



**Essential Services
Commission**

2013-18 Review of Water Prices

**Assessment of expenditure forecasts
for regional urban businesses**

Barwon Water

Final Report

19 February 2013

Mr Marcus Crudden
Acting Director - Water
Essential Services Commission
Level 2, 35 Spring St
Melbourne VIC 3000

19 February 2013

Dear Marcus

Re: Assessment of expenditure forecasts for regional urban businesses

We are pleased to provide our Final Report setting out our assessment of Barwon Water's operating and capital expenditure for the 2013-2018 regulatory period. This Final Report provides our findings and recommendations. It should be read in conjunction with our *Overview* document, which sets out our approach to a number of common expenditure issues across the businesses we have reviewed.

Please do not hesitate to contact me if you have any questions regarding the report.

Yours sincerely



Paul Liggins
Partner
Deloitte Touche Tohmatsu

Contents

Executive Summary	1
1 Introduction	1
1.1 Background	1
1.2 Scope of review	1
1.3 Structure of this report	3
2 Overview of approach	4
2.1 Process for review	4
2.2 Approach to assessing forecasts	4
3 Summary of Barwon Water's forecasts	5
3.1 Operating expenditure	5
3.2 Capital expenditure	6
3.3 Key drivers and obligations	7
4 Assessment of operating expenditure	9
4.1 Business As Usual (BAU) expenditure	9
4.2 Individual expenditure items	10
4.3 New initiatives	13
4.4 Recommended changes to operating expenditure	15
5 Capital expenditure	18
5.1 Generic issues	18
5.2 Major projects	19
5.3 Sewer mains replacement and rehabilitation	21
5.4 Colac water source expansion	22
5.5 Water mains water replacements	24
5.6 Inverleigh low level feeder main	25
5.7 Black Rock Water Reclamation Plant hydraulic capacity upgrade	27
5.8 Sewer main relining	28
5.9 Apollo Bay bulk water supply expansion	29
5.10 Vehicles	30
5.11 Aireys Inlet Water Treatment Plant upgrade	31
5.12 Pettavel water basin upgrade	32
5.13 Summary of our recommendations	33
6 Limitation of our work	35
General use restriction	35

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see www.deloitte.com/au/about for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

Liability limited by a scheme approved under Professional Standards Legislation.

© 2013 Deloitte Touche Tohmatsu

Executive Summary

Background

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 2013 to 30 June 2018, referred to in this document as 'the next regulatory period' or third water plan period (WP3).

The businesses have submitted Water Plans to the ESC for the WP3 period. The Water Plans include forecasts of operating expenditure, capital expenditure and demand, proposed service standards and prices. The ESC will review the Water Plans and intends to release a draft decision in March 2013, with a final decision issued in May 2013.

Deloitte has been engaged by the ESC to review the expenditure forecasts made by 10 regional urban water businesses.

The ESC has requested that in our review of capital expenditure forecasts we focus on the major projects that comprise a significant proportion of the total capital expenditure forecasts and provide advice on whether the expenditure meets certain criteria.

In relation to operating expenditure we have been asked to provide advice on whether changes in operating costs are consistent with the timing of major capital projects; that businesses are fulfilling their obligations and meeting customer service expectations as cost efficiently as possible; that forecast divergences can be readily explained; and one-off costs associated with the drought have been removed. The ESC has highlighted that energy, labour, IT and chemical costs should be a significant focus of the review.

Process for review

We took the following approach to undertaking this review:

- We reviewed the Water Plans and supporting documentation provided by Barwon Water to the ESC
- We submitted a request for further information and prepared a number of questions for Barwon Water
- We visited Barwon Water on 8-9 October 2012 to discuss the Water Plan and our questions
- We prepared a Draft Report which was provided to the ESC on 11 December 2012
- We held discussions with Barwon Water regarding the Draft Report and reviewed a written response from Barwon Water which was provided to us on 25 January 2013.

Approach to review

In our assessment of operating and capital expenditure proposed by each of the nominated water businesses, we have followed the direction of the *Water Industry Act (1994)* and the *Water Industry Regulatory Order (WIRO)*. The WIRO requires, amongst other things that the ESC:

*(a) be satisfied that the prices contained in the **Water Plan** which the **regulated entity** proposes it be permitted to charge for **prescribed services** over the term of the **Water Plan**, or the manner in which the **Water Plan** proposes that such prices are to be calculated or otherwise determined, are such as to:*

(i) provide for a sustainable revenue stream to the **regulated entity** that nonetheless does not reflect monopoly rents or inefficient expenditure by the **regulated entity**;

(ii) allow the **regulated entity** to recover its operational, maintenance and administrative costs;

(iii) allow the **regulated entity** to recover its expenditure on renewing and rehabilitating

existing assets;

(iv) allow the **regulated entity** to recover:

(A) a rate of return on assets as at 1 July 2004 that are valued in a manner determined by, or at an amount otherwise specified by, the **Minister** at any time before 1 July 2004;

(B) a rate of return on investments made after 1 July 2004 to augment existing assets or construct new assets;

Recommendations - operating expenditure

We have recommended the changes set out below to Barwon Water's forecast operating expenditure. Note that throughout this report, unless indicated otherwise, references to Barwon Water's 'forecast' or 'proposal' refer to its original September Water Plan proposal and not any subsequent proposals or adjustments that have been received.

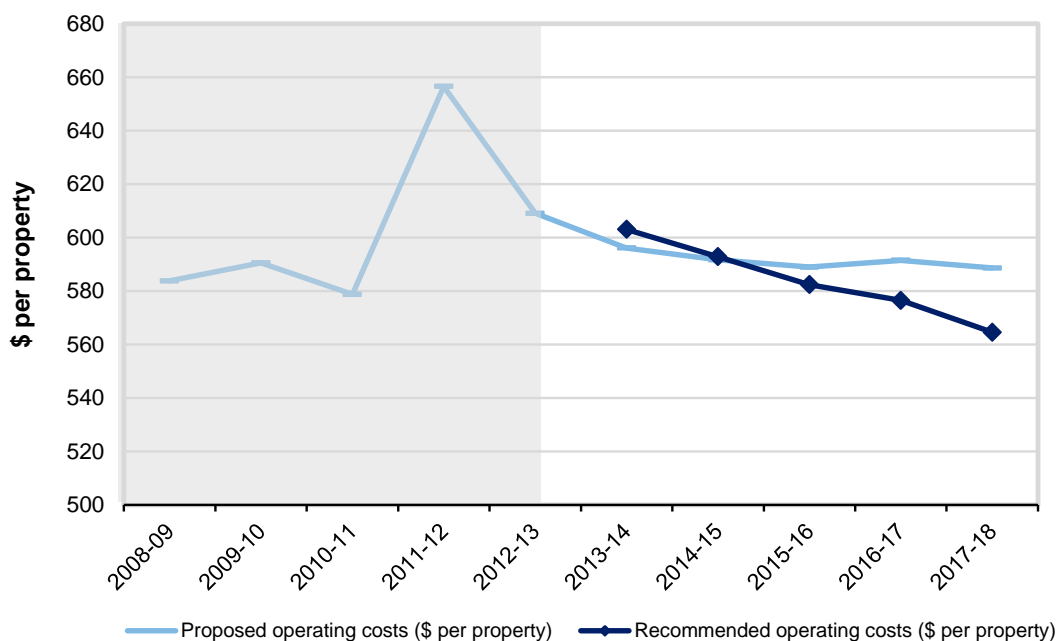
Table E1 Barwon Water forecast controllable operating expenditure and recommended adjustments (\$m, 01/01/2013)

Operating expenditure item	Actual 2011-12	Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Proposed controllable operating expenditure (\$m)	91.877	86.766	87.779	89.035	91.261	92.658	447.499
Recommended adjustments							
Labour		0.868	0.253	-0.568	-1.409	-2.267	-3.122
Electricity		-1.034	-1.215	-1.539	-1.981	-2.574	-8.342
Defined benefits		1.194	1.162	1.131	1.100	1.071	5.658
Total recommended adjustments		1.028	0.200	-0.976	-2.289	-3.770	-5.807
Recommended operating expenditure		87.794	87.979	88.060	88.972	88.888	441.693

Notes: Controllable operating expenditure excludes licence fees and the environmental contribution levy.

Figure E1 compares our recommended operating expenditure for Barwon Water (on a per connection basis) with Barwon Water's proposal.

Figure E1 Barwon Water forecast controllable operating expenditure and recommended operating expenditure (\$ per property 01/01/2013)



Performance against productivity hurdle

The ESC's Guidance Paper notes that the ESC will require all businesses to achieve a minimum of 1% per year productivity improvement on customer growth adjusted business as usual (BAU) operating expenditure for the WP3 period (the productivity hurdle).

We have interpreted BAU operating expenditure as being all operating expenditure other than expenditure that is the result of new or changed service outcomes, or new obligations imposed by Government or technical regulators.

In the case of Barwon Water, we have assessed the following increases in operating expenditure above the 2011-12 baseline as meeting this definition:

- Electricity
- Defined benefits superannuation contributions
- Operating expenditure that is required as a result of new capital expenditure projects (which include Black Rock recycled water plant, Northern water plant and Black Rock biosolids drying facility).

The following table summarises the expenditure above the 2011-12 BAU for these items that we have assessed as meeting the ESC's requirements for prudence and efficiency.

Table E2 Prudent and efficient new initiatives and obligations expenditure above the 2011-12 baseline (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast					Total
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18	WP3
Electricity		1.650	2.600	2.488	2.462	2.433	11.633
Defined benefits		1.194	1.162	1.131	1.100	1.071	5.658
Black Rock Recycled Water Plant		0.666	0.774	0.858	1.080	1.058	4.436
Northern Water Plant		3.192	3.330	3.371	3.451	3.558	16.903

Operating expenditure item	Actual 2011-12	Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Black Rock biosolids drying facility		7.875	7.577	7.574	7.567	7.559	38.152
Total		14.578	15.442	15.423	15.660	15.679	76.781

Note: Electricity encompasses carbon price impacts.

Table E3 below calculates a 'recommended BAU expenditure' using our total recommended operating expenditure less recommended expenditure on new or changed service outcomes, or new obligations imposed by Government or technical regulators above the BAU target. This amount is then compared with the growth and productivity adjusted BAU target to obtain a view on whether or not Barwon Water's operating expenditure, following our adjustments, meets the ESC's productivity hurdle.

Table E3 Productivity hurdle assessment (\$m, 01/01/2013)

Operating expenditure item	Actual 2011-12	Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Recommended operating expenditure		87.794	87.979	88.060	88.972	88.888	441.693
Less prudent and efficient new initiatives expenditure		14.578	15.442	15.423	15.660	15.679	76.781
Recommended BAU expenditure		73.216	72.537	72.637	73.313	73.209	364.911
Adjusted BAU target	75.877	77.365	78.120	78.883	79.653	80.430	394.451
Amount above BAU target		-4.149	-5.583	-6.246	-6.340	-7.221	-29.540

As shown in the table, following our recommended adjustments, and accounting for expenditure above the BAU target that is the result of new or changed service outcomes, or new obligations imposed by Government or technical regulators, Barwon Water meets the ESC's productivity hurdle.

