

The background features a large red rectangle on the left and a vertical bar on the right composed of several colored segments: orange at the top, pink, light orange, and yellow at the bottom. The main title is centered in the red area.

*Review of  
Metropolitan  
Melbourne's  
water  
companies'  
proposed  
expenditure*

Essential Services  
Commission

April 2013

Final findings



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## **Disclaimer**

In preparing this Report we have only considered the circumstances of the Essential Services Commission, and the Commission's requirements as set out in our engagement terms dated 4 September 2012.

Our Report should not be relied upon by any other person, or for any other purpose. We do not accept or assume responsibility to any person other than Essential Services Commission in respect of our Report.

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# 1 Introduction

## Background

The Essential Service Commission (ESC) is currently undertaking a review of the proposed prices to be charged by the Victorian water industry for the upcoming third regulatory period, between 1 July 2013 and 30 June 2018. The water companies proposed the prices to be charged in their Water Plans, published in late October 2012. The ESC will review the Water Plans and intends to release its draft decision on prices in April 2013, and final decision in June 2013, prior to the start of the upcoming regulatory period.

PwC has been engaged by the ESC to review to the prudence and efficiency of the greater metropolitan Melbourne water companies' proposed expenditure for the upcoming regulatory period. PwC engaged Beca to undertake elements of the review which required specific engineering expertise.

The companies PwC has been engaged to review are:

- Melbourne Water
- City West Water
- South East Water
- Yarra Valley Water
- Western Water

## Overview of our approach

PwC used the following approach for the review:

- we undertook an initial review of the companies' Water Plans and accompanying documentation.
- we prepared a preliminary information request to inform interviews with the companies.
- we undertook two days of interviews with relevant staff from each of the companies in late November and early December 2012 in order to:
  - allow the businesses to present their proposals
  - clarify our understanding of the companies' proposals
  - ask for further information to support the companies' proposals.
- we analysed the information collected throughout the process to date, in order to form draft recommendations to the ESC, which we submitted in January 2013. The findings for each company were distributed to that company individually.
- the companies submitted responses to our findings in February 2013.
- we met with the companies (upon the request of the companies) to discuss their responses, and requested further information which supports their responses, in January and February 2013.

## Introduction

- we analysed their responses and supporting material, to create final recommendations, submitted in March 2013.

### Nature of the recommendations

PwC has made recommendations on the basis of its own analysis and analysis undertaken by Beca and provided to PwC.

PwC has undertaken analysis to establish recommendations with regard to:

- operating expenditure
- the justification for capital expenditure (e.g. regulatory obligations and customer willingness-to-pay)

Beca has undertaken analysis with regards to:

- the options analysis by which capital projects and programs are selected
- the costing of capital projects and programs
- the delivery mechanism by which capital projects and programs are proposed to be undertaken.

We also wish to highlight that while this report constitutes our final recommendations, in places we have recommended that additional work be conducted by the companies to justify their proposals. We recommend to the ESC that this work is taken into account in setting the final prices for the upcoming regulatory period.

### Areas not in scope

A number of areas of expenditure are out of scope for this review, namely the prudence and efficiency of:

- operating expenditure relating to:
  - the Victorian Desalination Plant (VDP)
  - external potable, rural and recycled bulk water charges
  - licence fees
  - the environmental contribution.
- capital expenditure incurred in Water Plan 2, other than where it informs the analysis of capital or operating expenditure proposed to be incurred in Water Plan 3.

### Structure of this final report

The remainder of this report is structured as follows:

- Chapter 2 summarises our recommendations for both operating and capital expenditure for each of the companies reviewed
- Chapter 3 outlines our methodology for our operating expenditure review
- Chapter 4 details the analysis undertaken for operating expenditure, and presents our findings and recommendations
- Chapter 5 outlines our methodology for our capital expenditure review



- Chapter 6 details the analysis undertaken for capital expenditure, and presents our findings and recommendations.

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## **2 Summary of recommendations**

Below we summarise our recommendations for the capital and operating expenditure allowances for the five companies reviewed.

Detailed explanation of these recommendations is provided throughout this report.

### **2.1 Operating expenditure recommendations**

With the exception of Melbourne Water's waterways and drainage expenditure, we have assessed the water businesses' operating expenditure by comparing their expenditure forecasts to the efficient benchmark determined in accordance with the method prescribed by the ESC. If the water business's proposal is lower than the benchmark, then it is accepted, otherwise the efficient benchmark is applied. Under this method, the baseline efficient benchmark is calculated as:

- the base year expenditure (which is 2011/12), with expenditure on any ceasing activities or activities that are unrelated to the regulated business removed. This is known as business as usual (BAU) expenditure for 2011/12.
- escalated upwards by the growth in the number of consumers (for Melbourne Water, this is the weighted average of the retailer businesses' growth rates), and
- reduced by an annual factor of 1 per cent to account for expected productivity improvements.

To this baseline, an allowance for the cost of complying with new obligations is added.

We observe at the outset that most of the businesses forecast their operating expenditure using approaches that are quite different to the method implied by the ESC's efficient benchmark, often with more refined approaches applied to different categories of expenditure. Accordingly, much of our task has been to ascertain from the businesses' forecasts which of the line items should be accepted as a new obligation within the ESC's method, and which should be assumed (at least in aggregate) to be provided for through the "consumer growth less 1 per cent" growth factor. Where we do not include a particular item from a water business's forecast, this merely implies that the item is not relevant in an alternative forecasting method – it does not imply that the companies should not undertake activities to meet its obligations.

A particular issue that has been raised with us – and which we consider to have merit – is the treatment of input price escalation. A strict reading of the ESC's method would have the businesses' bearing input price escalation where this exceeds CPI inflation. Our view is that it is reasonable for the businesses to be able to pass on forecast input price escalation, and note that this is consistent with the 1 per cent factor being a productivity factor. However, we also recommend that the input price escalation be restricted to the few items where material price escalation is forecast. We note here that the businesses have only pointed to inputs whose prices are expected to increase in real terms, and have ignored those items whose prices may be expected to fall, and so is inherently asymmetric. By restricting the application of price escalation to the most material inputs, the potential for such asymmetry is minimised.

We first present (as Option 1) our recommended expenditure allowances under a strict application of the ESC's method, and then present (as Option 2) the increments to these allowances that would be required to allow a pass through of the most material input price

increases. We have set out the implications of allowing the price escalation in each input separately, so that Option 2 is in fact several sub-options.

Lastly, where the water businesses have proposed large programs of IT expenditure that is justified (at least in part) by increasing business efficiencies, we have reduced the efficient benchmark operating expenditure by the extent of operating expenditure efficiencies that are forecast. This reflects an assumption on our part that the 1 per cent saving is intended to be met prior to undertaking material (and costly) programs to increase business efficiency.

For Melbourne Water's waterways and drainage expenditure, we have concluded that the growth in the base of water consumers does not provide a reasonable predictor of the assets that Melbourne Water is required to maintain, and nor for the growth in its other activities. Accordingly, we have instead assumed a constant underlying level of expenditure on these activities, and assessed Melbourne Water's reasons for the growth in each of the categories of expenditure. The largest increase in its expenditure is for maintenance of waterways and drainage assets, which we note is commensurate with the growth in the physical base of assets under its management.

### 2.1.1 Melbourne Water – operating expenditure recommendations

**Table 1: Operating expenditure recommendations, Melbourne Water (\$M)**

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>2011/12 actual operating expenditure</b>	<b>330.67</b>							
<b>Step 1: Less base year adjustments:</b>								
Drought management initiatives	0.28							
Adjustment for renewable energy	3.74							
<b>Base year BAU after removing non-recurrent, imprudent &amp; non-cash costs</b>	<b>326.65</b>							
Waterways and drainage expenditure (removed to exclude from the customer growth, productivity baseline)	80.97							
<b>Base year BAU after removing non-recurrent, imprudent, non-cash costs &amp; waterways and drainage expenditure</b>	<b>245.69</b>							
<b>Step 2: Customer and productivity adjusted BAU baseline</b>			<b>249.63</b>	<b>251.63</b>	<b>253.64</b>	<b>255.67</b>	<b>257.72</b>	<b>1,268.29</b>
<b>Step 3: Variations to BAU baseline*</b>								
Tertiary treatment upgrade at Eastern Treatment Plant			12.62	12.70	12.35	13.10	13.40	<b>64.17</b>
Carbon tax - scope 1			3.95	4.09	3.49	3.64	3.81	<b>18.98</b>
Carbon tax - scope 3			2.56	2.77	2.43	2.32	2.48	<b>12.55</b>
Office accommodation			2.58	3.02	3.15	3.28	3.42	<b>15.45</b>
Energy cost escalation			3.44	3.78	3.29	3.39	2.96	<b>16.86</b>
IT operating benefits			0.00	-1.54	-1.63	-1.59	-1.58	<b>-6.34</b>

Summary of recommendations

<b>Description</b>	<b>2011/12</b>	<b>2012/13</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
Sub-total of variations to the BAU baseline			25.16	24.82	23.07	24.14	24.48	<b>121.66</b>
<b>Recommended maximum allowance (excluding waterways and drainage)</b>			274.79	276.45	276.71	279.81	282.20	<b>1389.95</b>
Waterways – BAU operating expenditure and new required expenditure			87.90	92.49	94.90	97.32	103.32	<b>475.93</b>
<b>Total recommended maximum allowance</b>			<b>362.69</b>	<b>368.94</b>	<b>371.61</b>	<b>377.13</b>	<b>385.52</b>	<b>1,865.89</b>
<b>Melbourne Water operating expenditure proposal</b>			<b>380.72</b>	<b>391.11</b>	<b>398.91</b>	<b>403.90</b>	<b>408.62</b>	<b>1,983.26</b>
<b>Recommended regulatory allowance</b>			<b>362.69</b>	<b>368.94</b>	<b>371.61</b>	<b>377.13</b>	<b>385.52</b>	<b>1,865.89</b>

\* Note: Variations to the BAU baseline from VDP costs have been excluded from our analysis.

