increases above inflation to be accompanied by improvements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

Benchmarking analysis of North East Water against other regional urban water corporations indicates that its current labour costs per FTE are around the average of regional urban businesses, and increases in FTEs over RP4 are relatively minor (an increase of 1.4 FTE in 2017-18, then no further increases).

We additionally note that North East Water significantly increased its FTEs across RP3. Figure 3-3, below shows significant increases in FTE throughout RP3 due to the Technical Services Review and the Workforce Analysis Review. Labour costs also increased significantly in this period, and are expected to increase by 0.70% p.a. (in real terms) throughout RP4.

Figure 3-3 North East Water’s FTEs across RP3 and RP4



As discussed above, the 2015 Technical Services Analysis recommended an additional 7 FTE roles (with an additional 2 to be subject for review and confirmation in 2016-17), with 6 FTE positions ultimately added. The 2016 Workforce Analysis Report recommended 3.5 FTE in addition to the 3.5 FTE earmarked in the 2016-17 Corporate Plan, resulting in an additional 7 FTEs in total. In addition, just over 30 FTEs were added across RP3.

In assessing North East Water’s proposed labour cost increases for RP4 we note:

- North East Water is proposing a wage increase of 3% per annum (0.7% real) as a result of its Enterprise Bargaining Agreement requirements – this has been reflected by North East Water as a 0.67% increase above baseline opex, when adjusted for growth and efficiency
- Although all businesses are experiencing an increase in labour costs as a result of wage increases above CPI, North East Water is one of only seven water businesses to propose material labour cost increases above the baseline (two other businesses have proposed marginal increases over the five-year regulatory period)
- North East Water saw significant increases in FTE in RP3 as a result of the Technical Services and Workforce Analysis reviews, which included consideration of the long-term labour requirements of North East Water. The recommendations of these reviews have been largely implemented.

We consider that North East Water has not provided strong justification that further increases in labour costs for RP4 are justified, or that they are not able to be managed by the business within the growth adjusted baseline. Given the significant increases in FTEs and labour costs throughout RP3, and given that most water businesses have been able to manage further increases in labour costs within the baseline, we are of the view that no additional expenditure allowance for labour above the 2016-17 baseline is required for North East Water to maintain an efficient staffing level, meet the requirements of its EBA, and deliver customer outcomes. As such we recommend removing these costs from the opex forecast for RP4. These adjustments are outlined in Table 3-4 below.

3.5.2 Electricity and emissions reduction

North East Water has forecast electricity expenditure to decrease by a net amount of \$2.11m over its proposed eight-year regulatory period. This is made up of increases for the first three years, followed by decreases for the following five years driven by reductions in electricity consumption from its emissions reduction program. This reflects a net decrease of 0.7% of total controllable opex over the eight years.

The table below presents a comparison of North East Water's forecast urban energy variations relative to the baseline to the other water businesses over the period to 2022-23. Over the five-year period to 2022-23 used by other businesses for RP4, North East Water proposed a net increase of \$1.33m. We note that electricity made up 10.1% of North East Water's controllable opex in 2016-17, the highest proportion of all Victorian water businesses.

Table 3-3 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%

Note: NEW results are for the first five years of its 8-year regulatory period. Over the full 8-year period it is proposing a net reduction in electricity opex of \$2.11m

Some key aspects of North East Water's electricity forecast include:

- North East Water procures electricity for its large sites through a combination of spot purchases and hedges. It purchases electricity for small sites through a contract that expires in July 2018.
- North East Water's price forecast is based on a forecast of wholesale and retail prices outlined in a report prepared by Jacobs for North East Water for the purpose of its price submission. This

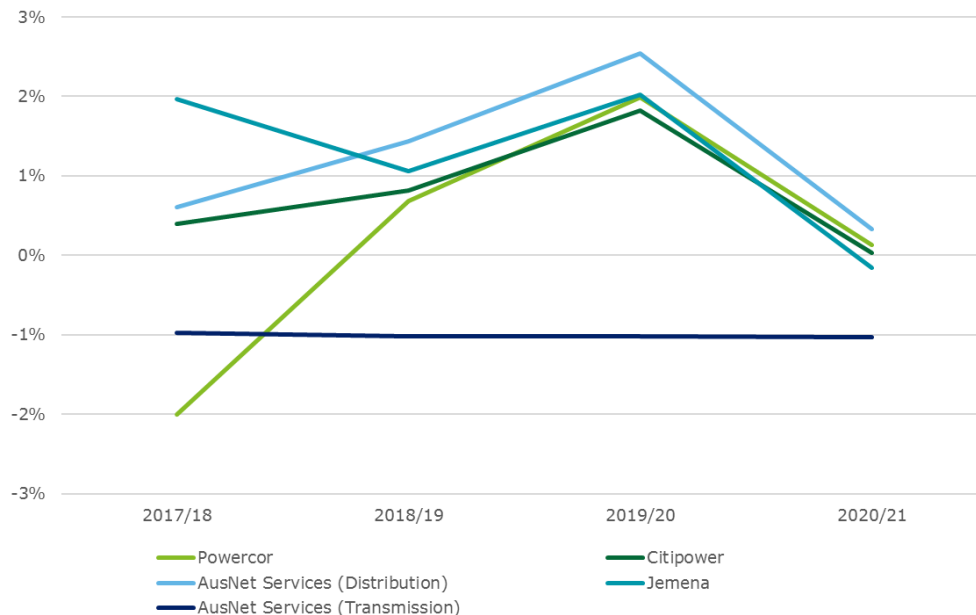
includes forecasts for large sites (under 'neutral' and 'high economic growth' scenarios) and small sites (under the 'neutral' scenario)