Capital expenditure

We have recommended a \$25.5m reduction to Barwon Water's proposed capital expenditure. The key factor affecting the reduction is our removal of the Colac water source expansion project.

Table E4 Barwon Water forecast capital expenditure and recommended adjustments (\$m, 01/01/2013)

Capital expenditure item		Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Sewer mains	Proposed	5.643	5.492	5.492	5.492	5.492	27.611
	Recommended	4.119	5.835	5.835	5.835	5.835	27.460
	Net change	-1.524	0.343	0.343	0.343	0.343	-0.151
Colac water source expansion	Proposed	0.118	0.914	1.037	25.339	0.000	27.409
	Recommended	0.118	0.914	1.037	0.000	0.000	2.069
	Net change	0.000	0.000	0.000	-25.339	0.000	-25.339
Water mains water replacements	Proposed	4.088	3.911	3.738	3.606	3.525	18.867
	Recommended	4.088	3.911	3.738	3.606	3.525	18.867
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Inverleigh low level feeder main	Proposed	0.000	0.000	0.663	11.663	0.106	12.432
	Recommended	0.000	0.000	0.350	12.000	0.100	12.450
	Net change	0.000	0.000	-0.313	0.337	-0.006	0.018

Capital expenditure item		Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Black Rock WRP hydraulic capacity upgrade	Proposed	0.263	2.882	8.638	0.000	0.000	11.783
	Recommended	0.263	2.882	8.638	0.000	0.000	11.783
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Sewer main relining	Proposed	2.165	2.094	1.044	2.609	1.114	9.026
	Recommended	2.165	2.094	1.044	2.609	1.114	9.026
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Apollo Bay bulk water supply expansion	Proposed	8.394	0.268	0.000	0.000	0.000	8.662
	Recommended	8.394	0.268	0.000	0.000	0.000	8.662
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Vehicles	Proposed	2.000	1.885	1.788	0.803	1.466	7.942
	Recommended	2.000	1.885	1.788	0.803	1.466	7.942
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Aireys Inlet Water Treatment Plant upgrade	Proposed	0.668	4.214	2.997	0.297	0.000	8.176
	Recommended	0.668	4.214	2.997	0.297	0.000	8.176
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Pettavel water basin upgrade	Proposed	5.922	1.080	0.000	0.000	0.000	7.002
	Recommended	5.922	1.080	0.000	0.000	0.000	7.002
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Total proposed		95.830	63.930	68.900	85.940	45.440	360.040
Recommended capital expenditure		94.306	64.273	68.930	61.281	45.777	334.568
Recommended adjustments from proposed		-1.524	0.343	0.030	-24.659	0.337	-25.472

1 Introduction

1.1 Background

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 2013 to 30 June 2018, referred to in this document as 'the next regulatory period' or Water Plan 3 (WP3).

The businesses have submitted Water Plans to the ESC for the next regulatory period. The Water Plans include forecasts of operating expenditure, capital expenditure and demand, proposed service standards and prices.

1.2 Scope of review

The ESC has engaged Deloitte to provide it with advice on whether the regional urban water businesses' proposed expenditure forecasts are consistent with the requirements of the legislative framework.

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.

Capital expenditure

In relation to capital expenditure, we have focussed on the major projects that comprise a significant proportion of the total capital expenditure forecasts. In forming a view as to whether expenditure meets the requirements in the WIRO, and consistent with advice in the ESC's Guidance Paper, we have had regard to the following items:

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

In relation to deliverability of individual projects as well as capital expenditure programs more broadly, the ESC has indicated that the following points need to be considered:

- The actual performance against previous capital expenditure programs and the business' demonstrated capacity to deliver against capital budgets
- The internal and external resources available to the water business to deliver the identified projects
- Timing of proposed capital programs in terms of deliverability, taking into account the proposed capital expenditure across the industry
- The opportunity to smooth the business's capital profiles or defer discretionary or non-essential projects from the start of the regulatory period to later in the period
- The business' risk sharing, and incentive and penalty payment arrangements with its contractors
- Whether businesses have appropriate project management systems and processes in place.

Operating expenditure

In relation to operating expenditure we have been asked to provide advice on, amongst other things, whether changes in operating costs are consistent with the timing of major capital projects; that businesses are fulfilling their obligations and meeting customer service expectations as cost efficiently as possible; that forecast divergences can be readily explained; and one-off costs associated with the drought have been removed.

The ESC has highlighted that energy, labour, IT and chemical costs should be a significant focus of the review. The Guidance Paper also outlines the ESC's intention to remove expenditure relating to drought mitigation and other related unnecessary water conservation, in light of the fact that Victoria is no longer experiencing a period of drought.

In addition, the Guidance Paper notes that ESC requires businesses to achieve at least a 1% productivity improvement on business as usual (BAU) expenditure.

Our approach to assessing operating expenditure for each business can be briefly summarised as follows:

1. **Assess 2011-12 BAU and adjust where necessary** – In general, we have removed one off expenditure, drought and other water conservation expenditure and other defined benefits, ultimately reaching an adjusted BAU expenditure for 2011-12.
2. **Assess business identified operating expenditure items increasing from 2011-12 levels and identify cuts consistent with prudent and efficient expenditure** – We have reviewed key areas of expenditure and where we are not satisfied that the expenditure is prudent or efficient we have removed it from the forecast to determine a revised operating expenditure forecast.

In making our adjustments there are a number of areas or cost categories where issues are common across businesses – electricity cost increases being one example. We have applied a consistent approach to these areas across the businesses.

We have not reviewed licence fee payments or environmental contribution levy payments as part of our analysis. We understand the ESC will review these items itself.

3. **Compare revised operating expenditure to target BAU (adjusted where necessary)** – Following our assessment of key areas of expenditure, we compare our total recommended operating expenditure (less recommended expenditure on new or changed service outcomes, or new obligations imposed by Government or technical regulators) with a growth and productivity adjusted BAU target to obtain a view on whether or not the business meets the ESC's 1% productivity hurdle. Where a business

does not meet the productivity hurdle, we identify the further downward adjustment to expenditure required to meet the hurdle.

1.3 Structure of this report

This report describes our approach and sets out our findings from the review of Barwon Water's Water Plan. It is structured as follows:

- Chapter 2 provides an overview of our methodology for conducting the review, the process followed and key timelines
- Chapter 3 briefly summarises Barwon Water's Water Plan with respect to expenditure forecasts and outlines key drivers of expenditure such as government obligations, service standards and demand forecasts
- Chapter 4 provides our analysis, conclusions and recommendations on key issues with respect to Barwon Water's operating expenditure forecast
- Chapter 5 provides our analysis, conclusions and recommendations on key issues with respect to Barwon Water's capital expenditure forecast.

2 Overview of approach

2.1 Process for review

Our approach to undertaking the review has involved the following key steps.

2.1.1 Initial planning and workshop with the ESC

The following steps were taken in the initial planning phase of the project:

- An initial review of Water Plans, financial model templates and associated documentation was undertaken to identify key issues
- A workshop was held with ESC staff to identify and discuss key issues for the focus of the review
- A detailed review of Water Plans and templates was undertaken, with an initial set of queries produced to guide our site visits with the businesses.

2.1.2 Questions to business and site visits

Following the planning phase, we prepared questions for the businesses and arranged site visits:

- We conducted our site visit with Barwon Water on 8-9 October 2012
- The site visits were used to hold discussions with Barwon Water and receive further information on key issues as required.

2.1.3 Preparation of Draft Report

A Draft Report was prepared and provided to the ESC on 11 December 2012. The ESC subsequently provided the Draft Report to Barwon Water.

2.1.4 Response from Barwon Water

We held discussions with Barwon Water personnel regarding the Draft Report. A formal response to the Draft Report was provided by Barwon Water on 25 January 2013. This response accepted some elements of our Draft Report, but disagreed with other elements.

We have closely examined Barwon Water's response and the information it provided to support its views. We subsequently held additional discussions with Barwon Water to clarify certain aspects of the forecasts and its response.

2.1.5 Final Report

This Final Report sets out our views of whether South Gippsland Water's operating and capital expenditure forecasts meet the requirements of the ESC/WIRO. Where we do not believe this is the case we have prepared alternative forecasts or recommended adjustments.

2.2 Approach to assessing forecasts

Our approach to reviewing many items of capital and operating expenditure is set out in our companion *Overview* document which should be read in conjunction with this report.

3 Summary of Barwon Water’s forecasts

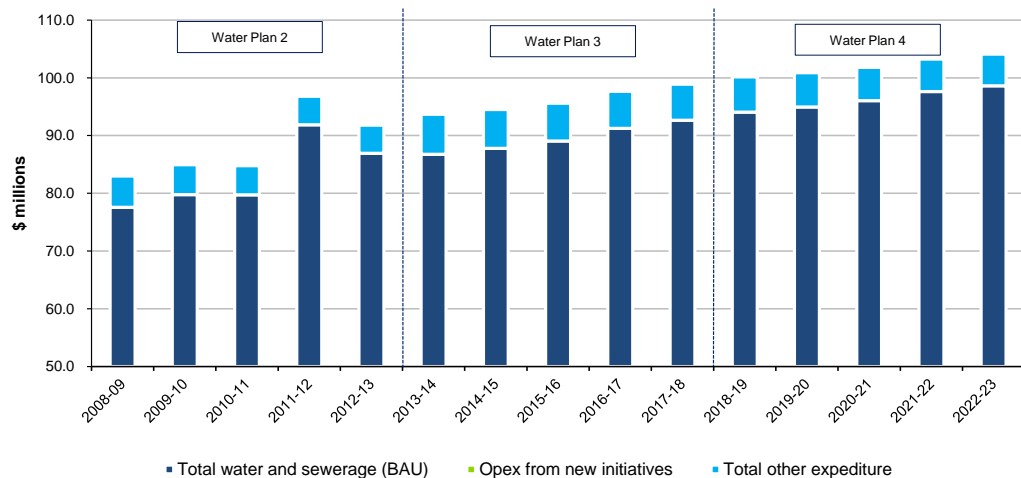
Barwon Water provides services to more than 285,000 permanent residents (and in holiday period up to 510,000 people) covering an area of 8,100 square kms. Key towns served include Geelong, Colac, Torquay, Lorne, and Apollo Bay.

3.1 Operating expenditure

Figure 3-1 shows Barwon Water’s operating expenditure over the WP2, WP3 and WP4 periods. Barwon Water’s operating costs (excluding licence fees, environmental contribution and bulk water purchases) are forecast to be a total of \$447.5m over WP3, which is a real increase of 8% from WP2 (total of \$415.9m).