## 2.1.2 Yarra Valley Water – operating expenditure recommendations

**Table 2: Operating expenditure recommendations, Yarra Valley Water (\$M)**

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>2011/12 actual operating expenditure</b>	<b>133.34</b>							
<b>Step 1: Less base year adjustments:</b>								
Water conservation	1.89							
Drought management initiatives	0.24							
Long service leave provision	2.00							
Unfunded superannuation liability	0.94							
Rounding adjustments	0.14							
<b>Base year BAU after removing non-recurrent, imprudent &amp; non-cash costs</b>	<b>128.13</b>							
<b>Step 2: Customer and productivity adjusted BAU baseline</b>			<b>128.90</b>	<b>129.28</b>	<b>129.67</b>	<b>130.06</b>	<b>130.45</b>	<b>648.37</b>
<b>Step 3: Variations to BAU baseline</b>								
Water conservation			1.70	1.70	1.70	1.70	1.70	<b>8.50</b>
Enhanced nutrient removal at sewerage treatment plant			-	-	-	-	0.15	<b>0.15</b>
Increased energy costs (including the carbon tax)			0.49	0.51	0.42	0.43	0.44	<b>2.29</b>
Operation & maintenance of asset infrastructure			0.10	0.17	0.17	0.21	0.36	<b>1.01</b>
Hardship initiative – water audit and retrofit program			0.15	0.15	0.15	0.15	0.15	<b>0.75</b>
Unfunded superannuation liability			0.46	0.35	-	-	-	<b>0.81</b>
Sub-total of variations to the BAU baseline			2.90	2.87	2.44	2.49	2.80	<b>13.51</b>

Summary of recommendations

<b>Description</b>	<b>2011/12</b>	<b>2012/13</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
<b>Total recommended maximum allowance</b>			<b>131.80</b>	<b>132.16</b>	<b>132.11</b>	<b>132.55</b>	<b>133.25</b>	<b>661.87</b>
<b>Yarra Valley Water operating expenditure proposal</b>			<b>134.76</b>	<b>135.40</b>	<b>135.48</b>	<b>135.22</b>	<b>136.41</b>	<b>677.28</b>
<b>Recommended regulatory allowance</b>			<b>131.80</b>	<b>132.16</b>	<b>132.11</b>	<b>132.55</b>	<b>133.25</b>	<b>661.87</b>

### 2.1.3 South East Water – operating expenditure recommendations

**Table 3: Operating expenditure recommendations, South East Water (\$M)**

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>2011/12 actual operating expenditure</b>	<b>120.13</b>							
Change in labour capitalisation policy	4.33							
<b>Base year BAU under new capitalisation policy</b>	<b>115.80</b>							
<b>Step 1: Less base year adjustments:</b>								
Land tax	0.49							
Single title refunds	0.85							
Property development labour costs	0.25							
Unfunded superannuation liability	0.84							
<b>Base year BAU after removing non-recurrent, imprudent &amp; non-cash costs</b>	<b>113.38</b>							
<b>Step 2: Customer and productivity adjusted BAU baseline</b>			<b>114.28</b>	<b>114.74</b>	<b>115.20</b>	<b>115.66</b>	<b>116.12</b>	<b>576.01</b>
<b>Step 3: Variations to BAU baseline</b>								
Lease costs relating to buildings			0.11	-0.03	-2.00	-2.24	-2.37	-6.53
IT costs – new contract for IT services			0.84	0.62	0.66	0.69	0.73	3.54
Fringe benefits tax			0.17	0.17	0.17	0.17	0.17	0.87
Chemicals			0.53	0.56	0.63	0.67	0.70	3.09
Electricity price increase, including the carbon tax			0.82	0.86	0.72	0.78	0.82	4.00
Electricity volume for Class A recycled water treatment			1.05	1.14	1.13	1.24	1.28	5.83



Summary of recommendations

<b>Description</b>	<b>2011/12</b>	<b>2012/13</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
Efficiencies resulting from the office relocation			0.00	0.00	-3.25	-3.25	-3.25	<b>-9.75</b>
Water conservation efficiency			-0.35	-0.33	-0.31	-0.29	-0.22	<b>-1.51</b>
Treatment plants - other			2.11	1.74	1.83	1.87	1.91	<b>9.44</b>
Increase in reticulated sewer repairs, reticulated sewer cleaning and maintenance of mono pump			0.18	0.30	0.43	0.55	0.68	<b>2.14</b>
Sub-total of variations to the BAU baseline			5.46	5.03	0.01	0.18	0.45	<b>11.12</b>
<b>Total recommended maximum allowance</b>			<b>119.74</b>	<b>119.77</b>	<b>115.21</b>	<b>115.84</b>	<b>116.58</b>	<b>587.14</b>
<b>South East Water operating expenditure proposal</b>			<b>123.87</b>	<b>123.92</b>	<b>119.68</b>	<b>119.65</b>	<b>120.20</b>	<b>607.31</b>
<b>Recommended regulatory allowance</b>			<b>119.74</b>	<b>119.77</b>	<b>115.21</b>	<b>115.84</b>	<b>116.58</b>	<b>587.14</b>

### 2.1.4 City West Water – operating expenditure recommendations

**Table 4: 2.1.2 Operating expenditure recommendations, City West Water (\$M)**

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>2011/12 actual operating expenditure</b>	<b>90.69</b>							
<b>Step 1: Less base year adjustments:</b>								
Carbon offsets	0.09							
Green energy	0.07							
RECs	0.07							
Asset write offs	0.34							
<b>Base year BAU after removing non-recurrent, imprudent &amp; non-cash costs</b>	<b>90.13</b>							
<b>Step 2: Customer and productivity adjusted BAU baseline</b>			<b>93.40</b>	<b>95.09</b>	<b>96.80</b>	<b>98.54</b>	<b>100.31</b>	<b>484.14</b>
<b>Step 3: Variations to BAU baseline</b>								
Alternative Water - Stormwater			0.10	0.16	0.19	0.21	0.34	<b>1.00</b>
Alternative Water - West Werribee third pipe distribution			-	4.19	4.33	4.60	4.83	<b>17.95</b>
Carbon Tax			0.29	0.29	0.24	0.25	0.26	<b>1.33</b>
City West Water Office Relocation			1.56	3.92	3.39	3.42	3.45	<b>15.74</b>
Arrow (IT program) operating expenditure savings			-	-1.52	-3.08	-4.25	-4.55	<b>-13.40</b>
Water conservation costs			-1.28	-1.29	-1.29	-1.30	-1.30	<b>-6.46</b>
Sub-total of variations to the BAU baseline			0.67	5.76	3.78	2.93	3.02	<b>16.16</b>
<b>Total recommended maximum allowance</b>			<b>94.08</b>	<b>100.84</b>	<b>100.57</b>	<b>101.47</b>	<b>103.33</b>	<b>500.29</b>

Summary of recommendations

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>City West Water operating expenditure proposal</b>			<b>96.56</b>	<b>104.96</b>	<b>107.76</b>	<b>113.92</b>	<b>116.09</b>	<b>539.29</b>
<b>Recommended regulatory allowance</b>			<b>94.08</b>	<b>100.84</b>	<b>100.57</b>	<b>101.47</b>	<b>103.33</b>	<b>500.29</b>

### 2.1.5 Western Water - operating expenditure recommendations

**Table 5: Operating expenditure recommendations, Western Water (\$M)**

Description	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
<b>2011/12 actual operating expenditure</b>	<b>35.34</b>							
<b>Step 1: Less base year adjustments:</b>								
Carbon offsets	0.02							
Unfunded superannuation liability	2.03							
DSE funded Mt Macedon Sewer expenditure	0.03							
Donations to unidentified parties	0.04							
<b>Base year BAU after removing non-recurrent, imprudent &amp; non-cash costs</b>	<b>33.23</b>							
<b>Step 2: Customer and productivity adjusted BAU baseline</b>			<b>35.73</b>	<b>36.83</b>	<b>37.95</b>	<b>39.12</b>	<b>40.32</b>	<b>189.95</b>
<b>Step 3: Variations to BAU baseline</b>								
Intelligent Water Network Contribution (\$1.25 per property)			0.07	0.07	0.08	0.08	0.08	<b>0.38</b>
Electricity prices, including the carbon tax			0.43	0.45	0.39	0.41	0.43	<b>2.11</b>
Sub-total of variations to the BAU baseline			0.50	0.53	0.46	0.49	0.51	<b>2.49</b>
<b>Total recommended maximum allowance</b>			<b>36.23</b>	<b>37.35</b>	<b>38.42</b>	<b>39.60</b>	<b>40.83</b>	<b>192.44</b>
<b>Western Water operating expenditure proposal</b>			<b>34.96</b>	<b>35.75</b>	<b>36.28</b>	<b>37.41</b>	<b>37.89</b>	<b>182.29</b>
<b>Recommended regulatory allowance</b>			<b>34.96</b>	<b>35.75</b>	<b>36.28</b>	<b>37.41</b>	<b>37.89</b>	<b>182.29</b>

In addition to the numbers above, we present the ESC with an option to allow input price rises for electricity, labour and/or land tax. If the ESC wishes to allow input price rises for any of these three items, the numbers in Table 6 to Table 8 below should be added to (not substituted) the numbers in the tables above at step 3. In some cases, these increases to the baseline (individually or in combination) result in the maximum recommended allowance exceeding a company’s proposal, in which case the company’s proposal should be taken to be the recommended regulatory allowance. We show the recommended regulatory allowance for each combination for each business in Table 9 to Table 13 below.