- Under the high scenario, Jacobs forecasts real wholesale electricity to peak in 2018-19 at \$134/MWh, remain relatively flat to 2020-21, decline to a low of \$96 in 2023-24, with steady increases following to 2027-28. The neutral scenario broadly follows the same trend, although prices are somewhat lower and continue to decrease until 2025-26 (other than a spike in 2022-23).
- North East Water has proposed a range of projects to reduce its electricity consumption and greenhouse gas emissions. These include the installation of renewable energy capacity at a range of sites including the Wodonga WWTP, and efficiency improvements at the Wodonga WWTP. North East Water expects electricity consumption at large sites (which made up approximately 80% of expenditure in 2016-17) to decrease from 17,015 MWh in 2016-17 to 9,269 MWh by 2025-26, a reduction of 48%.

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 period³, 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 3-4 below.

Figure 3-4 Annual change in expected revenue (smoothed, real \$2017-18)



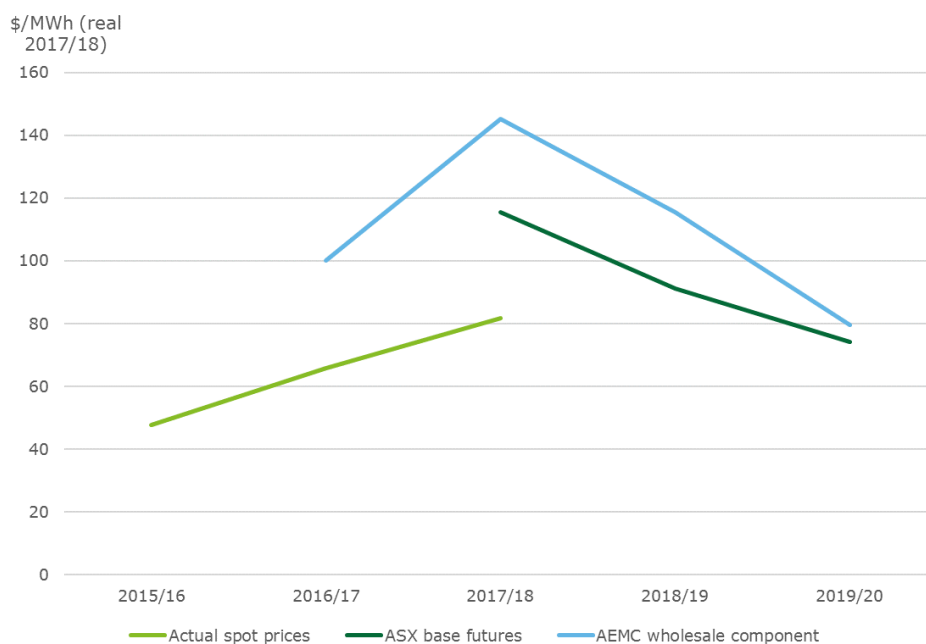
Source: Deloitte analysis of AER decisions

³ 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. North East 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 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.⁴ 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 3-5, along with actual average spot prices up to December 31 2018.

Figure 3-5 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.⁵ The divergence of views on wholesale costs reflects the overall uncertainty in the market, as well as quickly changing market conditions and expectations. The Jacobs report for North East Water was prepared in July 2017 using existing wholesale market modelling, so based on the timing of each report, the report for AEMO likely reflects a slightly updated view of market conditions based on changes throughout 2017. In our analysis, we have placed more weight on the AEMC outlook from December 2017, as this is the more recent analysis.

⁴ AEMC, 18 December 2017, *Final Report 2017 Residential Electricity Price Trends*

⁵ Jacobs, 21 September 2017, *Retail electricity price history and projected trends*

In reviewing North East Water's proposal, we have considered the evidence provided by North East Water, and recent forecasts of network and wholesale price movements. We consider that North East Water's proposed variation for electricity expenditure reflects prudent and efficient expenditure and our preliminary recommendation is that it be approved. Our view is that the proposed increases for electricity prices for 2018-19 and 2019-20 are reasonable. In general, we don't consider there is strong evidence to support an ongoing price increase beyond 2019-20, which is used as an input to the proposed variation throughout the period. However, we consider that the overall package of variations demonstrate that North East Water has taken steps to manage its electricity usage and expenditure, and this reflects a reasonable outcome for customers. Therefore, our preliminary recommendation is that the variation for electricity be approved. We note that the ESC intends to make a decision on allowable energy cost variations using updated contract offers post the finalisation of our reports. Therefore, our recommendations are indicative only.