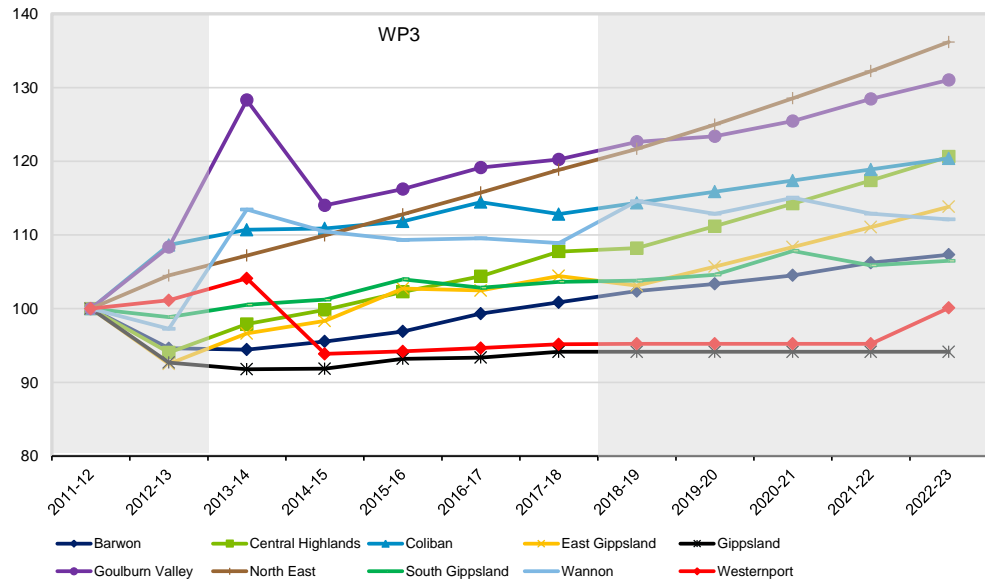
Note that throughout this report, unless indicated otherwise, references to Barwon Water’s ‘forecast’ or ‘proposal’ refer to its original September Water Plan proposal and not any subsequent proposal or adjustments that have been received.

Figure 3-1 Barwon Water actual and forecast operating expenditure (\$m, 01/01/2013)



Barwon Water has forecast the third lowest increases in operating expenditure over WP3 (compared to the baseline 2011-12) of the businesses we have reviewed. There are however some abnormally large items in the baseline year of 2011-12 (such as defined benefits payments of \$12.1m) which skew this result.

Figure 3-2 Operating expenditure (excluding licence fees and environmental contribution) for 2011-12, 2012-13, WP3 and WP4 periods (Index 2011-12 = 100)



Operating costs are forecast to be \$86.8m in 2013-14. Barwon Water has identified that key drivers of operating expenditure across WP3 include:

- Electricity costs to increase from \$4m in 2011-12 to \$9m in 2017-18. The increase is comprised of network charges (\$1.8m on average per year), carbon tax (\$1.2m per year) and new infrastructure sites (\$1.3m per year). This amounts to a total of \$20m in additional operating expenditure for WP3
- The biosolids facility becoming operational in 2012-13 which contributes \$7.6m additional operating expenditure on average per year over WP3 (\$38.2m in total for WP3)
- Other new infrastructure sites becoming operational in 2012-13 namely the Northern and Black Rock recycled water plants which contribute \$2.4m per year over WP3 (excluding energy costs) (or \$12.1m in total for WP3)
- Labour costs are reducing by \$11.1m over WP3 (compared to 2011-12), due to reduction in temporary staff from WP2 (mainly from IT projects which are now completed).

Barwon Water's actual operating costs for WP2 were under forecast (\$441m actual compared to \$447 approved in the determination). This was due to reduced water consumption (restrictions) and a delay in the commencement of biosolids drying facility at Black Rock.

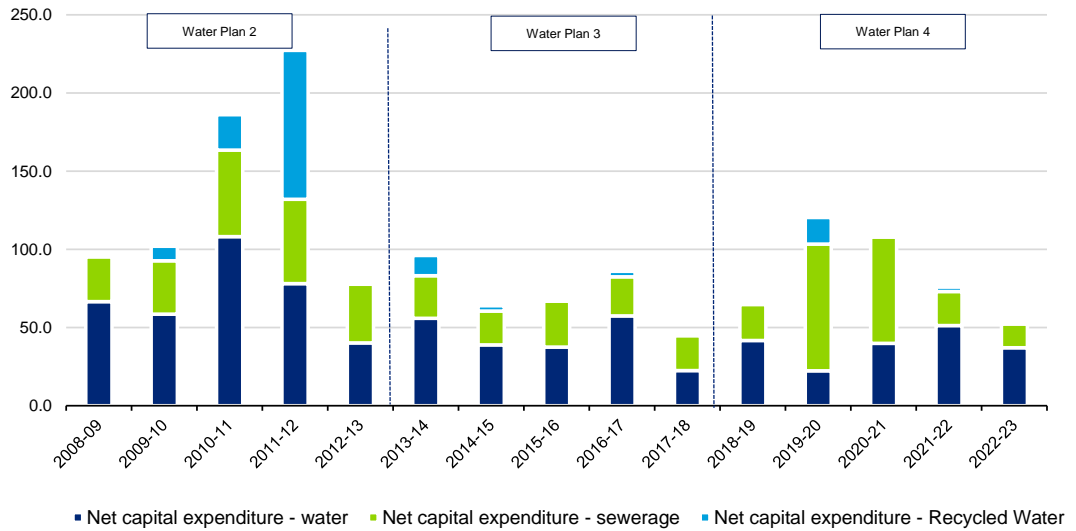
3.2 Capital expenditure

Barwon Water's actual and forecast water and sewerage capital expenditure is shown in Figure 3-3. Total net capital expenditure for WP3 is forecast to be \$323.7m which represents a 43% decrease on WP2 actual net expenditure of \$568m. This includes:

- Water expenditure of \$200m down from \$318m (a decrease of 37%)
- Sewerage expenditure of \$113m down from \$198m (a decrease of 43%)

- Recycled water expenditure of \$12m down from \$48m (a decrease of 76%).

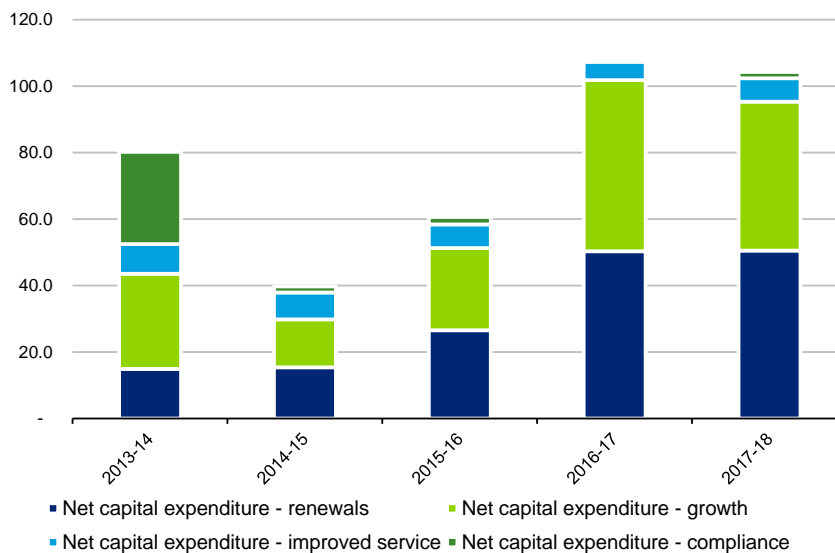
Figure 3-3 Barwon Water actual and forecast net capital expenditure (\$m, 01/01/2013)



The key drivers of capital expenditure for WP3 are:

- Asset renewals (\$101m or 28% of total capital expenditure)
- Service growth (\$120m or 33% of expenditure)
- Service level maintenance/improvement (\$57m or 16% of expenditure)
- Regulatory compliance (\$46m or 13% of expenditure).

Figure 3-4 Forecast capital expenditure by cost driver for WP3 (\$m, 01/01/2013)



3.3 Key drivers and obligations

3.3.1 Government obligations

Barwon Water advised of a number of new government obligations since the BAU baseline year of 2011-12 that will impact on WP3 operating expenditure. These include:

- Introduction of the carbon tax on 1 July 2012
- Requirement from the ESC to implement a GSL in relation to undertaking reasonable endeavours such as conducting site visits prior to any restriction of supply or legal action of hardship customers. In May 2012, the ESC released its final decision on its Hardship Related Guaranteed Service Level Review. In its final decision, the ESC extended the hardship related GSL scheme to Barwon Water (among others) from 1 July 2012
- A number of smaller new government obligations relating to:
 - Water quality, including water quality standards, total dissolved solids and training of water treatment operators
 - Fireplug maintenance
 - EPA obligations, including risk-based sewerage improvement programs and sewerage backlog programs.

3.3.2 Service standards

Barwon Water has proposed to maintain the ESC service standards as per WP2, with small changes to targets for 4 of 21 service standards that have no impact on expenditure.

Barwon Water has proposed to remove targets in relation to:

- Small town sewerage scheme – Barwon Water expects to have connected all properties in the scheme before the beginning of WP3
- Recycled water
- Greenhouse gas emissions.

3.3.3 Demand

Barwon Water is expecting population growth to be 8.2% over the WP3 period with demand for water expected to rise by 10.3%. Water restrictions were lifted in Geelong in 2010, although wet weather since then has reduced potable water demand.

4 Assessment of operating expenditure

This chapter sets out our assessment of operating expenditure including:

- An assessment of the 2011-12 baseline expenditure (which forms the basis of the growth adjusted BAU for WP3)
- Assessment of individual expenditure items. Our approach to assessing many of the expenditure items, including labour, electricity and superannuation guarantee costs, is set out in our *Overview* document
- Assessment of business specific expenditure items that are increasing and are above BAU (i.e. new initiatives or large increases in BAU items).

4.1 Business As Usual (BAU) expenditure

As outlined in the *Overview* document our approach to assessing BAU expenditure is to define efficient expenditure in the base year of 2011-12. Therefore we have removed material once-off items that were incurred in 2011-12, as well as adding back any material items that are normally incurred but were not in 2011-12. In addition, we have specifically removed any once-off and cyclical costs related to the drought in 2011-12, consistent with the ESC Guidance paper.

We have assessed Barwon Water's 2011-12 baseline and we agree with Barwon Water's methodology for adjusting its BAU (as outlined in Barwon Water's Water Plan, p37). Therefore we have made an adjustment of \$16m, which comprises the following items:

- Vision super defined benefit payment (\$12.1m)
- Black Rock de-sludging of large lagoon (\$0.72m). Note: this was changed from the figure provided in Barwon Water's Water Plan as it was identified that other lagoons at Black Rock were also de-sludged in 2011-12
- Preparation of the Sustainable Water Management Plan (\$0.3m)
- Black Rock Bike Path (\$0.11m)
- Reductions in utilisation of temporary employees (\$0.75m)
- Remedial work on installed water tanks (\$0.3m)
- Water Secure Home and Sustainable Garden expo (\$0.42m)
- Other non-recurrent costs (\$0.95m).