## Option 2 for electricity input costs – additional to the baseline

**Table 6: Electricity input costs additional to the baseline (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Melbourne Water	2.44	3.54	3.58	5.34	6.43	<b>21.33</b>
Yarra Valley Water	0.74	1.03	1.02	1.40	1.53	<b>5.72</b>
South East Water	0.27	0.50	0.56	0.86	0.93	<b>3.12</b>
City West Water	0.27	0.41	0.41	0.59	0.64	<b>2.33</b>
Western Water	0.09	0.24	0.32	0.49	0.58	<b>1.71</b>

Note that the above numbers are the difference between the carbon-only component of forecast energy price rises (option 1) and the total forecast energy price rise (option 2).

## Option 2 for labour input costs – additional to the baseline

**Table 7: Labour input costs additional to the baseline (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Melbourne Water	2.26	3.32	4.30	5.24	6.47	<b>21.59</b>
Yarra Valley Water	0.95	1.40	1.81	2.20	2.72	<b>9.08</b>
South East Water	1.18	1.73	2.24	2.73	3.37	<b>11.25</b>
City West Water	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
Western Water	0.34	0.50	0.65	0.79	0.98	<b>3.28</b>

Note that City West Water did not provide a labour break down in the ESC's financial template so we have been unable to calculate the addition to the baseline for labour input costs, as we have with other water companies.

## Option 2 for Melbourne Water's land tax input cost – additional to the baseline

**Table 8: Melbourne Water's land tax input cost additional to the baseline (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Land tax	0.55	0.84	1.12	1.42	1.71	<b>5.64</b>

## Summary of recommendations

The recommended regulatory allowance for each combination of these options is as follows:

### Melbourne Water

**Table 9: Recommended operating expenditure allowance with input price rises, Melbourne Water (\$M)**

<b>Description</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
No input price increase	362.69	368.94	371.61	377.13	385.52	<b>1865.89</b>
Input price increase for electricity only	365.13	372.48	375.19	382.47	391.95	<b>1887.22</b>
Input price increase for labour only	364.95	372.26	375.91	382.37	391.99	<b>1887.48</b>
Input price increase for land tax only	363.24	369.78	372.73	378.55	387.23	<b>1871.53</b>
Input price increase for electricity and labour	367.39	375.80	379.49	387.71	398.42	<b>1908.81</b>
Input price increase for electricity and land tax	365.68	373.32	376.31	383.89	393.66	<b>1892.86</b>
Input price increase for labour and land tax	365.50	373.10	377.03	383.79	393.70	<b>1893.12</b>
Input price increase for electricity, labour and land tax	367.94	376.64	380.61	389.13	400.13	<b>1914.45</b>

Summary of recommendations

Yarra Valley Water

**Table 10: Recommended operating expenditure allowance with input price rises, Yarra Valley Water (\$M)**

<b>Description</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
No input price increase	131.80	132.16	132.11	132.55	133.25	<b>661.87</b>
Input price increase for electricity only	132.54	133.19	133.13	133.95	134.78	<b>667.59</b>
Input price increase for labour only	132.75	133.56	133.92	134.75	135.97	<b>670.95</b>
Input price increase for electricity and labour	133.49	134.59	134.94	136.15	137.50	<b>676.67</b>

South East Water

**Table 11: Recommended operating expenditure allowance with input price rises, South East Water (\$M)**

<b>Description</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
No input price increase	119.74	119.77	115.21	115.84	116.58	<b>587.14</b>
Input price increase for electricity only	120.01	120.27	115.77	116.70	117.51	<b>590.26</b>
Input price increase for labour only	120.92	121.50	117.45	118.57	119.95	<b>598.39</b>
Input price increase for electricity and labour	121.19	122.00	118.01	119.43	120.88	<b>601.51</b>



Summary of recommendations

City West Water

**Table 12: Recommended operating expenditure allowance with input price rises, City West Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
No input price increase	94.08	100.84	100.57	101.47	103.33	<b>500.29</b>
Input price increase for electricity	94.35	101.25	100.98	102.06	103.97	<b>502.62</b>

Western Water

**Table 13: Recommended operating expenditure allowance with input price rises, Western Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
No input price increase*	34.96	35.75	36.28	37.41	37.89	<b>182.29</b>
Input price increase for electricity only*	34.96	35.75	36.28	37.41	37.89	<b>182.29</b>
Input price increase for labour only*	34.96	35.75	36.28	37.41	37.89	<b>182.29</b>
Input price increase for electricity and labour*	34.96	35.75	36.28	37.41	37.89	<b>182.29</b>

\* The recommended regulatory allowance is equal to Western Water's proposal in all combinations, as the maximum recommended allowance in all instances, regardless of which option is selected, exceeds Western Water's proposal.

## 2.2 Capital expenditure recommendations

### 2.2.1 Melbourne Water – capital expenditure recommendations

Many of the changes recommended to Melbourne Water's capital expenditure forecasts are the result of Melbourne Water's further refinements of project costings or timing since the submission of its water plan. We have reviewed these and recommend their acceptance. The one material change that we have recommended is for the allowance for its renewals program to be smoothed out over the regulatory period, recognising the flexibility that Melbourne Water has shown in the timings of renewals in the past.

In addition, late in the review, we discovered anomalies in Melbourne Water's analysis of the required timing of the augmentation to the Western Treatment Plant (WTP). Depending on the results of further analysis of these anomalies, it may be that the augmentation can be delayed by 2 or 3 years. Given that time precluded us from raising this issue with Melbourne Water, we have not recommended an adjustment to its proposal; however, we recommend that the ESC take up this issue with Melbourne Water during the remaining period of the review.

**Table 14: Capital expenditure recommendations, Melbourne Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Melbourne Water proposal total prescribed capital expenditure	667.25	564.22	499.61	421.21	304.80	2457.10
<b>Recommended adjustments</b>						
St Alban Werribee Pipeline Stage 2	-69.20	41.53	8.15	0.00	0.00	-19.51
Waterways and drainage - Land Development Change	3.32	-2.19	-9.29	-10.60	-11.93	-30.69
WTP capacity upgrade	0.00	0.00	-4.83	0.00	0.00	-4.83
Renewals expenditure	-44.15	-60.66	1.93	39.45	75.97	12.54
IT cost decreases	4.80	-0.98	-1.60	-1.60	-1.87	-1.24
Air treatment and civil works	1.36	-0.12	-2.85	2.72	0.00	1.11
Kenny St Link Main	-2.51	-21.03	2.32	20.16	0.07	-1.00
Corrosion and odour management	-13.17	-13.78	12.25	-0.07	13.14	-1.63
Northern sewer project	-2.41	0.00	0.00	0.00	0.00	-2.41
Melbourne Water proposed balancing adjustment	-32.61	33.98	-9.82	8.74	-0.61	-0.32
<b>Total recommended adjustments</b>	<b>-154.57</b>	<b>-23.25</b>	<b>-3.74</b>	<b>58.79</b>	<b>74.77</b>	<b>-47.99</b>
<b>Total recommended regulatory allowance</b>	<b>512.69</b>	<b>540.97</b>	<b>495.87</b>	<b>480.00</b>	<b>379.58</b>	<b>2409.11</b>

## Summary of recommendations

In addition to the above recommended adjustments to Melbourne Water's proposed capital expenditure, we also recommend to the ESC that:

- the ESC pursues further, in the time between the draft and final decisions, whether Melbourne Water's Western Treatment Plant capacity upgrade is justified
- the ESC considers, at the start of Water Plan 4, whether expenditure on the North Yarra Main Renewals was efficiently incurred, and that it considers not including any inefficient expenditure in the regulatory asset base at the start of Water Plan 4

### 2.2.3 Yarra Valley Water – capital expenditure recommendations

We recommend no alterations to Yarra Valley Water’s proposed capital expenditure, which is primarily made up of numerous small projects related to growth in customer numbers (37% of total capital expenditure, including expenditure on the sewerage backlog program, but excluding alternative water projects) and renewals of existing assets (47%). Yarra Valley Water’s proposed 9% of capital expenditure on alternative water projects are also accepted as efficient, given the in depth analysis undertaken by Yarra Valley Water that demonstrates that its proposals are the least cost means of supplying new growth areas.

**Table 15: Capital expenditure recommendations, Yarra Valley Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Yarra Valley Water proposal total prescribed capital expenditure	234.58	233.64	227.80	226.64	224.47	1147.14
<b>Total recommended regulatory allowance</b>	<b>234.58</b>	<b>233.64</b>	<b>227.80</b>	<b>226.64</b>	<b>224.47</b>	<b>1147.14</b>

### 2.2.4 South East Water – capital expenditure recommendations

We recommend no alterations to South East Water’s proposed capital expenditure, which, like Yarra Valley Water, is primarily made up of numerous small projects related to growth in customer numbers (57% of total capital expenditure, including expenditure on the sewerage backlog program, but excluding alternative water projects) and renewals of existing assets (19%). We have analysed South East Water’s proposals for these expenditure items and consider them reasonable.

Alternative water projects constitute 6% of the total proposed capital expenditure. As with the City West Water West Werribee project, we have recommended that allowance be made for South East Water’s alternative water projects because these relate to the completion of projects that were an obligation in Water Plan 2. We note, however, that alternative interpretations of whether these projects are obliged in Water Plan 3 are possible.