3.5.3 Asset decommissioning

North East Water has a number of sites that will require decommissioning as new plants are built. North East Water notes that these projects are outside the capital program and represent the final cost in the whole of asset lifecycle. It has forecast \$0.2m per year, for five years, in additional costs above the growth-adjusted baseline.

We note that North East Water also adjusted its 2016-17 baseline due to two decommissioning expenses that they deemed were non-recurring.

As North East Water has forecast consistent annual decommissioning expenses above the baseline across RP4, this means that North East Water considers that decommissioning expenses in total are expected to grow faster than the growth allowance throughout the period. Based on the information provided by North East Water, it is not clear to us that additional expenditure allowance above the growth adjusted baseline is required to manage what appears to be normal asset decommissioning expenditure.

However, we also note that North East Water removed a substantial amount of opex from its baseline year to adjust for non-recurring asset decommissioning. Clearly some level of asset decommissioning is required to be undertaken by North East Water on an ongoing basis, and an alternative approach would have been to remove a smaller amount from the baseline year, meaning that future decommissioning costs of a recurring nature could be accommodated within the growth-adjusted baseline.

As such, we consider that the variation above the baseline is a result of the approach taken by North East Water to characterising its expenditure and calculating variations above the baseline, rather than the result of efficient or inefficient operations. We therefore recommend no change to this expenditure for RP4.

3.5.4 Other expenditure – Digital metering

North East Water has forecast a total net increase of \$3.16m in opex from 'other' expenditure across RP4, with the Digital Metering Project accounting for \$3.00m of the total. North East Water intends to commence a pilot in 2018 and both the 2018-19 and 2019-20 budgets contain \$1.5m for the purchase and roll-out of this technology.

From North East Water's customer consultation, one of the customer proposals was to "Provide Smart Meters to all new connections from 2020 and upgrade all others to smart meters by 2026" (proposal 40 of 88).⁶ North East Water has also noted that this initiative also supports delivery of efficient systems and providing customers with the capability to monitor and manage their water consumption, which was also raised in the consultation forum. Further customer support identified by North East Water for digital metering includes:

- 54% of customers in an online survey of 233 customers supported smart meters to allow customers to measure water consumption remotely and day-by-day
- 84% of customers in a deliberative forum of 31 customers supported exploring the introduction of digital metering

⁶ North East Water Price Submission 2018 – 2026, p.53

- 43% of customers in a poll of 32 customers stated they would be comfortable to pay a \$40 and above annual increase in their bills (47% indicated that they would be comfortable with a \$20 annual increase), and the digital metering opex does not impact on the proposed tariff increase.

Based on a quote obtained by North East Water from a digital metering service provider, supply and installation of existing meters, complete with software, is expected to cost \$5.63m. North East Water has only included \$3.00m in expenditure for the program, and has noted that any costs above \$3.00m are intended to be recovered in RP5 or absorbed, to limit the price impact on customers of a full roll-out.

Subsequent to its initial submission, North East Water has further advised that it considers the expenditure for this program would be more appropriate in years five and six of its proposed 8-year regulatory period.

We note that North East Water is still in the initial project development stage. The Project Scoping document provided for our review is still in draft form and only partially complete, and Investment Logic Mapping (a Victorian Government investment analysis framework) for the project is yet to be completed.⁷ We also note that the expenditure forecasts by North East Water did not appear to include any consideration of compatibility or upgrades required to its billing system to handle the significant increase in data that will come from the digital meters, or the costs that will be incurred to deliver enhanced services to customers (such as remote, daily monitoring of water use).

Based on the information provided, we consider that:

- There is insufficient detail on the nature of the project or costs to determine the likely cost the business of undertaking a full digital meter roll-out
- The customer outcomes are not yet clearly defined
- Customer support for the project is unclear:
 - Although slightly more than half of customers in an online survey supported introducing smart meters, the link between the expenditure proposed and the actual outcome (remote, day to day measurement of water use for customers) is not clear. For example, no detail of how customers will be given access to their data is included in the business case documentation
 - The 84% support in the deliberative forum was to 'explore the introduction of digital metering', not to implement digital metering
 - The support for bill increases comes from a very small sample (32 customers polled, meaning 15 customers in total supported a \$20 per year bill increase), and the framing of the question is heavily weighted towards options for bill increases. Customers were presented with five alternative bill increase options, one option for no change to bills, and only one option for bill decreases. In our view, this survey design was biased towards customers selecting one of the bill increase options.