Table 4-1 below shows Barwon Water's proposed BAU expenditure (excluding licence fees, the environmental contribution levy and bulk water costs) for 2011-12 (as outlined in the ESC template) which is then growth and productivity adjusted for the WP3 years according to the methodology in the ESC's template.

Table 4-1 Barwon Water 2011-12 BAU and growth adjusted forecast (\$m, 01/01/2013)

Operating expenditure item	Actual		Water Plan forecast			
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18
Actual BAU	91.877	86.766	87.779	89.035	91.261	92.658
Deloitte adjustments to BAU	-16.000					
BAU baseline forecast	75.877	77.365	78.120	78.883	79.653	80.430

The ESC's Guidance Paper notes that the ESC will require all businesses to achieve a minimum of 1% per year productivity improvement on customer growth adjusted business as usual (BAU) operating expenditure for the WP3 period.

In the remainder of this chapter we assess the individual items of expenditure that Barwon Water has identified as increasing over the WP3 period. Following our assessment of each individual item, we compare our total recommended operating expenditure (less recommended expenditure on new or changed service outcomes, or new obligations imposed by Government or technical regulators) with the growth and productivity adjusted BAU target set out in Table 4-1 to obtain a view on whether or not Barwon Water meets the ESC's productivity hurdle.

This approach ensures that our assessment of Barwon Water's performance against the productivity hurdle takes into account the extent to which expenditure above the BAU target is the result of new or changed service outcomes, or new obligations imposed by Government or technical regulators (i.e. is either driven by required service outcomes from customers or largely outside the control of the business).

4.2 Individual expenditure items

Individual expenditure items have been assessed for prudence and efficiency using the approach set out in the *Overview* document. We have reported these items on a 'by exception' basis, i.e. we have generally only provided commentary for those items where we have recommended adjustments.

In this section, and where the context requires, references to Barwon Water's 'original' forecasts reflect forecasts contained in its Water Plan of September 2012. References to Barwon Water's 'revised' forecasts reflect adjustments proposed by Barwon Water in response to our Draft Report.

4.2.1 Labour costs

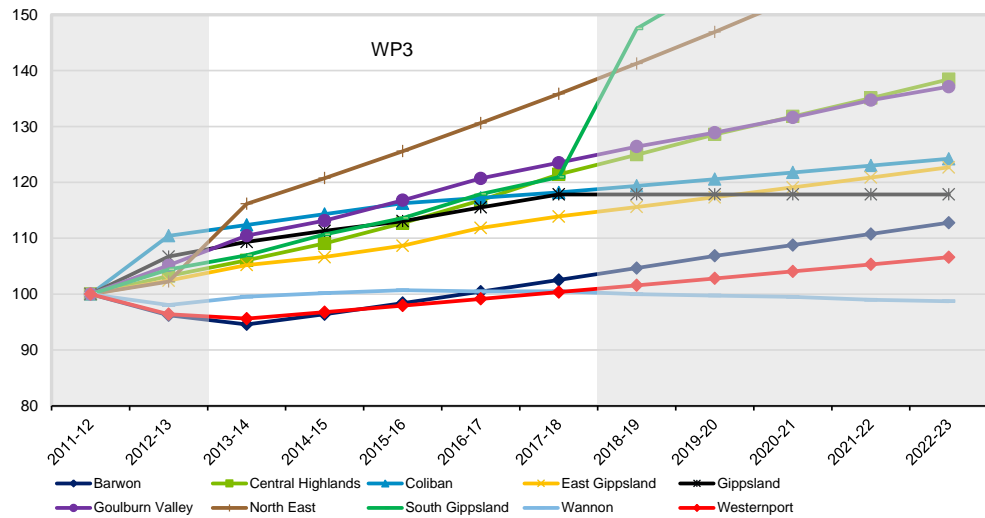
Barwon Water's Proposal

Barwon Water has forecast total labour expenditure to decrease by a total of \$3.2m in WP3 compared to the 2011-12 baseline. Key components of Barwon Water's proposal for labour costs include:

- Nominal wage escalation of 3.55% p.a. until December 2014 followed by 1% p.a. real increase for the remainder of WP3
- FTEs to decrease from 421 FTE in 2011-12 and be capped at 395 FTE for all years of WP3 (see Table 4-3). Barwon Water advised that this decrease is due to both natural attrition and a number of temporary employees that were utilised on IT projects finishing up. We note however that FTE's in WP3 are 7 FTE higher on average than in WP2
- Allowance for superannuation guarantee contribution increases (of \$0.334 total for WP3) and salary banding increments (\$0.360m per year or total of \$1.8m for WP3).

In comparison to the other ten regional urban businesses we reviewed, Barwon Water's proposed changes to labour costs from the 2011-12 baseline are among the lowest.

Figure 4-1 Total labour costs (Index 2011-12 = 100)



Analysis and Recommended adjustments

Our approach to reviewing labour forecasts is set out in the *Overview* document and involves:

- Applying wage increases set out in existing EBAs to apply until the EBA expires
- Once a new EBA applies, applying a real growth in wages per FTE of 0%
- Reviewing FTE numbers on a case-by case basis.

We are satisfied that Barwon Water’s forecasts of FTEs are reasonable and therefore we have made no adjustment to FTE numbers (Table 4-3).

We have considered Barwon Water’s labour expenditure using the approach above and recommend that a total net reduction of \$3.122m for WP3 be made to Barwon Water’s forecast labour costs as outlined in Table 4-2.

Table 4-2 Barwon Water labour expenditure (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast				
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed labour expenditure	41.090	38.860	39.608	40.429	41.270	42.129
Recommended adjustments		0.868	0.253	-0.568	-1.409	-2.267
Revised labour expenditure		39.729	39.861	39.861	39.861	39.861

Table 4-3 Barwon Water proposed FTEs

	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed FTE	420.7	395.0	395.0	395.0	395.0	395.0

4.2.2 Electricity costs

Barwon Water has the highest total electricity bills of any business, and in its Water Plan it forecast the highest cost per kWh or any business for its large sites in 2017-18, marginally higher than Central Highlands Water. Barwon Water’s forecast expenditure increased from \$3.9m in 2011-12 to \$9.2m in 2017-18. This increase is a result of both large new sites coming into operation in 2013, as well as an assumed 38% increase in prices in 2012-13.

Table 4-4 Water Plan electricity forecasts (\$m, 01/01/2013)

	Actual	Water Plan forecast					
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Large sites	3.161	4.639	5.551	6.568	6.781	7.155	7.659
Small sites	0.746	1.121	1.158	1.31	1.349	1.43	1.53
Total	3.908	5.761	6.708	7.878	8.13	8.585	9.19
% Change	7.00%	47.40%	16.50%	17.40%	3.20%	5.60%	7.00%

As noted in our *Overview* document Procurement Australia has recommended that AGL be selected to provide electricity services and a new three year quote has been provided to Barwon Water. The Procurement Australia quote also provides information on current usage and bills.

In our Draft Report we noted that Barwon Water's assumptions about price increases, including particularly in 2012-13, and which were based on the WSAA report, were too high in light of the Procurement Australia quote. Accordingly, our Draft report reduced Barwon Water's proposed electricity expenditure by a total of \$8.073m.

In response to our Draft Report Barwon updated its forecast to reflect the Procurement Australia quote and accepted our reductions.

Our revised forecast for Barwon Water is therefore as per our Draft Report, with the exception that (as outlined in the *Overview* document) we have adjusted the forecast to reflect that the Procurement Australia quote provides for unchanged energy costs in 2014-15 and 2015-16 in nominal (not real) terms. This results in a total reduction of \$8.342m across the WP3 period.

Table 4-5 Electricity costs (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast				
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed electricity expenditure	3.908	6.708	7.878	8.130	8.585	9.190
Recommended adjustments		-1.034	-1.215	-1.539	-1.981	-2.574
Revised electricity expenditure		5.674	6.663	6.591	6.604	6.616

4.2.3 Defined benefits superannuation costs

Barwon Water has included a once-off operating expenditure item of \$12.11m in the 2011-12 baseline year, as a result of its requirement to make an additional defined benefit superannuation contribution (including contribution tax) to Vision Super.

Background information regarding the requirement to make additional superannuation contributions is set out in our *Overview* document. As outlined in the *Overview* document we have allowed businesses to include an annuity payment in their operating forecasts to meet this obligation, calculated as the principal and interest payment on a 15 year loan at 5.75%.

Table 4-6 Barwon Water defined benefits superannuation expenditure (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast				
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed superannuation payment	12.110	0.000	0.000	0.000	0.000	0.000
Recommended adjustments	-12.110	1.194	1.162	1.131	1.100	1.071
Revised superannuation payment	0.000	1.194	1.162	1.131	1.100	1.071

4.3 New initiatives

Although Barwon Water has not identified any new initiatives in the ESC template, it has identified five operating expenditure items in the Water Plan which explain the increase of operating expenditure in WP3 above the growth adjusted BAU. Two of these items have already been assessed above, being electricity and labour. The remaining three items are discussed below and include:

- Biosolids drying facility
- Black Rock Water Reclamation Plant (WRP)
- Northern WRP.

In addition, chemical cost increases are the result of usage at the two recycled water plants therefore the prudence and efficiency of chemical costs have been considered in this section. We note that Barwon Water has not assumed any price increases for chemical costs, only increases in usage.

4.3.1 Biosolids drying facility

Barwon Water has proposed expenditure of \$38.2m above 2011-12 BAU (total for WP3) for management of its biosolids. The majority of this increase above BAU is associated with the new biosolids drying facility at Black Rock. The total costs of treating biosolids is \$50.1m in WP3, however there is \$2.4m in BAU (2011-12) that was spent on transport and treatment of biosolids to the Western Treatment Plant (which will discontinue) and also other biosolids activities in addition to payments for the drying facility. Therefore \$38.2m represents the net amount above BAU.

The biosolids drying facility receives biosolids from Black Rock and other treatment plants, and produces a product suitable for reuse. The facility is operated as a Public Private Partnership where a third party (in this case Plenary Environmental) designed, built and now operates the plant. Barwon Water pays monthly fees (both fixed and variable charges) which also includes a return on capital. The facility is intended to operate for a period of 20 years. The facility began full operation in 2012-13 therefore there are minimal operating costs in the 2011-12 baseline.

The prior arrangement for biosolids treatment was for Barwon Water to transport its wet sludge to the Western Treatment Plant (operated by Melbourne Water). Therefore there are some costs associated with transport and the contract with Melbourne Water that are saved (around \$0.55m per year). Barwon Water still has biosolids transport costs associated with transferring biosolids from its own treatment plants to Black Rock.

The biosolids drying facility was initially intended to begin operation in 2009, therefore it was included in WP2. The delay in the project to 2012-13 means that minimal costs of the facility were incurred in the baseline year of 2011-12, and therefore the majority of expenditure is now included in WP3. The cost is a contracted amount which was subject to competitive tender. We have compared the costs that were proposed in WP2 with those for WP3 and they are broadly consistent.