**Table 16: Capital expenditure recommendations, South East Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
South East Water proposal total prescribed capital expenditure	269.77	251.84	218.78	200.70	193.58	1134.68
<b>Total recommended regulatory allowance</b>	<b>269.77</b>	<b>251.84</b>	<b>218.78</b>	<b>200.70</b>	<b>193.58</b>	<b>1134.68</b>

We also recommend to the ESC that it considers changes to South East Water’s forecast capital contributions resulting from the backlog scheme.

### 2.2.5 City West Water – capital expenditure recommendations

A significant proportion of City West Water’s proposed capital expenditure is for the renewal of existing assets (30% of the total proposed capital expenditure) and to service growth in population (16% of total proposed capital expenditure, excluding alternative water growth expenditure). Both of these expenditure categories are largely made up of a large number of small individual projects. We have analysed City West Water’s proposals for these expenditure items and consider them reasonable. We recommend no adjustments.

City West Water also has proposed substantial expenditure on alternative water projects (35% of its total capital expenditure). We have recommended the removal of much of this expenditure at this stage. One project that we have recommended be allowed for is the completion of the West Werribee third pipe scheme, which is the completion of the project that was an obligation in Water Plan 2. We note, however, that alternative interpretations of whether this project is obliged are possible.

For the third pipe schemes in new areas, our reason for removing these projects is because there has been no analysis presented demonstrating the economic benefits of the projects, particularly in light of the current water supply situation; however it may be that the projects would be prudent and efficient. Accordingly, we recommend that the ESC include provision for these projects to be included in prices (and, more relevantly, new capital contributions) in the future if such an analysis is performed and it demonstrates the efficiency of the projects.

**Table 17: Capital expenditure recommendations, City West Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
City West Water proposal total prescribed capital expenditure	203.49	151.47	152.79	153.93	133.16	794.84
<b>Recommended adjustments</b>						
Altona Stage 2	-17.85	-29.56	-32.55	0.00	0.00	-79.95
Footscray activity area alternative water	0.00	-1.02	-1.02	-1.02	-2.03	-5.08
New integrated water supply areas (including developer reimbursements)	-0.77	0.00	-5.44	-25.37	-35.67	-67.25
Sewer mining in dockland	0.00	-2.78	-9.74	-15.30	0.00	-27.82
Capitalised labour associated with these projects	-0.30	-0.68	-0.76	-0.75	-0.70	-3.18
<b>Total recommended adjustments</b>	<b>-18.92</b>	<b>-34.04</b>	<b>-49.49</b>	<b>-42.43</b>	<b>-38.40</b>	<b>-183.28</b>
<b>Total recommended regulatory allowance</b>	<b>184.56</b>	<b>117.43</b>	<b>103.30</b>	<b>111.51</b>	<b>94.76</b>	<b>611.56</b>

## Summary of recommendations

In addition to the above recommended adjustments to City West Water's proposed capital expenditure, we also recommend to the ESC that:

- the ESC defines trigger events that allow for the above alternative water projects to proceed (and prices adjusted accordingly) if they are demonstrated to be the least cost means to meet obligations, or where rigorous customer willingness to pay evidence is provided
- the ESC invites City West Water to propose alternative expenditure requirements (for instance in its potable water system) in the case that expenditure relating to alternative water projects is not allowed
- the ESC analyses possible alterations to City West Water's:
  - customer contributions as a result of stormwater projects
  - contract revenue as a result of stormwater projects
  - government contributions as a result of ASR projects.

### 2.2.6 Western Water – capital expenditure recommendations

Growth (56% of total capital expenditure, excluding alternative water capital expenditure) and renewals (15%) constitute the majority of Western Water’s capital expenditure proposals. As with the Melbourne retailers, the expenditure is made up of numerous small individual projects. With small exceptions (detailed below) we have accepted these proposals as efficient.

Alternative water expenditure makes up a further 15% of proposed capital expenditure. The largest changes that we have recommended in relation to Western Water is to not allow for third pipe schemes in its new development areas (apart from Eynesbury, for which contractual obligations exist). As with City West Water, this is because analysis has not been presented that demonstrates the economic benefits of the projects (unlike City West Water, a preliminary economic analysis was presented; however, the analysis presented was not capable of an unambiguous interpretation). It may be that the projects would be prudent and efficient. Like with City West Water, we recommend that the ESC include provision for these projects to be included in prices (and, more relevantly, new capital contributions) in the future if such an analysis is performed and it demonstrates the efficiency of the projects.

We have also recommended not allowing for the Toolern stormwater project, but recommend that provision be made for its inclusion if it is successful in getting 50 per cent Commonwealth Government funding, for which an application is currently being made.

Lastly, we have recommended a delay to the Sunbury Additional Water Storage (growth related) and the removal of one IT project, the latter on the basis that the benefits are speculative at this stage.

**Table 18: Capital expenditure recommendations, Western Water (\$M)**

Description	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Western Water proposal total prescribed capital expenditure	27.47	39.27	52.93	68.10	64.17	251.94
<b>Recommended adjustments</b>						
Class A recycled water dual pipe supply infrastructure	0.00	0.00	-8.56	-8.46	-0.32	-17.33
Toolern Stormwater infrastructure	-3.18	-7.14	-7.88	-0.50	0.00	-18.70
IT Program - SCADA	-0.09	-0.11	-0.48	-0.46	-0.50	-1.63
Sunbury Additional Water Storage - Bald Hill Tank	-0.19	0.19	0.00	-4.60	4.60	0.00
<b>Total recommended adjustments</b>	<b>-3.46</b>	<b>-7.06</b>	<b>-16.92</b>	<b>-14.01</b>	<b>3.78</b>	<b>-37.65</b>
<b>Total recommended regulatory allowance</b>	<b>24.02</b>	<b>32.21</b>	<b>36.01</b>	<b>54.09</b>	<b>67.95</b>	<b>214.29</b>



In addition to the above recommended adjustments to Western Water's proposed capital expenditure, we also recommend to the ESC that:

- the ESC considers, at the start of Water Plan 4, whether expenditure on the Sunbury Additional Water Storage Tank – Bald Hill was efficiently incurred, and that it considers not including any inefficient expenditure in the regulatory asset base at the start of Water Plan 4
- the ESC defines trigger events that allow for the above alternative water projects to proceed (and prices adjusted accordingly) if they are demonstrated to be the least cost means to meet obligations, or where rigorous customer willingness to pay evidence is provided
- the ESC invites Western Water to propose alternative expenditure requirements (for instance in its potable water system) in the case that expenditure relating to alternative water projects is not allowed
- the ESC carefully examines its IT project selection process at the end of the upcoming regulatory period and not roll into the regulatory asset base expenditure relating to those projects that fail to demonstrate an appropriate rigour in its analysis of options.

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## 3 *Operating expenditure methodology*

The ESC has engaged us to review the operating expenditure of the water businesses in accordance with the method the ESC has established. This method is guided by two documents – the Guidance Paper<sup>1</sup> and the Financial Template<sup>2</sup>. We have given practical effect to the ESC’s methodology by drawing upon chapter six of the Guidance Paper and the tab ‘BAUOperating expenditureProd\_FO’ of the Financial Template. The methodology is set out below.

### **3.1 Overview**

At a high level the ESC’s method for assessing operating expenditure is to take a ‘top down’ estimate and compare it to each company’s proposed operating expenditure. This is done by taking a base year – being the latest full financial year of actual data – removing one-off or non-recurrent items from this year as well as items considered not to be required to fulfil the regulated functions of the business, increasing this base by the proportionate growth in customer numbers and then reducing it by a productivity target. This forms a baseline. In addition to the baseline, new initiatives that would not be included in the base year are allowed, providing they are justified.

We asked the companies to set out their proposed expenditure following the steps outlined above in a PwC constructed operating expenditure template. It is the information provided by the companies in these templates that has been the focus of our review. Importantly, we have not undertaken a bottom-up review of the companies’ proposals, with the exception of Melbourne Water’s waterways and drainage expenditure. We have instead compared the overall expenditure proposed by the companies to the overall expenditure derived via the top-down methodology. Our recommended expenditure allowance is then the lower of a company’s proposals, and that derived via the top-down methodology: where the top-down methodology derives an expenditure level below that of a company’s proposals, we recommend that the expenditure allowance be adjusted downwards to the level derived from the top-down methodology.

For Melbourne Water’s waterways and drainage expenditure, we have concluded that the growth in the number of water consumers does not provide a reasonable predictor of the assets that Melbourne Water is required to maintain, and nor for the growth in its other activities. Accordingly, we have not applied the top-down methodology described above in the particular case of Melbourne Water’s waterways and drainage operational expenditure. We have instead removed it from the top-down assessment described above, assumed a constant underlying level of expenditure on these activities, and assessed Melbourne Water’s reasons for the growth in each of the categories of expenditure.

The steps of the methodology are explained in more detail below.

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<sup>1</sup> Essential Services Commission, Guidance paper 2013 Water Price Review, October 2011.

<sup>2</sup> Essential Services Commission, Water Price Review 2013-14 to 2017-18 Financial Model Template, Version 2.0, 31 July 2012.

## **3.2 Methodology steps**

### **3.2.1 Step 1 – Review and adjust the base year**

The first step to the ESC methodology requires the latest year of actual operating expenditure available to be established as a prudent and efficient base year from which to forecast expenditure going forwards.

All water companies were required to provide and explain the differences between:

- their actual operating expenditure for 2011-12
- the levels of operating expenditure allowed in the Water Plan 2 review.<sup>3</sup>

We reviewed 2011-12 expenditure (excluding external bulk water charges, temporary water purchases, licence fees and environmental contributions) on a line-by-line basis to consider whether the costs, according to their accounting description, appear reasonably incurred during 2011/12 given both the regulated obligations of water companies and relative to levels of other water companies.