On the basis of the information provided by North East Water, we recommend that North East Water considers further developing its business case, and potentially undertaking a smaller-scale pilot or trial of the smart meters, prior to committing to a full-roll out. Given that evidence of customer willingness to incur increases in water bills to fund a digital meter roll-out appears to be limited, we consider that these activities should be undertaken without the need for significant additional opex above the growth-adjusted baseline. However, we also note that there does appear to be some support for North East Water to at least undertake further investigations, and potentially commence rolling out digital meters later in RP4. We therefore propose a downward revision to the opex forecast of \$3.00m in the earlier years of RP4, with \$1.00m in additional expenditure above the baseline (spread over years five and six of RP4) to support further investigations and trials. This adjustment is summarised in Table 3-4 below.

3.6 Recommended changes to forecast opex

Based on the analysis above, we recommend removal of \$9.33m of North East Water's proposed variations from the forecast controllable operating expenditure for RP4.

⁷ Per advice from North East Water in December 2017

Table 3-4 North East Water forecast controllable operating expenditure and recommended adjustments

Operating expenditure item	Actual	Price submission forecast								Total
	Baseline 2016-17	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	RP4
Proposed controllable operating expenditure (\$m)	37.95	40.59	40.45	38.80	38.20	38.59	38.20	38.39	38.54	311.76
Recommended adjustments										
Employees - Ops		-0.11	-0.16	-0.20	-0.25	-0.29	-0.34	-0.38	-0.43	-2.16
Employees - Admin		-0.36	-0.44	-0.52	-0.60	-0.69	-0.77	-0.85	-0.94	-5.17
Admin Other – Digital metering		-1.50	-1.50	0.00	0.00	0.50	0.50	0.00	0.00	-2.00
Total recommended adjustments		-1.97	-2.10	-0.72	-0.85	-0.48	-0.61	-1.24	-1.37	-9.33
Recommended operating expenditure		38.62	38.35	38.07	37.35	38.11	37.59	37.16	37.17	302.43

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

4 Assessment of capex

This chapter of the report sets out our assessment of North East 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 (top four by total expenditure) 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

North East Water proposed a total of \$146m in capex over the next 8 years. The equivalent proposed capex for the next 5 years is \$103.7m. This is a significant increase compared to the RP3 proposed Capex of \$80m, however we note that the projected actual capex for RP3 is approximately \$95m.⁸

North East Water had five projects classified as major projects by ESC for RP3. As of December 2016, one project was delayed, one was on schedule, and only one had been completed (late). The remaining two projects were deferred.

The supporting documents provided for the proposed capital works program were limited in detail. An Asset Renewals Process Report was provided, which provided a detailed description of the process of evaluating asset useful life. However, information regarding previous performance or the details of the proposed asset renewals were not provided. North East Water has provided details on a newly implemented asset management approach and system including predictive modelling of required renewals. Further commentary on this is provided below in the review of the proposed renewals program.

North East Water has exceeded its proposed and approved RP3 capex benchmark. In particular, this appears to include growth projects in the final year of the period. It is understood that a number of growth projects have been 'ring-fenced' from the current submission and therefore have not been part of the detailed review. However, it would appear that some of these unreviewed projects may be required in RP4 and need to be incorporated within the capital program without consideration, at this time, of the impact on prices.

4.3 Major projects

The following table provides an overview of the top 10 projects and top 5 programs (by capex), showing the primary driver and forecast expenditure over RP4. As indicated in Section 1.4.2, the review has focussed on four of the top 10 projects and major renewals programs that are proposed to increase in capex from historical trends.

Table 4-1 North East Water forecast capex

Capex item	Primary Driver	Price submission forecast expenditure (\$m)									
		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	Total RP4	% of total
Wodonga WWTP Capacity & Emissions Reduction	Growth	0.59	4.33	6.20	0.59	0.00	0.00	0.00	0.00	11.7	8.01%
Wodonga WWTP Major Upgrade	Improvements / Compliance	0.00	0.00	0.08	0.08	0.40	5.64	1.85	0.00	8.05	5.51%
Beechworth Wastewater System Upgrade	Improvements / Compliance	2.41	3.62	0.00	0.00	0.00	0.00	0.00	0.00	6.029	4.13%
Wodonga Sewerage Transfer Capacity	Growth	0.00	0.05	0.32	4.75	0.27	0.00	0.00	0.00	5.399	3.70%
Wodonga WWTP Solar Power	Improvements / Compliance	0.10	0.14	1.06	3.27	0.24	0.00	0.00	0.00	4.804	3.29%
Region-Wide Digital Business Sustainability	Improvements / Compliance	0.04	0.04	0.07	3.38	0.00	0.00	0.00	0.00	3.526	2.42%

⁸ RP3 capex is as advised by North East Water (RP3 capex in the ESC template is \$85m).