Therefore, as shown in Table 4-6, we have made no adjustment to operating expenditure associated with the biosolids drying facility for WP3.

Table 4-7 Barwon Water operating expenditure from biosolids drying facility (\$m, 01/01/2013)

Operating expenditure item	Water Plan forecast				
	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed expenditure	7.875	7.577	7.574	7.567	7.559
Recommended adjustments	0.000	0.000	0.000	0.000	0.000
Revised expenditure	7.875	7.577	7.574	7.567	7.559

4.3.2 Northern WRP

Barwon Water has proposed expenditure of \$16.9m above 2011-12 BAU (total for WP3) for the operation of the Northern WRP. The largest item of expenditure is electricity which totals \$7.3m (see Table 4-8). The Northern WRP is a recycled water facility that supplies Class A recycled water to the Shell refinery, substituting the potable water supply. This scheme also improves the capacity of sewerage infrastructure running through Geelong (which has capacity limitations) through capturing the sewage and trade waste in the north of the city and reducing the need for transport through Geelong for treatment at Black Rock. The capital costs of the project were shared between Barwon Water, the Federal Government and Shell.

Table 4-8 Breakdown of operating expenditure from Northern WRP (\$m, 01/01/2013)

Expenditure item	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Electricity	1.279	1.417	1.458	1.537	1.644	7.336
Contractor	0.915	0.915	0.915	0.915	0.915	4.573
Materials	0.559	0.559	0.559	0.559	0.559	2.794
Chemicals	0.440	0.440	0.440	0.440	0.440	2.200
Total	3.192	3.330	3.371	3.451	3.558	16.903

The Northern WRP was initially intended to begin operation in 2009, therefore it was included in WP2. The delay in the project to 2012-13 means that there were no costs in the baseline year of 2011-12, therefore the majority of expenditure is now included in WP3. The facility was assessed for prudence and efficiency in WP2 and operating costs were considered reasonable based on a comparison with other like facilities. We have assessed the forecasts for WP3 and they are broadly consistent with what was provided for WP2.

Therefore, as shown in Table 4-9 we recommend no adjustment to operating expenditure associated with the Northern WRP for WP3.

Table 4-9 Barwon Water operating expenditure from Northern WRP (\$m, 01/01/2013)

Operating expenditure item	Water Plan forecast				
	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed expenditure	3.192	3.330	3.371	3.451	3.558
Recommended adjustments	0.000	0.000	0.000	0.000	0.000
Revised expenditure	3.192	3.330	3.371	3.451	3.558

4.3.3 Black Rock recycled water plant

Barwon Water has proposed expenditure of \$4.4m above 2011-12 BAU (total for WP3) for the operation of the Black Rock recycled water plant. Almost half (\$1.9m) of the total operating costs of the plant are for electricity (see Table 4-10).

Table 4-10 Barwon Water operating expenditure and Class A demand forecast from Black Rock WRP (\$m, 01/01/2013)

Expenditure item	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Demand – Class A (ML)	134	204	276	348	464	1426
Electricity	0.323	0.363	0.379	0.405	0.443	1.912
Contractor	0.169	0.237	0.305	0.373	0.440	1.523
Materials	0.060	0.060	0.060	0.188	0.060	0.429
Chemicals	0.115	0.115	0.115	0.115	0.115	0.573
Total	0.666	0.774	0.858	1.080	1.058	4.437

The plant will supply Class A recycled water for use in dual pipe schemes to new residential developments at Armstrong Creek and Torquay as well as improve salinity levels for current Class C customers (agricultural customers). The capital cost of the project was \$42m and was incurred in WP2, however the project was not included in the WP2 determination. The project received Federal Government funding of \$10m.

The operating costs in Table 4-10 are based on a report by John Holland which assessed the operating costs of the plant at full capacity (i.e. operating two treatment trains for the full 12 months of the year). The cost of the plant at full capacity over WP3 was estimated at \$10.6m. This cost estimate has been adjusted to \$4.4m for WP3 by Barwon Water to reflect a lower demand assumption, due to growth of the Armstrong Creek and Torquay developments being lower than anticipated. Barwon Water has now assumed that recycled water will be produced from one treatment train between March and October, with demand for Class A customers beginning at 134 ML in 2013-14 and increasing to 464ML by 2017-18 (see Table 4-10). These revised demand numbers are based on a GHD MarcoPlan report and an SKM report discussing the design basis for dual supply systems.

Given the plant has been adjusted to suit revised demand assumptions, we consider the forecast cost estimate to be reasonable. Therefore we recommend that no adjustment be made to forecast costs associated with the Black Rock recycled water plant as shown in Table 4-11 below.

Table 4-11 Barwon Water operating expenditure from Black Rock WRP (\$m, 01/01/2013)

Operating expenditure item	Water Plan forecast				
	2013-14	2014-15	2015-16	2016-17	2017-18
Proposed expenditure	0.666	0.774	0.858	1.080	1.058
Recommended adjustments	0.000	0.000	0.000	0.000	0.000
Revised expenditure	0.666	0.774	0.858	1.080	1.058

4.4 Recommended changes to operating expenditure

Recommended operating expenditure

We have recommended a reduction of \$5.807m to Barwon Water's WP3 forecast controllable operating expenditure as per the table below.

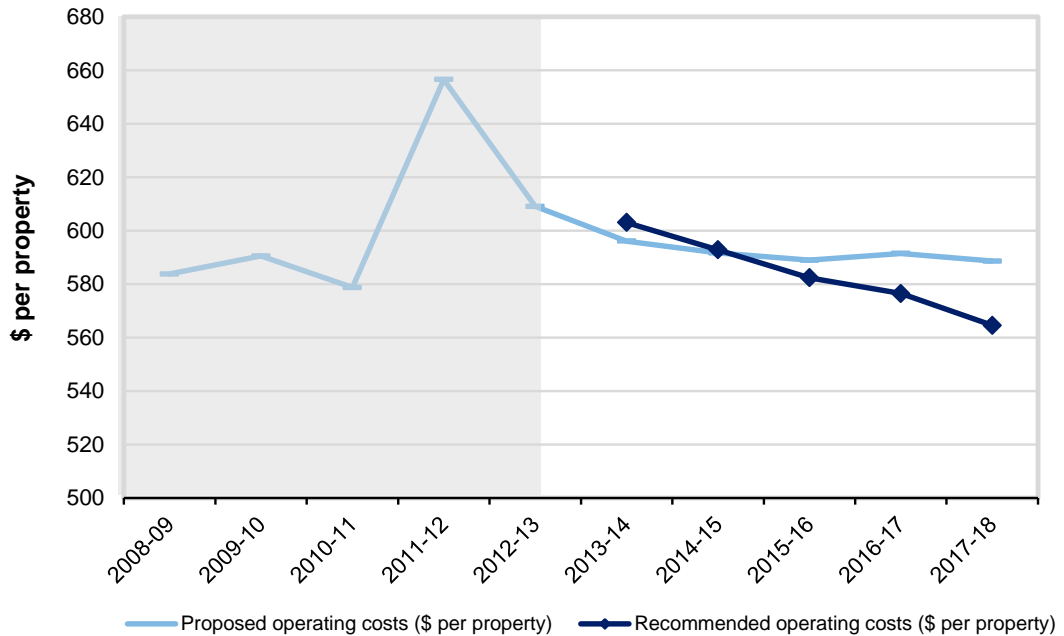
Table 4-12 Barwon Water forecast controllable operating expenditure and recommended adjustments (\$m, 01/01/2013)

Operating expenditure item	Actual 2011-12	Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Proposed controllable operating expenditure (\$m)	91.877	86.766	87.779	89.035	91.261	92.658	447.499
Recommended adjustments							
Labour		0.868	0.253	-0.568	-1.409	-2.267	-3.122
Electricity		-1.034	-1.215	-1.539	-1.981	-2.574	-8.342
Defined benefits		1.194	1.162	1.131	1.100	1.071	5.658
Total recommended adjustments		1.028	0.200	-0.976	-2.289	-3.770	-5.807
Recommended operating expenditure		87.794	87.979	88.060	88.972	88.888	441.693

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

Figure 4-2 compares our recommended operating expenditure for Barwon Water (on a per connection basis) with Barwon Water’s proposal.

Figure 4-2 Barwon Water forecast controllable operating expenditure and recommended operating expenditure (\$ per property 01/01/2013)



Performance against productivity hurdle

The ESC’s Guidance Paper notes that the ESC will require all businesses to achieve a minimum of 1% per year productivity improvement on customer growth adjusted business as usual (BAU) operating expenditure for the WP3 period (the productivity hurdle).

We have interpreted BAU operating expenditure as being all operating expenditure other than expenditure that is the result of new or changed service outcomes, or new obligations imposed by Government or technical regulators.

In the case of Barwon Water, we have assessed the following increases in operating expenditure above the 2011-12 baseline as meeting this definition:

- Electricity
- Defined benefits superannuation contributions
- Operating expenditure that is required as a result of new capital expenditure projects (which include Black Rock recycled water plant, Northern water plant and Black Rock biosolids drying facility).

The following table summarises the expenditure above the 2011-12 BAU for these items that we have assessed as meeting the ESC’s requirements for prudence and efficiency.

Table 4-13 Prudent and efficient new initiatives and obligations expenditure above the 2011-12 baseline (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast					Total WP3
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18	
Electricity		1.650	2.600	2.488	2.462	2.433	11.633
Defined benefits		1.194	1.162	1.131	1.100	1.071	5.658
Black Rock Recycled Water Plant		0.666	0.774	0.858	1.080	1.058	4.436

Operating expenditure item	Actual	Water Plan forecast					Total
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18	WP3
Northern Water Plant		3.192	3.330	3.371	3.451	3.558	16.903
Black Rock biosolids drying facility		7.875	7.577	7.574	7.567	7.559	38.152
Total		14.578	15.442	15.423	15.660	15.679	76.781

Note: Electricity encompasses carbon price impacts.

Table 4-14 below calculates a 'recommended BAU expenditure' using our total recommended operating expenditure less recommended expenditure on new or changed service outcomes, or new obligations imposed by Government or technical regulators above the BAU target. This amount is then compared with the growth and productivity adjusted BAU target to obtain a view on whether or not Barwon Water's operating expenditure, following our adjustments, meets the ESC's productivity hurdle.

Table 4-14 Productivity hurdle assessment (\$m, 01/01/2013)

Operating expenditure item	Actual	Water Plan forecast					Total
	2011-12	2013-14	2014-15	2015-16	2016-17	2017-18	WP3
Recommended operating expenditure		87.794	87.979	88.060	88.972	88.888	441.693
Less prudent and efficient new initiatives expenditure		14.578	15.442	15.423	15.660	15.679	76.781
Recommended BAU expenditure		73.216	72.537	72.637	73.313	73.209	364.911
Adjusted BAU target	75.877	77.365	78.120	78.883	79.653	80.430	394.451
Amount above BAU target		-4.149	-5.583	-6.246	-6.340	-7.221	-29.540

As shown in the table, following our recommended adjustments, and accounting for expenditure above the BAU target that is the result of new or changed service outcomes, or new obligations imposed by Government or technical regulators, Barwon Water meets the ESC's productivity hurdle.