The result of this step is to remove from base year any:

- Items that relate to activities that are unlikely to be performed in Water Plan 3 that water companies have not already identified, such as drought management, which the ESC has said will decline from levels spent in Water Plan 2.<sup>4</sup> Importantly, we note that while these expenditure items were reasonably incurred in 2011/12, they are unlikely to be incurred (at all or at the same level) in Water Plan 3, and are therefore not a suitable basis from which to forecast expenditure during Water Plan 3. However, we sought only to remove those items that are reasonably expected to cease. We have accepted the comments from the water businesses that meticulously removing from the base year all lumpy items, when other lumpy items not in the base year may appear in Water Plan 3, is both inconsistent with the top-down approach we are applying and asymmetric, resulting in a bias against the companies.
- Items that were not required during 2011/12 (or Water Plan 3) to meet the regulated obligations of water companies (e.g. sponsorship of community organisations). Although water companies may continue to choose to spend their funds in such a way, such expenditure will not be considered to be a part of their regulated operating expenditure, and hence not recoverable from water customers.
- Non-cash items, such as provisions, where they do not form a reasonable basis for forecasting expenditure going forwards.
- Expenditure that is unexplainably materially high compared to the other companies.

We note that the regulatory regime provides financial incentives on the companies to minimise their expenditure while still fulfilling their obligations. While we have sought to identify examples of where a company has incurred expenditure at a level far in excess of reasonable to undertake its obligation, or is claiming in the base year expenditure not linked to a regulatory obligation, we have relied principally within the top-down assessment on the incentives acting upon the companies to minimise their expenditure.

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<sup>3</sup> Essential Services Commission, Guidance paper 2013 Water Price Review, October 2011, page 43.

<sup>4</sup> Essential Services Commission, Guidance paper 2013 Water Price Review, October 2011, pages 37-38.

### 3.2.2 Step 2 – Grow the base year for customer numbers less productivity

Having established a suitable base year from which to form the basis of forecast expenditure going forward, the ESC's methodology allows operating expenditure to increase in real terms at a maximum rate of growth given by the expected growth rate in customer numbers, less an offset of 1 per cent.<sup>5</sup> This offset has been referred to in some papers as a "productivity" offset, although that description is not strictly correct. The ESC method assumes, in effect, that water businesses are able to manage their operating expenditure within an overall allowance that rises with customer growth less this offset – in turn reflecting an assumption that customer growth will cause an increase in overall operating expenditure, but by an amount that is less than proportionate as scale economies are expected to be realised in some cost categories and efficiency gains are made.

Upon the instruction of the ESC:

- The customer growth and productivity savings are represented in the following equation to calculate the BAU baseline in year 't':

$$\text{Base year BAU operating expenditure} \times (1 + \text{annual customer growth rate} - \text{annual productivity target})^t$$

where 't' is the number of years since the base year; i.e. t = 0 is the base year (2011-12), t = 1 is 2012-13, t = 2 is the first year of Water Plan 3 (2013-14) and so on.

- The annual customer growth rate used is that provided by the ESC to us. We have not independently assessed these growth rates.
- The productivity hurdle is applied in 2012-13 (the final year of Water Plan 2) as well as each year in Water Plan 3.<sup>6</sup> This has been done because we are establishing a reasonable base line expenditure within which the companies should be able to manage their expenses. This reasonable baseline should include productivity growth in each year from the base year.<sup>7</sup>

In addition, in its Guidance Paper, the ESC also emphasises that 1 per cent is the minimum productivity target, stating that water companies 'should exceed the Commission's ... target'.<sup>8</sup> We have given effect to this by setting all annual productivity targets to 1 per cent and, once the following Step 3 is performed, taking the lower of the operating expenditure benchmark built up from this methodology ('recommended maximum allowance') or the water companies' operating expenditure proposal. Where the companies' proposals are lower than the recommended maximum allowance, it implies the use of a productivity target that is greater than 1 per cent and hence exceeds the ESC's minimum target.

### 3.2.3 Step 3 – Review and adjust new initiatives and obligations

Clearly, an allowance that commences with a base year and is increased for the factors summarised above will only provide an allowance in respect of those activities that were

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<sup>5</sup> Essential Services Commission, Guidance paper 2013 Water Price Review, October 2011, page 37 and Essential Services Commission, Water Price Review 2013-14 to 2017-18 Financial Model Template, Version 2.0, 31 July 2012, BAUOperating expenditure\_FO.

<sup>6</sup> Although it should be noted, the ESC's Financial Template did not include the productivity target for 2012-13.

<sup>7</sup> A number of the companies have implied that the productivity hurdle should not be applied in 2012-13, on the basis that the productivity hurdle set in Water Plan 2 was not annual, but instead set for the five years in total. However, whether the companies have outperformed in the early years of the current regulatory period and are therefore "ahead" of their Water Plan 2 target (a matter that has not been substantiated by the companies) is not relevant in establishing a reasonable base line expenditure going forwards.

<sup>8</sup> Essential Services Commission, Guidance paper 2013 Water Price Review, October 2011, page 38.

undertaken during the base year. Thus, where the businesses are subject to new obligations or reasonably undertake new initiatives that were not factored into the base year, then the maximum operating expenditure will need to be increased by a prudent allowance for those matters.

Therefore, in addition to the baseline, the ESC methodology allows the maximum allowance to change to reflect the cost of new initiatives and new obligations, providing such proposed expenditure is justified.

We developed the following guiding principles as to which categories of expenditure qualify as new initiatives or obligations, and which categories of expenditure we assumed to be met through BAU operating expenditure.

#### Expenditure which qualifies as a new initiative or obligation

- New or changed government obligations that will come into being in Water Plan 3 or those that came into being in Water Plan 2, but for which the operating expenditure only came into effect after the base year, qualify as new initiatives or obligations. For example, the price on carbon is a new obligation in Water Plan 3.
- Customer service demands that are new or changed in Water Plan 3 do qualify as new initiatives or obligations, providing the customer demand for such service is demonstrated.
- Operating expenditure savings that are driven by capital expenditure projects designed to improve business efficiency qualify as new initiatives. The 1 per cent hurdle is assumed to be met under BAU conditions, and would become an easy target, if it could be 'bought' through capital expenditure. Therefore such operating expenditure savings need to be treated as in addition to the productivity savings included in the baseline.

#### Expenditure which does not qualify as a new initiative or obligation

- Changes in volumes that drive operating expenditure are assumed to be approximately provided for in the BAU expenditure. This includes where changes in the business cycle mean there is more construction activity or there are more customers in hardship. Water companies are expected to accommodate increases in volume above customer growth for some items through offsetting by items whose volume increases at a rate less than customer growth.
- The ESC's method assumes that businesses are able to manage changes to their input prices within an overall allowance, with no mechanistic adjustment made for changes to input prices. Water companies are expected to accommodate increases in prices above CPI for some items through offsetting by items whose increase in price change is less than CPI.

The companies have requested increases to the baseline for a number of items due to input prices rising greater than CPI for those items. However, the companies have not highlighted likely real decreases in price for other items. Adjusting only for those inputs whose prices are rising in real terms, but not adjusting downwards for those items whose prices are decreasing in real teams will produce an upward bias in the forecast. As the AER, in its recent draft determination for SP Ausnet states:

*“Any estimate that uses real cost escalation for only one, or some, materials as a proxy for the entire basket of network materials cost escalation, is not arrived at on a reasonable basis and does not represent the best forecast or estimate possible in the circumstances. This is because while the real cost of some items will increase, others will decrease. Adjusting only for real cost increases, and not decreases, produces upwardly biased cost forecasts. In order to establish that compensation for network materials real cost escalation is necessary, there must be evidence the entire basket of network costs has been increasing by more than CPI. Consequently, even if there is evidence the price of some materials will increase more than CPI this does*

*not necessitate that SP AusNet's network materials costs will increase by more than CPI.*<sup>9</sup>

We considers that the ESC's methodology of not allowing for increases to the base line for input price rises above CPI should apply in all cases where the change in input prices is not material. However, where the change in input price is material, we have recommended that the ESC consider further whether its methodology should be applied. This is discussed in the section immediately below.

- Operating expenditure items that are not required by regulatory obligations. Such items are removed based on them being imprudent expenditure for the regulated component of a business, or alternatively as activities that are not properly allocated to a regulated component of a business.

#### Expenditure items recommended for further consideration by the ESC

- The assumption that businesses can accommodate input price growth is a challenging assumption during times when prices for material inputs are growing at much faster rates of inflation. This is because we and the companies have identified a number of material expenditure items which are likely to incur a material rise in prices above CPI, but we have not identified any material expenditure items which are likely to offset this material rise through a material fall in input prices.

An increase to the baseline for input price rises above CPI may be appropriate in circumstances where there:

- There is regulatory precedent to do so in other jurisdictions and industries (such as for labour price increases above CPI)
- The materiality of price rises is high, and therefore the assumption that companies can accommodate these rises through price decreases for other inputs may not be reasonable.

Moreover, on a technical level, productivity growth is a relationship between the quantities of outputs sold and the quantities of inputs used, and so a target for productivity can be met while at the same time passing on the effects of input price inflation.

In our analysis below we present alternative options to the ESC on the treatment of this issue.

#### Other expenditure items assessed on a case by case basis

- On occasions, proposed additional operating expenditure above the baseline does not fit into the above categories. These are treated on a case-by-case basis.