Capex item	Primary Driver	Price submission forecast expenditure (\$m)									
		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	Total RP4	% of total
Benalla WWTP Upgrade	Growth	0.00	0.00	0.00	0.00	0.00	0.03	0.47	2.88	3.386	2.32%
Region-Wide ICT Infrastructure	Improvements / Compliance	0.30	0.30	0.30	0.30	0.30	0.30	0.54	0.30	2.636	1.81%
Wangaratta Water Distribution	Improvements / Compliance	0.00	0.00	0.00	0.00	0.00	0.13	2.31	0.13	2.572	1.76%
Benalla Water Distribution Upgrade	Growth	0.00	0.12	2.32	0.00	0.00	0.00	0.00	0.00	2.439	1.67%
Subtotal - Top 10 Projects		3.43	8.60	10.35	12.37	1.21	6.10	5.18	3.31	50.54	34.62%
Below Ground Asset Renewals Wastewater		0.90	1.28	1.05	0.90	3.38	0.90	0.90	0.90	10.239	7.01%
Below Ground Asset Renewals Water		2.02	0.99	1.79	1.75	0.89	0.89	0.89	0.89	10.095	6.91%
Above Ground Asset Renewals Water		1.71	0.85	0.14	1.37	1.94	1.19	1.19	0.95	9.329	6.39%
Above Ground Asset Renewals Wastewater		1.58	0.96	0.51	0.87	1.15	1.12	0.79	0.76	7.7325	5.30%
Fleet		0.97	1.05	1.01	0.99	1.00	1.20	0.95	1.08	8.236	5.64%
Subtotal - Top 5 Programs		7.19	5.12	4.49	5.87	8.35	5.30	4.72	4.58	45.63	31.25%
Total		10.61	13.72	14.84	18.24	9.56	11.40	9.90	7.88	96.17	
Proportion of annual expenditure		7%	9%	10%	12%	7%	8%	7%	5%	66%	

4.4 Renewals expenditure

4.4.1 Description of project

North East Water proposed a total renewal budget of \$37.4m over 8 years (\$26m over first 5 years).

North East Water provided the Asset Renewal Process Pricing Submission 4 Report, which documented the process adopted to develop the renewal program. A Renewal Model was developed, which adopted a variation of the typical Risk and Consequence matrix. The model provided an index that classified the remaining life of assets. Assets that had exceeded the determined useful life were identified for renewal.

North East Water indicated that there was \$15.3m of asset renewal that is overdue based on the adopted methodology. The Asset Renewal Process Pricing Submission 4 Report noted that North East Water is not looking to reduce the scope of renewal backlog.

The renewal budget includes renewal of water mains, sewer mains, WTPs and pump stations. North East Water categorised the assets for renewals into the following four categories:

- Wastewater Above Ground Asset Renewal \$7.7m (\$5.1m for 5 years)
- Wastewater Below Ground Asset Renewal \$10.2m (\$7.5m for 5 years)
- Water Above Ground Asset Renewal \$9.3m (\$6.0m for 5 years)
- Water Below Ground Asset Renewal \$10.1m (\$7.4m for 5 years)

4.4.2 Analysis

North East Water's supporting documents for the renewal program did not include any information on recorded burst/leaks or sewer blockages. There was no information comparing the actual performance to the adopted KPI for RP3.

A number of the proposed renewal projects were identified, but the majority of the proposed renewals were rolled up into a total budget. The total scope of the renewal program was not reported. Business cases were provided for each of the categories of asset renewal. However, documentation justifying the spending lacked details such as pipe length to be renewed each year or the condition assessment of above ground assets. It was not possible to evaluate if the asset performance was satisfactory or if the burst / leaks and blockages were exceeding the KPI which needed to be addressed.

The cost estimates of projects appear to be indicative costs based on expectation, e.g. five different water tank roof renewals are allocated \$200,000 each.

4.4.3 Recommendation

The North East Water submission has not provided sufficient information such as previous failure history, the scope of renewals, condition assessments, asset performance against KPIs, to demonstrate that the proposed expenditure for the renewal program is prudent and efficient.

We recommend the renewal budget be reduced to the historical level of approximately \$4.2m per year, i.e. a total of \$33.2m over 8 years. This represents an 11% reduction in North East Water's proposed renewal budget. This adjustment is reflected in Table 4-2.

4.5 Wodonga WWTP Upgrade

4.5.1 Description of project

Two of the highest budget major projects nominated by North East Water relate to augmenting the Wodonga WWTP. These include the

- Wodonga WWTP Capacity Upgrade and Emission Reduction
- Wodonga WWTP Major Upgrades

The Wodonga WWTP was originally constructed in 1986. A system upgrade in 2002 doubled the capacity of the bioreactors. The system upgrade was designed for the projected 2012 system load. A 2015 process review identified a number of system capacity constraints, and the existing plant is unable to effectively treat the inflow under peak loading conditions.