5 Capital expenditure

This chapter of the report sets out our assessment of Barwon Water's capital expenditure proposal for WP3 including:

- An assessment of generic issues relevant to the overall prudence, efficiency and deliverability of the proposed capital expenditure program.
- A summary of major projects with a significant impact on the capital expenditure proposal (top ten by total expenditure) and assessment of each project
- A summary of our recommendations.

Our approach to assessing generic capital expenditure issues and project specific issues that are common to a number of businesses is set out in our *Overview* document.

5.1 Generic issues

In undertaking our review of Barwon Water's capital expenditure forecast, we have focussed on the major projects that comprise a significant proportion of the total capital expenditure forecast.

In doing so, we have also undertaken a high-level assessment of generic issues that may have an impact on the prudence, efficiency and deliverability of multiple projects or Barwon Water's capital expenditure program as whole.

5.1.1 Capital expenditure planning

Capital planning

- Barwon Water's capital program is contained within the Capital Works Investment Plan (CWIP) which is a rolling 10 year program of works
- Projects can be added to the CWIP at any time through the TechOne interface. A Project Justification form must be attached which describes the project and assesses the associated risks
- Descriptions of options assessments in the Project Justification form are brief and typically reference consultant's reports
- The quality of options assessments are variable depending on the project and each project needs to be assessed separately.

Asset Management

- Barwon Water's asset management systems are reasonably robust with FOCUS (a works database) used for water mains replacement management and SIMS (Sewer Infrastructure Management System) used to manage sewer main replacements.
- Key recommendations from the last asset management audit included the development of an overall Asset Management Strategy, development of an Asset Maintenance Strategy and Plan, and further development of the Asset Management Systems.

5.1.2 Cost estimation and escalation

Consultants GHD were engaged to develop P5, P50 and P95 cost estimates for Barwon's largest ten projects however these estimates have not been used in WP3. Typically they are higher than Barwon Water's own estimates.

GHD used the @Risk package to develop estimates, as follows:

- Concept or preliminary design estimates used to develop unit rates for line items
- Minimum and maximum contingency levels set, typically 20% below and 40-50% above unit rate
- Minimum and maximum unit rates developed using contingency levels
- @Risk analysis run to develop P50 cost estimate
- Difference between P50 and concept or preliminary design estimate calculated
- All line items inflated by % difference identified above to calculate P50 cost estimates for each line item.

Our assessment indicates that no cost escalation factors were used in development of capital cost estimates.

5.1.3 Deliverability of the capital expenditure program

Barwon Water has proposed to invest \$360.1m during the next Water Plan, which equates to an average annual capital expenditure of \$72.0m. This is around half of the WP2 actual capital expenditure.

Barwon Water uses a number of preferred engineering consultants to provide the majority of concept and detailed design services for capital projects. Barwon Water also has an alliance process to facilitate the delivery of major projects.

Given these factors, Barwon Water is not expected to encounter problems delivering its capital program.

5.2 Major projects

Table 5-1 provides an overview of the top ten projects (by capital expenditure), showing the primary driver and forecast expenditure over the current and next regulatory period.

Table 5-1 Barwon Water top ten projects and forecast expenditure (\$m, 01/01/2013)

Capital expenditure item	Primary Driver	Water Plan forecast expenditure					Total	Proportion of total expenditure
		2013-14	2014-15	2015-16	2016-17	2017-18		
Sewer mains replacement and rehabilitation	Renewal	5.64	5.49	5.49	5.49	5.49	27.61	7.7%
Colac water source expansion	Growth	0.12	0.91	1.04	25.34	0.00	27.41	7.6%
Water mains water replacements	Renewal	4.09	3.91	3.74	3.61	3.52	18.87	5.2%
Inverleigh low level feeder main	Growth	0.00	0.00	0.66	11.66	0.11	12.43	3.5%
Black Rock Water Reclamation Plant hydraulic capacity upgrade	Renewal	0.26	2.88	8.64	0.00	0.00	11.78	3.3%
Sewer main relining	Renewal	2.16	2.09	1.04	2.61	1.11	9.03	2.5%
Apollo Bay bulk water supply expansion	Growth	8.39	0.27	0.00	0.00	0.00	8.66	2.4%
Vehicles	Renewal	2.00	1.89	1.79	0.80	1.47	7.94	2.2%
Aireys Inlet Water Treatment Plant upgrade	Renewal	0.67	4.21	3.00	0.30	0.00	8.18	2.3%
Pettavel water basin upgrade	Growth	5.92	1.08	0.00	0.00	0.00	7.00	1.9%
Subtotal - Top 10 Projects		29.26	22.74	25.40	49.81	11.70	138.91	38.6%
Other large projects		19.90	2.19	6.04	2.23	10.70	41.08	11.4%
Other minor projects		46.84	38.97	37.46	33.86	22.99	180.11	50.0%
Total		96.00	63.90	68.90	85.90	45.40	360.10	
Proportion of annual expenditure		27%	18%	19%	24%	13%		

5.3 Sewer mains replacement and rehabilitation

5.3.1 Business proposal

Barwon Water has proposed to replace or rehabilitate 3,105 sewer reticulation mains covering 169,145 metres at a total cost of \$27.61m.

Key drivers

The key driver for this project is renewals – to replace or rehabilitate extreme risk sewer mains in order to maintain service levels and a reliable supply.

Options analysis and proposed costs

Barwon Water employs a risk management approach for its assets and has developed SIMS as an automated tool for risk ranking of sewer mains. SIMS takes data from FOCUS, Profis (GIS) and WINCAN (CCTV database) to determine the overall risk of a sewer main failing. Sewer mains rated as extreme risk are inspected by CCTV to determine the appropriateness of relining works and if confirmed to be in poor condition are scheduled for relining.

Cost estimates for this project are based on a Schedule of Rates contract with an external contractor. Barwon Water is in the process of proposing a new panel contract with two contractors.

Proposed timing

Barwon Water has proposed a regular allowance for each year of WP3 with works undertaken by an external contractor. This project is ongoing from WP2 and will continue into WP4.

5.3.2 Analysis and recommended adjustments

Some key issues and our high-level approach to renewals expenditure is set out in our *Overview* document.

Options analysis and proposed costs

Barwon Water's SIMS process facilitates the identification of sewer mains with a high risk of failure. The output of this automated tool is a list of sewer mains prioritised for CCTV and potentially relining. The list of sewer mains and established contract unit rates are then used to set funding requirements necessary to achieve a set level of service. Barwon Water has determined to eliminate all extreme risk pipelines to ensure that current service levels are maintained.

The annual number and length of sewer mains identified by SIMS for rehabilitation in each year of WP3 is almost 3-4 times larger than the renewals achieved in 2012-13. However, we accept that this level of works is required to catch up on lowered levels of expenditure in WP2 and reflects the changeover to the SIMS process. We also note that Barwon Water's focus on extreme risk pipelines.

Whilst there is some concern over the deliverability of the increased program, Barwon Water's current contract arrangement is being changed to a dual contractor panel so that two streams of work can be managed.

Subsequent to the development of its Water Plan, Barwon Water has suggested a small deferral of expenditure from 2013-14 to allow the new panel contract to be implemented.

Recommendation

Barwon Water's sewer mains replacement program is sufficiently justified in the supporting documentation and Barwon Water's new two contractor panel demonstrates an ability to achieve the significantly increased level of renewals.

We have not recommended any adjustments to this program however Barwon Water's proposed adjustments are shown below.

Table 5-2 Proposed and Recommended Expenditure for Sewer mains replacement and rehabilitation (\$m, 01/01/2013)

		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Sewer mains replacement and rehabilitation	Proposed	5.64	5.49	5.49	5.49	5.49	27.61
	Recommended	4.12	5.84	5.84	5.84	5.84	27.46
	Net change	-1.52	0.34	0.34	0.34	0.34	-0.15

5.4 Colac water source expansion

5.4.1 Business proposal

Barwon Water is currently pursuing options to augment the water supply at Colac at a total cost of \$27.41m.

Key Drivers

The key driver for this project is growth, and in particular to meet water security obligations. Barwon Water has set a 95% reliability target – that is, water restrictions would only be in place for one in every 20 years¹. Modelling has also indicated that the current system will need augmentation to supply future demands.

Options analysis

Barwon Water has investigated a large range of water supply options including asset based solutions, demand management, water conservation, and alternative source options. A number of options were identified by the community through consultation events organised by Barwon Water. A shortlist of six feasible options was developed by Barwon Water for further assessment.

The final concept design is expected to be approved by the Board in June 2013.

Proposed Costs

Barwon Water has advised that the cost estimate has been confirmed as part of a P50 analysis completed with input from Barwon Water's design and construction partners, GHD and John Holland, prior to finalisation of the Water Plan.

Proposed Timing

Originally proposed for 2024, modelling of recent reductions in expected water availability and increases in forecast consumption have brought forward these water security works to 2016-17. Detailed development and selection of options is expected to be completed by June 2013 with further works scheduled each year to construction.

¹ Barwon Water 2012, Water Supply Demand Strategy 2012-2062, March 2012, pg 88

5.4.2 Analysis and recommended adjustments

Drivers

The reliability target set for this project, whilst comparable to some other water businesses, is not a legislated target nor is it in the Statement of Obligations. Guidance from the Victorian Government encourages businesses to develop their own targets in full consultation with customers.

Outcomes from consultation as part of the updated Water Supply Demand Strategy 2012-2062 indicates that 38% of customers surveyed were not prepared to pay more to reduce the likelihood of restrictions while 46% of customers were prepared to pay more (although how much more is not specified) and 16% did not respond. Some respondents indicated that an increase of no more than 10% was not acceptable.

Future consultation stages will need to include detailed consideration of the capital cost trade off against the benefits of reducing restrictions. This will ensure that customers are appropriately informed of the costs of achieving the proposed reliability targets.

The modelling analysis undertaken to determine the need for, and timing of, this project, does not appear to account for the impact of water restrictions, beyond permanent water saving measures², which could have a significant impact in reducing demand. Whilst Barwon Water has indicated that the modelling did in fact include restrictions, no clear evidence of this was provided. The key climate scenario used to justify the need for this project, a continuously repeated 1997-99 climate³, was the worst recorded inflow period in Victoria and in this situation, water restrictions would have been implemented and should therefore have been assessed in the model.

The modelling of the worst case scenario does not suggest the system would run out of water, while the second worst climate scenario modelled, a continuously repeated 2006-07 climate, indicates that storage levels do not fall below minimum levels⁴.

Options analysis and proposed costs

As indicated above, it is not clear that the modelling takes into account the impact of water restrictions reducing demand, therefore making additional options viable from a yield perspective. In our view, significant further work is required to further assess options and identify the preferred solution with more detailed costs.

Proposed timing

The proposed timing of works to identify the preferred option and undertake community consultation appears reasonable. The assessment of the proposed capital works timing is not possible given a preferred option has not been selected.