Applying this approach to Step 3, results in a customer-growth and productivity-adjusted BAU baseline plus new initiatives and obligations, in accordance with the ESC methodology. This results in a top-down estimate of the maximum allowed operating expenditure. We refer to this as the 'recommended maximum allowance' for operating expenditure and is represented in Figure 1. Our recommended operating expenditure allowance is the lower of:

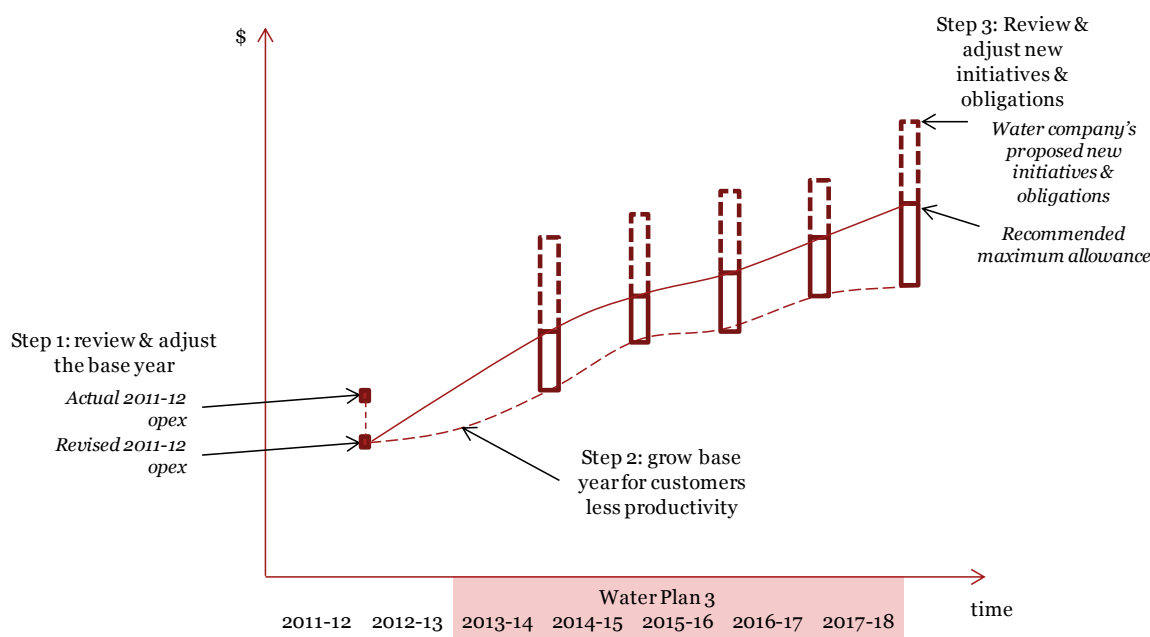
- the recommend maximum allowance or

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<sup>9</sup> Access arrangement draft decision - SPI Networks (Gas) Pty Ltd - 2013-17 - Part 3 (appendices), p83, September 2012

- the water company’s proposal.

**Figure 1: Simplified illustration of operating expenditure assessment methodology**



### 3.2.4 Alterations made to the companies’ attempts to demonstrate the efficiency hurdle

The businesses’ proposals contained in their Water Plans were based upon a range of different forecasting techniques. In order to undertake the analysis described in sections 3.2.1 to 3.2.3, we asked the businesses to demonstrate how their forecasts of operating expenditure contained in their Water Plans met the 1% productivity target of the ESC’s methodology. This was equivalent to asking the businesses how the ESC’s methodology for determining the ESC’s productivity benchmark should be applied in the context of the businesses’ forecasts.

This task was done by the water businesses to different degrees, with most of the businesses adjusting the ESC method in a manner that achieved greater consistency with their own forecasting technique. Accordingly, we have had to undertake a number of adjustments to the businesses’ demonstration of how their proposals meet the productivity hurdle in order to more faithfully reflect our view of how the ESC’s method is to be applied.

Indeed, in this aspect of our analysis, it may appear at first sight that allowances for expenditure on a range of items has been disallowed. This impression is incorrect – the task has been to establish the maximum overall allowance for operating expenditure, in which it is assumed implicitly that the growth applied to all categories of base year expenditure is sufficient to compensate for the overall cost of undertaking those same activities in Water Plan 3. Where a business has produced its forecast in a “bottom up” fashion, it is to be expected that many of the growth-related elements of that bottom-up forecast would double-count the allowance provided implicitly through the growth applied to the base year.

### 3.2.5 Melbourne Water’s waterways and drainage expenditure

Melbourne Water has argued that waterways and drainage operating expenditure is poorly correlated to growth in customer numbers, and that it is better correlated to growth in assets. We agree with Melbourne Water, and have therefore assessed Melbourne Water’s waterways and drainage expenditure using a methodology different to the methodology we have used for all other operating expenditure for Melbourne Water and the other companies.

We have undertaken a bottom-up assessment of Melbourne Water's proposed waterways and drainage expenditure. As a result, we followed the following steps:

- We separated waterways and drainage operating expenditure from the base year expenditure that was used to calculate the baseline. The effect of this was to “remove” the waterways and drainage expenditure incurred in 2011/12 from the base year in order to determine the baseline in step 2.
- We then assessed the justification for the real forecast changes in Melbourne Water's expenditure versus the 2011/12 expenditure levels for waterways and drainage (as opposed to a customer and productivity adjusted baseline level of expenditure for that activity).
- finally, we “re-inserted” our recommended operating expenditure allowance for Melbourne Water's waterways and drainage expenditure. This was determined via a bottom-up assessment on each line-item proposed by Melbourne Water.



# 4 *Operating expenditure analysis*

This chapter analyses the operating expenditure allowance for the businesses. It is structured as follows.

- 1 An overview is given of the companies' overall proposed operating expenditure.
- 2 The chapter addresses step 1 of the methodology, by stating:
  - the companies' proposals with regard to a suitable base year from which to base our forecast expenditure upon for Water Plan 3.
  - our analysis of the companies' proposals with regard to a suitable base year.
- 3 The chapter addresses step 2 of the methodology, by stating:
  - the companies' proposals with regard to the productivity factor and growth rates by which the base year is escalated.
  - our analysis of the companies' proposals with regard to the productivity factor and growth rates by which the base year is escalated.
- 4 The chapter addresses step 3 of the methodology, by stating:
  - the companies' proposals with regard to new initiatives and obligations to be allowed in addition to the base line.
  - our analysis of the companies' proposals with regard to new initiatives and obligations.
- 5 The chapter summarises the outcome of the three steps of the methodology, compares this outcome to the companies' overall proposals for their expenditure allowance, and makes recommendations as required to adjust the expenditure allowance.

## **4.1 *Overview of company proposals***

### **Melbourne Water**

Melbourne Water is forecasting an increase in its operating expenditure from \$330.67 million in 2011-12, to an average of \$396.65 million in Water Plan 3. This is a 20% real increase in the annual average operating expenditure compared to 2011-12.

### **Yarra Valley Water**

Yarra Valley Water is forecasting an increase in its operating expenditure from \$133.34 million in 2011-12 to an average \$135.46 million per annum in Water Plan 3. This is a 1.6 per cent real increase in the annual average operating expenditure compared to 2011-12.

### **South East Water**

South East Water is forecasting an increase in its operating expenditure to an average \$121.46 million per annum in Water Plan 3 from \$120.13 million in 2011-12. This is a 1.1 per cent real increase in the annual average operating expenditure compared to 2011-12.

South East Water is, however, making a significant change in the accounting treatment of some labour costs, in which more labour will be capitalised. The change occurs from 2012-13

and hence affects the comparison of Water Plan 3 to the 2011-12 base year. For these reasons, South East Water requests that operating expenditure forecast for Water Plan 3 are compared to the base year less \$4.33 million. This is an adjusted operating expenditure of \$115.80 million. Once this is considered, South East Water is proposing a 4.9 per cent real increase in the annual average operating expenditure compared to 2011-12.

#### **City West Water**

City West Water is forecasting an increase in its operating expenditure from \$90.69 million in 2011-12 to an average \$107.86 million per annum in Water Plan 3. This is an 18.9 per cent real increase in the annual average operating expenditure compared to 2011-12.

#### **Western Water**

Western Water is forecasting an increase in its operating expenditure from \$35.34 million in 2011-12<sup>10</sup> to an average \$36.46 million per annum in Water Plan 3. This is a 3.2 per cent real increase in the annual average operating expenditure compared to 2011-12.

## ***4.2 Step 1 - Establish a suitable base year***

### ***4.2.1 Company proposals***

#### **Melbourne Water**

Melbourne Water spent \$330.7 million in operating expenditure in 2011-12, which it considered necessary and efficient to undertake its functions in that year.

Melbourne Water recognised that \$0.3 million of drought management initiatives that were required in 2011-12 would no longer be recurrent in Water Plan 3. It therefore proposed a base year expenditure of \$330.4 million.

#### **Yarra Valley Water**

Yarra Valley Water spent \$133.34 million in operating expenditure in 2011-12, which it considered necessary and efficient to undertake its functions in that year.

Yarra Valley Water recognised that \$4.14 million of non-recurrent expenditure (including water conservation, drought management initiatives and long service leave provision) that was required in 2011-12 would no longer be recurrent in Water Plan 3. It therefore proposed a base year expenditure of \$129.21 million.

#### **South East Water**

South East Water spent \$120.13 million in operating expenditure in 2011-12, which it considered necessary and efficient to undertake its functions in that year.

South East Water recognised that \$1.32 million of non-recurrent expenditure (including land tax and single title refunds) that was required in 2011-12 would no longer be recurrent in Water Plan 3. It therefore proposed a base year expenditure of \$118.82 million.

#### **City West Water**

City West Water spent \$90.69 million in operating expenditure in 2011-12, which it considered necessary and efficient to undertake its functions in that year.