4.5.1.1 Wodonga WWTP Capacity Upgrade and Emission Reduction

Three options with different treatment processes were investigated, including

- Anaerobic Treatment Upgrade (21ML BFV + 360kW Cogeneration system)
- Aerobic treatment upgrade and digester volume upgrade
- Anaerobic treatment upgrade (AFR + 360kW cogeneration system)

The Anaerobic Treatment Upgrade (21ML BFV + 360kW Cogeneration system) option was selected as the preferred option with the lowest estimated cost of \$11.7m.

4.5.1.2 Wodonga WWTP Major Upgrades

North East Water also proposed a total of \$8.05m for a package of small to medium projects for the Wodonga WWTP. The upgrades are generally aimed at improving the efficiency of the treatment process, improve capacity and operability. The projects include

- Sludge Dewatering System, \$3.8m
- Bioreactor 1 and 2 Modifications, \$950k
- Effluent Discharge Upgrade, \$750k
- West Wodonga WWTP Regional Sludge Storage Area Pond 4, \$550k
- West Wodonga Balancing Lagoon Permanent Pump Station, \$150k
- Chemical Dosing Upgrades, \$800k
- UV Disinfection Upgrades, \$1050k.

4.5.2 Analysis

North East Water provided the business case for the Wodonga WWTP Capacity Upgrade and Emissions Reduction. The business case provided a high-level summary of the proposed upgrade. The detailed options analysis report was not provided.

The proposed augmentation appears to be well justified. The inclusion of a cogeneration unit will reduce the emission from the existing treatment process and help achieve the long-term target of zero-emission.

North East Water provided the business case for the Wodonga WWTP Major Upgrade Project. The business case provided a high-level summary of the proposed upgrades. The primary strategy document nominated in the business case, Regional Growth Strategy Infrastructure Plan, was not provided. It is noted as being in development in the business case.

The proposed augmentation appears to be well justified. The projects will improve efficiency, capacity and operability.

We note that a 10% contingency was applied to the estimated cost for Wodonga WWTP Capacity Upgrade and Emission Reduction project. A 5% contingency was applied to the Wodonga WWTP Major Upgrades. The cost estimates also included 20%-25% for Contractor profit / overhead / risk and 5%-10% for external and internal project management. North East Water stated that there is some level of contingency built into the Contractor profit / overhead / risk component. We believe that there are sufficient risk factors applied to the projects, and that additional contingency budgets are not necessary.

4.5.3 Recommendation

We consider that the risk factors and contingency budgets for this project are not consistent with the Guidance Paper requirement for capex forecasts to have optimised contingency allowances. Therefore, we recommend that the proposed budget for Wodonga WWTP Capacity Upgrade and Emission Reduction be reduced by 10% to \$10.5m, and the Wodonga WWTP Major Upgrades budget be reduced by 5% to \$7.65m to remove the contingencies. These adjustments are reflected in Table 4-2.

4.6 Beechworth Wastewater System Upgrade

4.6.1 Description of project

North East Water proposed a total of \$6.03m for the upgrade of the Beechworth Wastewater System. The Beechworth system has had multiple spills under wet weather conditions which resulted in the EPA issuing a Pollution Abatement Notice for non-compliance.

Two primary options with additional sub-options were investigated, including

- Alternative Transfer Main and WWTP Upgrades
 - Gravity Feed + WWTP upgrades, \$5.05m
 - Rising Main + WWTP Upgrades, \$6.03m
- Retention Tank + WWTP Upgrades, \$8m.

The Rising Main and WWTP Upgrades option was selected as the preferred option. The justification for selecting this as the preferred option was not provided in the business case.

4.6.2 Analysis

North East Water provided the business case for the proposed Beechworth Wastewater System Upgrade. The detailed analysis of proposed works was not provided. The business case document indicates that the supporting technical document is a report completed in 2006 by Beca. It is not clear if the study completed in 2006 remains valid to address the under capacity issue in the Beechworth system. It is advisable that the report and recommendation be reviewed and updated to ensure that any changes in the loading and existing infrastructure remains valid.

We consider that the documentation demonstrates that the Beechworth Wastewater System urgently needs augmentation to address the under capacity issue to prevent further uncontrolled spill to the environment. However, the proposed upgrade of the Beechworth WTP and constructing a new pump station and raising main do not appear to be the most efficient option based on the limited information provided. In particular, while North East Water has indicated that the community has expressed a

preference for the rising main option, we consider that North East Water has not provided sufficient project and technical information to support the selection of the this (more expensive) option.

4.6.3 Recommendation

We consider that the information provided by North East Water does not meet the Guidance Paper requirements for a business case outlining options considered and approach to identifying optimal solution – specifically, it is not clear why the chosen option is considered the optimal solution. Therefore, we recommend that the allowance for the Beechworth Wastewater System Upgrade be reduced to \$5.05m, which is consistent with the costs of the lowest cost option. This adjustment is reflected in Table 4-2.