Recommendation

The overall need for an augmentation to the water supply at Colac has been adequately demonstrated in the Water Supply Demand Strategy however the timing of the upgrade, the works required and the cost estimates are too preliminary to assess.

One of the key justifications for this project, the 95% reliability target, is not a specifically legislated target and does not have majority local or wider community support. It is also unclear whether the modelling takes account of the expected reduction in demand from water restrictions during drought.

² Ibid, pg 38

³ Ibid, pgs 35-37

⁴ Barwon Water 2012, Water Supply Demand Strategy 2012-2062, March 2012, Figure 16, pg 36

While noting that Barwon Water provided additional explanations for this project, no new information was provided that contradicted our initial assessment.

There is therefore sufficient doubt regarding this project to recommend deferral of the majority of capital expenditure, leaving expenditure for further options analysis and community consultation, particularly the consideration of the trade-offs involved in meeting different reliability targets.

The proposed adjustment to forecast expenditure is shown below.

Table 5-3 Proposed and Recommended Expenditure for Colac water source expansion (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Colac water source expansion	Proposed	0.12	0.91	1.04	25.34	0.00	27.41
	Recommended	0.12	0.91	1.04	0.00	0.00	2.07
	Net change	0.00	0.00	0.00	-25.34	0.00	-25.34

5.5 Water mains water replacements

5.5.1 Business proposal

Barwon Water has proposed to allocate \$18.87m to replace water mains over the WP3 period.

Key Driver

The key driver for this project is renewals – to efficiently maintain service levels at acceptable risk, therefore fulfilling obligations to provide reliable services. Barwon Water has a run-to-failure strategy for water mains due to low assessed risk but also replaces mains in response to multiple failures defined by service level triggers.

Options Analysis

Barwon Water uses FOCUS (Field Operations Case Utility System) to record mains failures and to flag mains where multiple failures have occurred. The flagged mains are then subjected to a risk assessment to determine their priority for replacement.

Replacement works involve pipe bursting and installing a new pipe and this is undertaken by an external contractor who undertakes works based on priority.

Proposed Costs

Barwon Water uses the CSIRO developed PARMS (Pipeline Asset and Risk Management System) to predict the levels of expenditure required to maintain a specific service level. These annual levels are included as an allowance in WP3.

Actual expenditure is based on a schedule of rates contract.

Total expenditure has been reduced to reflect work undertaken in the Geelong Pressure Management Project which has resulted in lower numbers of failures.

Proposed Timing

Expenditure is allocated across all years of WP3 and works are undertaken on a priority basis by an external contractor.

5.5.2 Analysis and recommended adjustments

Recommendation

No adjustments are proposed for this project. The proposed and recommended expenditure is shown below.

Table 5-4 Proposed and Recommended Expenditure for Water mains water replacements (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Water mains water replacements	Proposed	4.09	3.91	3.74	3.61	3.52	18.87
	Recommended	4.09	3.91	3.74	3.61	3.52	18.87
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.6 Inverleigh low level feeder main

5.6.1 Business proposal

Barwon Water has proposed to construct a 13.7km, 300mm diameter pipeline from Bannockburn Basin to Inverleigh.

Key Driver

The key driver for this project is growth – to supply new development areas in Inverleigh. Additionally, the project also reduces demand on the existing system and provides greater water security by creating a loop in the existing system.

Options Analysis

Two key supply options were investigated, the augmentation of the existing supply system through Teesdale or a feeder main from the Bannockburn Basin direct to Inverleigh. The direct feeder main connection was identified as the preferred solution as it provides a higher level of water security, being a second supply source, and also reduces pumping costs through the existing system.

Specific options identified included various pipeline alignments and the Concept Design report⁵ recommends the proposed works as the preferred option.

Updated information provided by Barwon Water indicates that the feeder main sizing has increased from DN300mm to DN350mm.

Proposed Costs

Concept design costs for the preferred option total \$6.55m⁶ which includes a 30% contingency, 15% for design and construction supervision, and allowances for approvals, investigations, consultation, and vegetation offsets.

Barwon Water provided updated cost estimates totalling \$12.45m.

⁵ AECOM 2011, Inverleigh Low-Level Feeder Main, Concept Design report completed 24 March 2011

⁶ Ibid, pg 43

Proposed Timing

Expenditure is allocated from 2015-16 to 2017-18 with the majority of expenditure in 2016-17.

5.6.2 Analysis and recommended adjustments

Drivers

The driver for this project is adequately justified.

Options analysis and proposed costs

The Concept Design report identifies the proposed works as part of the preferred option, with the inclusion of a 3ML tank. The Project Justification form⁷, however, indicates that this project is related to another project, W1156 Bannockburn Tank, which involves the construction of a supply tank to be used while the Bannockburn Basin is relined and covered. The Concept Design report identifies this tank as a potential supply source for the Inverleigh feeder main negating the additional cost of a separate tank.

The concept design cost of \$6.55m is significantly different to both the allocated expenditure in WP3 (\$12.4m) and the calculated P50 estimate (\$14.8m)⁸ indicating that significant additional works have been included in the cost estimate.

Barwon Water provided updated cost information detailing the proposed expenditure of \$12.4m. The reasons for the cost differential between the concept design and the latest estimate include the upsizing of the feeder main from DN300 to DN350, significant underestimation of pipeline costs in the concept design including pipe material and laying rates, allowances for rock, and specific allowances for some procurement costs.

Proposed timing

No timing is suggested in the Concept Design report however updated information supplied by Barwon Water is the same as the timing of expenditure proposed in WP3.

Recommendation

There is significant variability in the capital cost estimates from the concept design to the latest figures supplied by Barwon Water with the key reason for this being poor cost estimation during concept design and upsizing of the feeder main. The updated figures are, however, consistent with the proposed WP3 expenditure and as such, we have not proposed any adjustments. The recommended figures have been updated to reflect Barwon Water's latest estimates.

The proposed and recommended expenditure is shown below.

Table 5-5 Proposed and Recommended Expenditure for Inverleigh low level feeder main (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Inverleigh low level feeder main	Proposed	0.00	0.00	0.66	11.66	0.11	12.43
	Recommended	0.00	0.00	0.35	12.00	0.10	12.45
	Net change	0.00	0.00	-0.31	0.34	-0.01	0.02

⁷ Barwon Water 2012, Capital Works Project Justification Inverleigh Low Level Feed Main, updated 23 August 2012

⁸ GHD 2012 Water Plan 3 Project Cost Assessments Report, completed November 2012, pg 8

5.7 Black Rock Water Reclamation Plant hydraulic capacity upgrade

5.7.1 Business proposal

Barwon Water has proposed to replace inlet infrastructure at the Black Rock Water Reclamation Plant at a cost of \$11.8m.

Key Driver

The key driver for this project is renewal – replacement of end-of-life assets that have various degrees of mechanical failure over the past few years. An additional driver is Growth with the replacement assets sized to cater for future capacity. A further driver for this project is compliance with environmental obligations and occupational health and safety requirements.

Options Analysis

Three main options have been identified, assessed and further developed since 2009: retrofitting existing facilities; new combined facilities; and new split function facilities⁹. These options have been assessed using Multi-Criteria Analysis (MCA) and a preferred option identified.

Proposed Costs

The proposed costs identified in the Concept Design report were valid as at October 2011 and are concept costs. The quoted accuracy is $\pm 30\%$ with a number of allowances and contingencies including Preliminaries and General (12%), Design Development (20%), and Project Contingency (10%) with each allowance based on the cumulative total. The total capital cost for the preferred option was calculated to be \$8.54m.

Barwon Water provided updated cost estimates for this project from an unknown source which calculated the total cost at \$11.78m, an increase of almost 40%.

Barwon Water has now provided updated figures including a P50 figure of \$11.3m.

Proposed Timing

The proposed works are scheduled to commence in 2013-14 with construction works occurring over 2014-15 and 2015-16.

5.7.2 Analysis and recommended adjustments

Drivers

There are multiple drivers for this project however they all adequately contribute to establishing the need for this project.

Options analysis

Three options have been investigated since 2009 and cover the range of feasible alternatives for this site.

⁹ Beca 2011 Black Rock Water Reclamation Plant Inlet Works Concept Design Report, completed 22 December 2011, pg 2

Proposed costs

The proposed costs have increased significantly from the original business case submission of \$5.56m to the proposed figure of \$11.8m. This increase is due to the addition of new works and allowances to the project.

Proposed timing

The proposed timing has been assessed as adequate.

Recommendation

The need for this project is adequately established and the latest cost estimates are similar to the proposed WP3 expenditure. As such we have not proposed any adjustments to this project.

Proposed and recommended expenditure is shown below.

Table 5-6 Proposed and Recommended Expenditure for Black Rock Water Reclamation Plant hydraulic capacity upgrade (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Black Rock Water Reclamation Plant hydraulic capacity upgrade	Proposed	0.26	2.88	8.64	0.00	0.00	11.78
	Recommended	0.26	2.88	8.64	0.00	0.00	11.78
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.8 Sewer main relining

5.8.1 Business proposal

Barwon Water has proposed to reline about 12.1km of major sewer mains over WP3 at a total cost of \$9.0m.

Key Driver

The key driver for this project is renewals – to increase the life of existing assets, maintain an acceptable risk of failure and to provide a reliable service.

Historical CCTV work, combined with failure data and asset profiling, has identified a list of high risk assets that are in poor condition which are then targeted for renewal. Barwon Water is moving to integrate the major sewer mains assessment into a module of SIMS, the package used for reticulation sewer main replacements and rehabilitation.

Options Analysis

Major sewer mains are relined prior to their complete failure to reduce capital costs. Structural relining significantly extends the life of the existing asset.

Specific sewer mains are identified for relining with each main risk assessed and ranked.

Proposed Costs

Barwon Water has a three year schedule of rates contract for relining major sewers. The proposed expenditure has been calculated using the rates for this contract and the lengths of sewer mains requiring relining in WP3.

The quantum of proposed expenditure over WP3 and the average annual expenditure are consistent with actual expenditure from WP2.

Proposed Timing

This is an ongoing program of works with timing for specific expenditure dependent on an external contractor.

5.8.2 Analysis and recommended adjustments

Recommendation

Barwon Water has an appropriate system to identify, rank and renew major sewer mains and we have no adjustments to make on the proposed expenditure.

Proposed and recommended expenditure is shown below.

Table 5-7 Proposed and Recommended Expenditure for Sewer main relining (\$m, 01/01/2013)

Project	2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3	
Sewer main relining	Proposed	2.16	2.09	1.04	2.61	1.11	9.03
	Recommended	2.16	2.09	1.04	2.61	1.11	9.03
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.9 Apollo Bay bulk water supply expansion

5.9.1 Business proposal

Barwon Water has proposed to augment the Apollo Bay bulk water supply system with large water storage at a cost of \$8.7m in WP3. This project was a carryover from WP1 and has now carried over from WP2.