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<sup>10</sup> Note – this differs from the \$31.32 million Western Water stated as BAU operating expenditure in its Water Plan 3. This was due to an error of not updating the forecast 2011-12 expenditure to actual 2011-12 expenditure.

City West Water recognised that \$0.22 million of non-recurrent expenditure (including carbon offsets, green energy, Renewable Energy Certificates (RECs)) that was required in 2011-12 would no longer be recurrent in Water Plan 3. It therefore proposed a base year expenditure of \$90.47 million.

#### Western Water

Upon instruction by the ESC, we have used an actual 2011/12 expenditure of \$35.75 million.<sup>11</sup>

Western Water recognised that \$2.05 million of non-recurrent expenditure (including carbon offsets, additional defined superannuation payments and expenditure on the Mt Macedon sewer, which is funded by the Department of Sustainability and Environment) that was required in 2011-12 would no longer be recurrent in Water Plan 3. The resulting base year expenditure (taking the 2011/12 expenditure as determined by the ESC and applying Western Water's proposed reductions) is \$33.64 million.

### 4.2.2 PwC analysis

We examined the actual expenditure incurred in 2011-12, net of the adjustments proposed to the companies as described above, with particular regard to:

- 1 Material expenditure reasonably undertaken in 2011-12 but not required in Water Plan 3 (non-recurrent expenditure).
- 2 Items that are not required during 2011/12 (or Water Plan 3) to meet the regulated obligations of water companies
- 3 Non-cash items
- 4 Expenditure which is unexplainably materially high compared to the other companies.

Other than the adjustments detailed below, we are satisfied that the expenditure proposed by the companies for the base year reasonably represents the expenditure that should be extrapolated forward in step 2 of the methodology to form the base line expenditure for Water Plan 3.

While in many cases some companies have numerous individual adjustments, this does not necessarily reflect the materiality of these adjustments in dollar terms.

#### 1. Analysis of non-recurrent expenditure

##### Redundancies

We were concerned that redundancies were of a non-recurrent nature. However, for those companies where expenditure related to redundancies was incurred in 2011-12 (South East Water and Yarra Valley Water), historical evidence has been provided by the companies to demonstrate that expenditure for this item is recurrent.

We recommend no change to either South East Water's or Yarra Valley Water's base year expenditure, given the evidence of historic redundancy expenditure.

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<sup>11</sup> This differs slightly from the expenditure used by Western Water in its demonstration how its forecast expenditure meets the ESC's productivity hurdle, in which it used the figure of \$35.34 million.

### Defined superannuation payments

South East Water has received indicative advice from the actuaries of the Equipsuper defined benefit scheme which suggests that additional “top-up” employer contributions are not likely to be required over the course of the Water Plan period. It therefore accepts that it is reasonable to remove expenditure of \$0.84 million from the base year relating to a defined superannuation payment in 2011/12.

Yarra Valley Water also received actuarial advice from Mercer Consulting. An extract produced in the response to our Draft Report shows Yarra Valley Water will need to contribute to its superannuation liabilities in 2013/14 and 2014/15 but not thereafter. For these reasons, we have removed Yarra Valley Water’s 2011/12 unfunded superannuation liability payment from the base year. Expenditure relating to this item will be allowed in the two years of Water Plan 3, and adjusted for in Step 3 of this methodology.

### One off incidents

A number of companies 2011-12 expenditure contained expenditure for incidents of a one-off nature (such as flooding and legal disputes). While these incidents are indeed one off, we are satisfied that they are numerous enough (and individually sufficiently immaterial) that the expenditure related to these incidents may be considered to be at a recurrent level, and hence suitable to be extrapolated forwards in step 2 of the methodology. This is not to say that these incidents *specifically* will be repeated each year of Water Plan 3, but that the expenditure incurred as a result is not inconsistent with an expected level of expenditure *generally* for one off incidents that will occur in Water Plan 3. This is in keeping with a top-down approach to analysing the companies’ expenditure.

### Other non-recurrent expenditure

South East Water incurred property development labour costs of \$0.25 million in 2011-12. We consider this to be non-recurrent (owing to it being related to the office move) and hence recommend its removal from the base year operating expenditure. South East Water accepts this recommendation.

South East Water has identified two non-recurrent items (land tax and single title refunds). Both items appear to be in 2011-12 dollars and have been inflated into 2012-13 dollars.

We recommend that \$0.14 million be removed from Yarra Valley Water’s base year relating to rounding adjustments. This expenditure relates to over the counter payments being rounded down to the nearest 5 cents. This is a tariff issue, not an expenditure issue, and hence we recommend it is removed from the base year expenditure. Yarra Valley should pursue this tariff matter with the ESC to ensure that the revenue requirement is appropriately adjusted to account for rounding adjustments.

Western Water’s ‘miscellaneous’ expenditure was reasonably material at about 0.6 per cent of its 2011-12 operating expenditure. Due to its description, we were unable to ascertain what this consists of. We generally accept that there will be miscellaneous expenses as part of its operating expenditure, and recommend no adjustment, but suggests Western Water could better described its operating expenditure so that its ‘miscellaneous’ category is less material.

## 2. Analysis of items not obliged to be undertaken

### Sponsorships and grants

We analysed those items identified in the companies’ 2011-12 expenditure as sponsorships and grants, with particular concern that such expenditure was directed for marketing or charitable purposes, rather than with specific regard to regulatory obligations.

We sought clarification of the nature of this expenditure from the companies, and are satisfied that such expenditure is indeed directed towards regulatory obligations. Examples include “grants” to landowners to undertake waterways and drainage type activities on behalf of Melbourne Water, which does not differ (from the perspective of our analysis) from

Melbourne Water undertaking the work itself (at its own expense) or engaging a contractor to undertake the work.

### Renewable energy

A particular issue that arose in relation to Melbourne Water is how we should assess its energy costs in relation to its large sites in view of its contractual arrangements for supply to these sites. This has proved to be a complex issue, which has adjustments made both here in step 1 of the ESC's methodology, and also in step 3.

With particular regard to step 1, we recommend that the energy purchase cost element of Melbourne Water's base year (2011/12) be replaced with a benchmark amount reflecting the cost of purchasing "black" energy.<sup>12</sup> This benchmark, in turn, was calculated as the average price for swap contracts over the 2011/12 year (sourced from AFMA), plus a 10 per cent margin, adopting the method that Melbourne Water proposed. This benchmark assumes, in effect, that energy is purchased under reasonably short term arrangements, like many other inputs.

A more detailed discussion of Melbourne Water's operating energy costs (and the adjustments made throughout the steps of this methodology) is found in Appendix A.

### Office relocation

Melbourne Water's new office has a 6 Green Star rating whereas the State Government's Office Accommodation Guidelines<sup>13</sup> minimum standard is 5 Green Star. According to Melbourne Water<sup>14</sup>, in the tender submissions received to lease an office to its specifications, the average of tenders for a 5 Green Star rated building was \$490 per m<sup>2</sup> while 6 Green Star rated tenders costed on average \$522 cost per m<sup>2</sup>. However, Melbourne Water was able to secure a discounted cost for its new offices of \$480 per m<sup>2</sup>. Melbourne Water's board papers do not indicate the dispersion around of the average cost of tenders for 5 and 6 Green Star buildings, but as the actual lease cost per m<sup>2</sup> is lower than the average 5 Green Star tender, we believe the office costs are reasonable.

## 3. Non-cash items

City West Water has an item in its 2011-12 operating expenditure, "Asset write offs" that is relevant to calculations of the regulatory asset base (RAB) and not operating expenditure. We therefore removed it from the base year expenditure.

Further, the \$4.33 million of capitalised labour has been "removed" from South East Water's base year. This is as a result of a capitalisation policy change by South East Water, and means that this amount has been transferred to capital expenditure. This change does not reflect change to South East Water's overall expenditure (capital and operating combined).

## 4. Expenditure which is unexplainably materially high compared to the other companies

We have not identified any non-cash items undertaken by the companies in 2011-12.

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<sup>12</sup> This mechanism was different to what Melbourne Water proposed, but should have delivered a similar outcome. We pointed out to Melbourne Water that it had made an error by not removing the value of REC/LGC purchases from its base year, which it conceded during discussions.

<sup>13</sup> Victorian Government, Office Accommodation Guidelines 2007, page 13.

<sup>14</sup> Melbourne Water, Board Paper - 990 LaTrobe St Relocation, 2012, page 5.

### **Other issues of note**

The companies had differing approaches to the treatment of water conservation expenditure. Both Yarra Valley Water and South East Water proposed decreases to their forecast water conservation expenditure versus 2011-12. Yarra Valley Water proposed that its base year be reduced in step 1 by the full amount of water conservation expenditure in that year, with subsequent increases (at step 3) to the baseline in each year of Water Plan 3 (but with a net overall decrease in expenditure). In contrast, South East Water proposed that no adjustment be made to its base year, but with a decrease being made in each year of Water Plan 3 (at step 3).

Both methods are equally valid and result in the same overall recommended capital expenditure allowance.

## ***4.3 Step 2 – Review customer growth rate and productivity adjustments***

### ***4.3.1 Company proposals***

While this step is reasonably mechanical, companies made various proposals with regard to the customer growth rates and productivity adjustments.

Melbourne Water proposed no productivity adjustment in 2012-13 (the last year of the current Water Plan).

Melbourne Water uses an average 1.8 per cent for customer growth. Melbourne Water has alternatively suggested an operating expenditure growth rate that uses a weighted average of asset growth and customer growth is more appropriate than the ESC's rate of customer growth only.

South East Water removed customer growth rates and productivity rates for Water Plan 3, and instead included increases in expenditure related to growth less the productivity hurdle as part of its step 3 adjustments.