4.7 Wodonga WWTP – Solar Power

4.7.1 Description of project

As part of the Victorian Government commitment to a long-term target of net-zero emissions, North East Water is proposing to install two 1MW solar power plants with tracking ability with an estimated cost of \$4.8m. Four options were investigated including

- 2 x 1 MW solar power plant with tracking, \$4.8m
- 2 x 1 MW static solar power plant, \$4m
- 1 x 1 MW solar power plant with tracking, \$2.3m
- 1 x 1 MW static solar power plant, \$2m.

The 2 x 1 MW solar power plant with tracking was selected as the preferred option. North East Water anticipate that the solar panels will provide \$438k p.a. savings in energy usage and \$399k p.a. in Renewable Energy Certificates (LGCs) revenue.

Subsequent to its original submission, North East Water provided an updated estimate for the costs of this project:

North East Water has now commenced the process of detailed planning whereby additional information is suggesting that the \$4.8m estimate for a 2MW tracked solar facility insufficient at \$2.4m per MW. While finalising the design and estimates is still in progress our electrical engineering consultants are suggesting that the costs are likely to be above \$3.0m per MW (and could be up to \$3.5m per MW) of solar fully installed and integrated back into the West Wodonga WWTP and grid.

We are also aware of costs for other solar installations recently completed or market tested which are correlating with these higher price ranges.

4.7.2 Analysis

Given the significant energy use at the WWTP and proportion of NEW's costs made up by energy costs, investment in renewable energy at the WWTP site appears to be prudent. We note that North East Water has identified significant reductions in energy use, resulting in a net overall reduction in energy costs for RP4 over the next 8 years.

However, it is not clear from the documentation provided which of the options under consideration is likely to be the most efficient approach to delivering the outcomes in terms of emissions abatement and cost reductions. We also have some concerns about the detail around the estimates of output from the panels, reductions in energy use and LGC revenue. Specifically:

- There is limited information on the basis for the calculated output, and in particular how it would align to energy usage at the site – this information would be important for determining whether the additional cost of adding a tracking system to the panels was justified by the increase in output
- The figure used by North East Water for energy cost savings appears to be lower than the figures suggested in its ESC financial template for large site electricity use
- The potential to receive revenue from LGCs is unclear, given that NEW's own forecast for electricity indicates that by the date of commissioning (2021-22), the LGC price is likely to be close to zero.

North East Water did not provide the detailed options analysis to justify the selection of the preferred option. The business case provided did not provide details such as expected opex reduction and payback periods for each option.

North East Water identified an increase in output of 34% for the tracked system compared to the fixed system (at an additional cost of approximately 20%) in supporting the decision of proposing a tracked solar panel system. These figures are generally consistent with industry benchmarks.⁹ However we note that the specific conditions of the site may result in different outcomes.

Industry benchmarks from 2015 suggest that North East Water's proposed increase in costs (to \$6m) is at the high-end. For example, single axis tracked solar (10MW) was estimated by the CO2CRC to have capital costs in the order of \$2.85m per MW.¹⁰ More recent analysis into capital costs of solar installations indicates a lower range, plus an expectation of significant reductions in costs going forward. For example, analysis undertaken for the Report to Independent Review into the Future Security of the National Electricity Market (the Finkel Review) by Jacobs assumes a reduction in capital costs for solar in the order of 4.5% p.a. to 2025.¹¹

On the basis of these benchmarks, and the proposal for delivery of the system in 2021-22, and the much greater level of detail in the original submission from North East Water on expected costs of the system, we consider that North East Water's original, more detailed analysis provides a more reasonable estimate.

4.7.3 Recommendation

On the basis of the information provided by North East Water and available industry benchmarks, we recommend no changes to North East Water's originally proposed budget for the Wodonga WWTP – Solar Power project (i.e. \$4.8m for the 2 x 1 MW solar power plant with tracking).

4.8 Ring Fenced Projects

4.8.1 Description of project

North East Water provided a list of 'Ring Fenced' projects. These are capital projects that are potentially required but not included in the proposed capex for the review. The total estimated value of the 'Ring Fenced' projects is \$47.8m. The projects are comprised of:

- Corporate \$7.8m
- Wastewater \$17.9m
- Water \$6.8m
- Renewals \$15.3m

A few examples of the ring-fenced major projects include:

- Wangaratta Reuse Expansion \$10m
- Region-Wide WWTP Lagoon Lining \$4m
- Region-Wide Efficiencies \$5m (Corporate).

4.8.2 Analysis

It appears that North East Water has conducted limited investigations or evaluations into the ring-fenced projects. We note that the ESC has raised concerns regarding North East Water implementing some of the ring-fenced projects near the end of RP2 and RP3, an approach which could be seen to bypass the review process of the previous pricing reviews, with expenditure rolling in to the next regulatory period.