This project was assessed in WP2 with the key comments in the review relating to provisions for geotechnical investigations, the significant increase in costs from WP1 to WP2, and the inconsistency between the forecast expenditure and the capital program.

Increases in capital costs for the project were submitted for the Managing Director's approval in September 2012 and were primarily related to geotechnical conditions at the preferred site, requiring additional investigations.

The project is currently awaiting a Target Outturn Cost (TOC) from the alliance selected to deliver the project. The TOC is to be subjected to independent scrutiny from an external consultant.

5.9.2 Analysis and recommended adjustments

Recommendation

This project is a carryover from WP2 and was assessed as part of the WP2 approval process. The concerns raised in the WP2 review appear to have been resolved and as such, we recommended no adjustment to the proposed expenditure.

Proposed and recommended expenditure is shown below.

Table 5-8 Proposed and Recommended Expenditure for Apollo Bay bulk water supply expansion (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Apollo Bay bulk water supply expansion	Proposed	8.39	0.27	0.00	0.00	0.00	8.66
	Recommended	8.39	0.27	0.00	0.00	0.00	8.66
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.10 Vehicles

5.10.1 Business proposal

Barwon Water has proposed to replace assets in their passenger and commercial fleet over WP3 at a total cost of \$7.94m.

Key Driver

The key driver for this project is renewals – to maintain the passenger and commercial fleets to aid productivity and efficiency of organisation across service outcomes.

Options Analysis

Barwon Water has recently modified its fleet replacement targets to extend both the minimum age of the vehicle and minimum kilometres before replacement. An assessment was undertaken to determine the optimal replacement target by considering residual values by asset age and kilometres compared to deferred new asset costs¹⁰.

The Fleet Review also assessed the costs and benefits of purchasing versus leasing assets and recommended that purchasing vehicles is more cost effective.

Proposed Costs

The proposed expenditure on new vehicles is determined from the fleet vehicle pricing subject to strict guidelines on the vehicle type or category and minimum specifications. New asset purchases are offset by the sale of current fleet.

Proposed Timing

Barwon Water has a register of vehicles detailing replacement timeframes. This is an ongoing program of works with vehicles replaced over periods ranging from 3-12 years.

5.10.2 Analysis and recommended adjustments

Recommendation

We have no proposed adjustments to vehicles expenditure for WP3.

Proposed and recommended expenditure is shown below.

¹⁰ Barwon Water 2012, Fleet Review – 2012, internal strategy report completed March 2012

Table 5-9 Proposed and Recommended Expenditure for Vehicles (\$m, 01/01/2013)

Project	2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Proposed	2.00	1.89	1.79	0.80	1.47	7.94
Vehicles						
Recommended	2.00	1.89	1.79	0.80	1.47	7.94
Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.11 Aireys Inlet Water Treatment Plant upgrade

5.11.1 Business proposal

Barwon Water has proposed to upgrade the Aireys Inlet Water Treatment Plant at a total cost of \$8.18m.

Key Driver

The key driver for this project is renewal in order to maintain current service levels. The current plant is nearing the end of life and is unable to cope with current demands whilst maintaining water quality standards.

Options Analysis

The current plant is a large scale pilot plant rather than a fully functional permanent treatment plant and uses the proprietary MIEX (Magnetic Ion Exchange) system to treat high organic loads coupled with conventional processes.

A business case¹¹ and Concept Design report¹² outline the various options considered however the only solutions that met water quality targets were MIEX based options. A total of nine options were assessed and costed including a range of different treatment methods.

Proposed Costs

The estimated costs for this project are based on the Concept Design report and are quoted to $\pm 30\%$ accuracy with a general contingency allowance of 20% and specific allowances for design and investigations, project management, site establishment, construction management, commissioning, and contractor margins which total 36%.

Proposed Timing

This project commenced at the end of the WP2 and is scheduled for completion in 2016-17 with the majority of capital expenditure proposed for 2014-15.

5.11.2 Analysis and recommended adjustments

Recommendation

The business case and concept design report provide adequate justification of this project and as such we are not recommending any adjustments to proposed expenditure.

¹¹ Barwon Water 2012, Aireys Inlet WTP Upgrade Business Case Report, March 2012

¹² AECOM 2011, Aireys Inlet Water Treatment Plant Upgrade Concept Design Report, 14 December 2011

Proposed and recommended expenditure is shown in Table 5-10.

Table 5-10 Proposed and Recommended Expenditure for Aireys Inlet Water Treatment Plant upgrade (\$m, 01/01/2013)

Project		2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3
Aireys Inlet Water Treatment Plant upgrade	Proposed	0.67	4.21	3.00	0.30	0.00	8.18
	Recommended	0.67	4.21	3.00	0.30	0.00	8.18
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.12 Pettavel water basin upgrade

5.12.1 Business proposal

Barwon Water has proposed to augment the existing 50ML Pettavel water supply storage in WP3 to cater for planned growth at a cost of \$7.0m.

Key Driver

The key driver for this project is growth to meet expanding demand, particularly in the Armstrong Creek development area. Future growth forecasts indicate that an augmented storage is required to meet current demand while a second augmentation is required in 15 years to meet future demand. The project also provides a level of backup supply for ongoing maintenance programs.

Options Analysis

Barwon Water states that there are no viable alternatives for this project. The options assessed for this project are variations on the size, location and timing of the storage augmentation.

Proposed Costs

The latest cost estimates for this project have been prepared by the Barwon Water Alliance.

Proposed Timing

This project is already underway with referral to the Alliance for design and construction in July 2012, Functional Design completed in October 2012, Detailed Design completed in March 2013 and construction commencing in July 2013 and completing in July 2014.

5.12.2 Analysis and recommended adjustments

Drivers

There is no mention of this project in Barwon Water's Water Supply Demand Strategy 2012-2062 however Barwon Water has stated that the basin is a distribution asset only. The Growth driver for this project is appropriate given the project's proximity to the Armstrong Creek development area.

Options analysis

Only one potential alternative option for this project was investigated, a larger pipeline, however due to the length of pipe required and subsequent cost, the option proved significantly more expensive than the proposed works.

We note that there is no mention of this augmentation requirement or the various options to resolve this in any of the long or short-term strategies provided. A previous options assessment and concept design report completed in July 2010 also did not provide any alternative options and is now superseded given that it recommended doubling the storage augmentation to 200ML.

Proposed costs

The basis for the cost estimates in the June 2012 Business Case and the updated estimates from the Alliance are unclear. No supporting documentation has been provided.

It is noted that the costs were previously reviewed by Inside Infrastructure in April 2012 who suggested a number of adjustments to design and project management costs and the removal of a scope growth allowance. However this review was based on a now superseded scope of works.

The current cost estimates reflect the proportion of expenditure allocated to WP3 and a current functional design and updated cost estimate from January 2013 (unsighted) confirmed the proposed expenditure of \$7.0m.

Proposed timing

Barwon Water provided an updated timeline for the project indicating expected completion dates to May 2014.

Recommendation

Whilst there remains some inconsistency in the supporting documentation and independent reviews, the project driver is sound and the latest cost estimates appear to be well supported, although specific documents were not sighted. We do not propose any adjustments to this project.

The proposed and recommended expenditure is shown in Table 5-11.

Table 5-11 Proposed and Recommended Expenditure for Pettavel water basin upgrade (\$m, 01/01/2013)

Project	2013-14	2014-15	2015-16	2016-17	2017-18	Total WP3	
Pettavel water basin upgrade	Proposed	5.92	1.08	0.00	0.00	0.00	7.00
	Recommended	5.92	1.08	0.00	0.00	0.00	7.00
	Net change	0.00	0.00	0.00	0.00	0.00	0.00

5.13 Summary of our recommendations

Our recommendations for adjustments to Barwon Water's capital expenditure forecast over WP3 are set out below. We have removed \$25.5m from Barwon's proposal and recommend that:

- Proposed expenditure for Sewer Mains Replacement / Rehabilitation be updated to reflect Barwon Water's latest estimates
- Proposed expenditure for Colac Water Source Expansion be reduced to \$2.07m to reflect significant uncertainty over the need for and timing of works. The recommended expenditure is to cover further remodelling demand with restrictions, further options analysis, and community consultation on the reliability target

- Proposed expenditure for Inverleigh low level feeder main be updated to reflect Barwon Water's latest estimates.

Table 5-12 Barwon Water's forecast capital expenditure and recommended adjustments (\$m, 01/01/2013)

Capital expenditure item		Water Plan forecast					Total WP3
		2013-14	2014-15	2015-16	2016-17	2017-18	
Sewer mains	Proposed	5.643	5.492	5.492	5.492	5.492	27.611
	Recommended	4.119	5.835	5.835	5.835	5.835	27.460
	Net change	-1.524	0.343	0.343	0.343	0.343	-0.151
Colac water source expansion	Proposed	0.118	0.914	1.037	25.339	0.000	27.409
	Recommended	0.118	0.914	1.037	0.000	0.000	2.069
	Net change	0.000	0.000	0.000	-25.339	0.000	-25.339
Water mains water replacements	Proposed	4.088	3.911	3.738	3.606	3.525	18.867
	Recommended	4.088	3.911	3.738	3.606	3.525	18.867
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Inverleigh low level feeder main	Proposed	0.000	0.000	0.663	11.663	0.106	12.432
	Recommended	0.000	0.000	0.350	12.000	0.100	12.450
	Net change	0.000	0.000	-0.313	0.337	-0.006	0.018
Black Rock WRP hydraulic capacity upgrade	Proposed	0.263	2.882	8.638	0.000	0.000	11.783
	Recommended	0.263	2.882	8.638	0.000	0.000	11.783
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Sewer main relining	Proposed	2.165	2.094	1.044	2.609	1.114	9.026
	Recommended	2.165	2.094	1.044	2.609	1.114	9.026
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Apollo Bay bulk water supply expansion	Proposed	8.394	0.268	0.000	0.000	0.000	8.662
	Recommended	8.394	0.268	0.000	0.000	0.000	8.662
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Vehicles	Proposed	2.000	1.885	1.788	0.803	1.466	7.942
	Recommended	2.000	1.885	1.788	0.803	1.466	7.942
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Aireys Inlet Water Treatment Plant upgrade	Proposed	0.668	4.214	2.997	0.297	0.000	8.176
	Recommended	0.668	4.214	2.997	0.297	0.000	8.176
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Pettavel water basin upgrade	Proposed	5.922	1.080	0.000	0.000	0.000	7.002
	Recommended	5.922	1.080	0.000	0.000	0.000	7.002
	Net change	0.000	0.000	0.000	0.000	0.000	0.000
Total proposed		95.830	63.930	68.900	85.940	45.440	360.040
Recommended capital expenditure		94.306	64.273	68.930	61.281	45.777	334.568
Recommended adjustments from proposed		-1.524	0.343	0.030	-24.659	0.337	-25.472

6 Limitation of our work

General use restriction

This Report is prepared solely for the internal use of the Essential Services Commission. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of the Essential Services Commission's review of Water Plans. You should not refer to or use our name or the advice for any other purpose.