4.8.3 Recommendation

We have not recommended any adjustments in relation to ring fenced projects. However, we consider it would be prudent for North East Water to undertake further work into the need for the ring-fenced projects before committing to investment. We also consider that should any such projects be

⁹ CO2CRC (2015), *Australian Power Generation Technology Report*, p.42

¹⁰ CO2CRC (2015), *Australian Power Generation Technology Report*, p.114

¹¹ Jacobs (2017), *Report to Independent Review into the Future Security of the National Electricity Market*, p.123

implemented that the expenditure should be subject to review prior to being rolled into the RAB, to ensure that it is prudent and efficient.

4.9 Summary of recommendations

North East Water supplied limited information for the water and sewer renewal program and some high-level information for a number of the major projects proposed. Based on the information provided by North East Water, we have recommended reductions for the following programs and projects:

- Water and Wastewater Above/Below Ground Renewal Programs
- Wodonga WWTP Capacity Upgrade and Emission Reduction
- Wodonga WWTP Major Upgrades
- Beechworth Wastewater System Upgrade.

A total reduction of \$6.75m is recommended, which brings the total capex budget to \$139.45m over 8 years.

Table 4-2 North East Water forecast capex and recommended reductions

Capex item		Price submission forecast (\$m)								Total RP4
		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	
Wastewater Above Ground Asset Renewal	Proposed	1.58	0.96	0.51	0.87	1.15	1.12	0.79	0.76	7.74
	Recommended	1.40	0.85	0.45	0.77	1.02	0.99	0.70	0.67	6.87
	Net change	-0.18	-0.11	-0.06	-0.10	-0.13	-0.13	-0.09	-0.09	-0.87
Wastewater Below Ground Asset Renewal	Proposed	0.90	1.28	1.05	0.90	3.38	0.90	0.90	0.90	10.21
	Recommended	0.80	1.14	0.93	0.80	3.00	0.80	0.80	0.80	9.06
	Net change	-0.10	-0.14	-0.12	-0.10	-0.38	-0.10	-0.10	-0.10	-1.15
Water Above Ground Asset Renewal	Proposed	1.71	0.85	0.14	1.37	1.94	1.19	1.19	0.95	9.34
	Recommended	1.52	0.75	0.12	1.22	1.72	1.06	1.06	0.84	8.29
	Net change	-0.19	-0.10	-0.02	-0.15	-0.22	-0.13	-0.13	-0.11	-1.05
Water Below Ground Asset Renewal	Proposed	2.02	0.99	1.79	1.75	0.89	0.89	0.89	0.89	10.11
	Recommended	1.79	0.88	1.59	1.55	0.79	0.79	0.79	0.79	8.97
	Net change	-0.23	-0.11	-0.20	-0.20	-0.10	-0.10	-0.10	-0.10	-1.14
Wodonga WWTP Capacity Upgrade and Emission Reduction	Proposed	0.59	4.33	6.20	0.59	0.00	0.00	0.00	0.00	11.71
	Recommended	0.53	3.90	5.58	0.53	0.00	0.00	0.00	0.00	10.54
	Net change	-0.06	-0.43	-0.62	-0.06	0.00	0.00	0.00	0.00	-1.17
Wodonga WWTP Major Upgrades	Proposed	0.00	0.00	0.08	0.08	0.40	5.64	1.85	0.00	8.05
	Recommended	0.00	0.00	0.08	0.08	0.38	5.35	1.76	0.00	7.65
	Net change	0.00	0.00	0.00	0.00	-0.02	-0.29	-0.09	0.00	-0.40
Beechworth Wastewater System Upgrade	Proposed	2.41	3.62	0.00	0.00	0.00	0.00	0.00	0.00	6.03
	Recommended	2.02	3.03	0.00	0.00	0.00	0.00	0.00	0.00	5.05
	Net change	-0.39	-0.59	0.00	0.00	0.00	0.00	0.00	0.00	-0.98

Capex item	Price submission forecast (\$m)								
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	Total RP4
Wodonga WWTP Proposed	0.10	0.14	1.06	3.27	0.24	0.00	0.00	0.00	4.81
- Solar Power									
Recommended	0.10	0.14	1.06	3.27	0.24	0.00	0.00	0.00	4.81
Net change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total proposed (Reviewed)	9.31	12.17	10.83	8.83	8.00	9.74	5.62	3.50	68.00
Recommended capex (Reviewed)	8.16	10.69	9.82	8.22	7.15	8.99	5.11	3.11	61.25
Recommended adjustments from proposed (Reviewed)	-1.15	-1.48	-1.01	-0.61	-0.85	-0.75	-0.51	-0.39	-6.75
Total Proposed	16.80	21.60	23.40	25.50	16.50	16.20	14.80	11.40	146.10
Recommended Capex	15.65	20.12	22.39	24.89	15.65	15.45	14.29	11.01	139.45

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