Yarra Valley Water also removed the global customer growth component and instead included increases in expenditure related to growth as part of its step 3 adjustments.

Both Yarra Valley Water and Western Water proposed productivity hurdles greater than 1 per cent per year. In the case of Western Water, it is proposing a 2 per cent productivity hurdle each year. Yarra Valley proposes a 1.2 per cent productivity hurdle in 2012-13 only, and 1 per cent in Water Plan 3.

Western Water and City West Water submitted annual growth rates that differ from those submitted to the ESC in the Financial Template for Water Plan 3. In the case of City West Water, it submitted an average customer growth rate in each year, rather than the actual growth rate forecast for a particular year.

In its response to the draft report, where we provided an operating expenditure template with the customer growth rates taken from the ESC Financial Template, South East Water noted these customer growth rates were reflective of a tariff change and not the underlying change in customer numbers.

### ***4.3.2 PwC analysis***

We have sought to amend all of the companies' adjustments so that the mechanical step 2 functions appropriately.

The ESC and its consultants have undertaken a review of the companies' proposed demand forecasts in parallel with this expenditure review. As a result of the ESC's and its consultants review, the ESC has altered the companies' customer growth numbers for inclusion in its draft decision for prices. In order to be consistent with the customer growth numbers to be

applied in the draft decision, the ESC has asked us to use the updated customer growth numbers rather than the companies' original proposals in determining our recommendations for operating expenditure<sup>15</sup>. We have not independently assessed these customer growth forecasts. Furthermore, should they be subject to further change between the ESC's draft and final decisions, the inputs to step 2 of the operating expenditure methodology should be altered accordingly.

With regard to Melbourne Water's proposal that the productivity hurdle should not apply to 2012-13, we have re-included the productivity adjustment, in accordance with the discussion in section 3.2.2 above.

We do not propose any changes to Melbourne Water's growth rates of 1.8%, consistent with the ESC's approach of using growth in customer numbers. We are not persuaded that the growth rates should be altered as part of step 2, although recommend additional expenditure claimed by Melbourne Water as a result growth in customer numbers being poorly correlated to growth specifically for waterways and drainage expenditure (as outlined in sections 3.2.5 and 4.5).

As discussed in section 3.2.4, a number of the companies did not apply the ESC's methodology forecast in their original proposals (as per the Water Plan), nor their explanation of how those forecasts meet the ESC's productivity hurdle, and instead explained their forecasts in manners more akin to their original forecasting methodology. As a result, we have made the following adjustments, to align the companies' explanations of how their forecasts meet the hurdle to our interpretation of the ESC's methodology:

- South East Water excluded step 2 altogether from its explanation, meaning that its base year was not escalated by customer growth less the productivity hurdle. We have reinserted the growth and productivity adjustment to escalate the base year in order to establish the baseline. In step 3, South East Water included the productivity hurdle in its proposed increases to the baseline. As we have reinserted the productivity adjustment in step 2, we have removed the productivity component of the South East Water's proposed increases in step 3, to avoid double counting the productivity adjustment. The net outcome of these changes was an increase to South East Water's proposals.
- In its proposed step 3 increases to the baseline, Yarra Valley Water included customer growth in each of its additional expenditure items. As customer growth is also accounted for in step 2, in order not to double count customer growth, Yarra Valley Water proposed an additional downward adjustment in step 3. Instead, we adjusted each of Yarra Valley Water's step 3 proposed expenditure items downwards, so as to remove the customer growth component related to each, and also removed Yarra Valley Water's proposed balancing line item at step 3.
- Both Western Water's and Yarra Valley Water's productivity hurdles have been adjusted downwards to 1 per cent for the purposes of establishing the maximum expenditure allowance. If, all else being equal, these companies' (or any companies') proposal is lower than the recommended maximum allowance then it is implying a productivity rate higher than 1 per cent.

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<sup>15</sup> PwC notes that while any changes to customer growth forecasts affects the operating expenditure allowance, the effect of this on prices is (partially or more than) offset by the direct impact of customer growth forecasts on prices. For example, an increase in customer numbers results in an increase in operating expenditure, but more customers over whom the (increased) operating expenditure is recovered.

## ***4.4 Step 3 - Review and adjust new initiatives and obligations***

### ***4.4.1 Company proposals***

In addition to the baseline, the companies, through their explanations of how their proposals meet the ESC's productivity hurdle, have proposed a number of changes to the baseline.

Below, we outline the companies' proposals, noting that the information presented below:

- is that contained in the companies' explanations of how their proposals (as per the Water Plan) meet the ESC's productivity hurdle. For most of the companies, this information was not contained in the forecasts in their Water Plans, owing to the differing approaches that the companies took in creating the forecasts in their Water Plans compared to the ESC's methodology.
- is after our adjustment at described step 2 above (section 4.3.2). In the case of Yarra Valley Water and South East Water, adjustments were made to the amounts claimed in step 3 in conjunction with changes in step 2, so as not to double count the effect of the customer growth and/or productivity adjustments. The requirement for this change is explained in our methodology, in section 3.2.4.



**Melbourne Water**

Melbourne Water’s proposed adjustments to the baseline are outlined Table 19.

**Table 19: Proposed adjustments to the baseline, Melbourne Water (\$M)**

<b>Name and description</b>	<b>Company proposed adjustment to base line</b>
	<b>Total for 5 years of Water Plan 3</b>
1. Victorian Desalination Plant - contract costs*	3,042.75
2. Victorian Desalination Plant - project m'ment costs*	16.11
3. Costs relating to the tertiary treatment upgrade at Eastern Treatment Plant. This upgrade was made because of the 2006 Victorian Government decision to improve the quality of the treated effluent from the plant.	69.64
4. Carbon tax - scope 1 - liabilities resulting from Melbourne Water’s own carbon emissions)	23.29
5. Carbon tax - scope 3 - increases to input costs throughout Melbourne Water’s supply chain as a result of the carbon tax	20.74
6. Waterways and drainage <sup>16</sup> - new and existing standards and asset growth. Various items including:	
<ul style="list-style-type: none"> <li>• AAV/Cultural Heritage management (\$3.7 million)</li> <li>• Beach outlet maintenance (\$0.5 million)</li> <li>• Maintenance of stormwater quality assets (\$7.9 million)</li> <li>• Waterways condition (\$20.1 million)</li> <li>• Developer constructed assets (\$7.5 million)</li> <li>• Sediment management (\$21.2 million)</li> <li>• Hydrographic site maintenance (\$1.5 million)</li> <li>• Waterways – condition (\$11.9 million)</li> <li>• Waterways - drainage and flood protection (\$3.0 million)</li> </ul>	77.23
These items are justified on various grounds, including new obligations and growth in customer numbers being poorly correlated to the growth in expenditure for these items (due to the large growth in asset numbers).	
7. Office accommodation - Melbourne Water relocated part-way through the 2011-12, resulting in the full increase in operating expenditure not being reflected in the base year	15.45
8. Energy price - justified on the basis of rising input prices, including scope	12.60

<sup>16</sup> Melbourne Water complied with our request to explain how its proposed expenditure forecast meets the ESC’s productivity hurdle. As such, in the case of waterways and drainage, it included its forecast expenditure increase in step 3. However, it also argued that the ESC’s methodology is not appropriate in the case of waterways and drainage expenditure, as this expenditure is poorly correlated to customer growth. We have accepted Melbourne Water’s arguments that the ESC’s methodology is inappropriate for waterways and drainage expenditure, and have instead analysed Melbourne Water’s waterways and drainage expenditure using an alternative methodology, as explained in section 3.2.5. We have therefore included the figures for Melbourne Water’s proposed waterways and drainage increase at step 3 in Table 19 for completeness, but note that we have not analysed these figures using the same approach as for the other expenditure items.

<b>Name and description</b>	<b>Company proposed adjustment to base line</b>
	<b>Total for 5 years of Water Plan 3</b>
2 results of the carbon tax	
9. Labour/sub-contractors - Maintenance contracts - justified on the basis of rising input prices for labour and sub-contractors	15.86
10. Land tax - justified on the basis of an increased value of land on which land tax is applied	15.38
11. Superannuation - justified on the basis of increased superannuation contribution rates	3.16
<b>Total (excluding VDP costs)</b>	<b>253.35</b>

\* Expenditure relating to the desalination plant is out of scope for this review and are not analysed further.

Yarra Valley Water

Yarra Valley Water’s proposed adjustments to the baseline are outlined in Table 20.

**Table 20: Proposed adjustments to the baseline, Yarra Valley Water (\$M)**

<b>Name and description</b>	<b>Company proposed adjustment to base line<sup>17</sup></b> <b>Total for 5 years of Water Plan 3</b>
1 - Water Conservation - the continuation of expenditure on water efficiency, but at a lower level, is justified on the willingness to pay of customers <sup>18</sup>	-1.13
2 - Water mains cleaning – justified on the basis of customer preferences	5.08
3 - Backflow prevention justified on the basis of expected changes to Department of Health regulations	1.18
4 - Integrated sewage quality management for trade waste – justified with regard to the new ESC Trade Waste Customer Service Code	0.61
5 - Enhanced nutrient removal at sewage treatment plants – to meet increasing standards for ‘licensed point source discharges with approved mixing zones’	0.15
6 - Recycled water compliance and cross connection prevention – driven by the new recycled water schemes being commissioned	1.35
7 - Increased energy costs justified on the basis of rising input prices, including the carbon tax	7.53
8 - Labour costs above CPI - justified on the basis of rising input prices for labour <sup>19</sup>	-2.29
9 - IT (licences, support and maintenance) – justified by Microsoft increasing licensing costs and two projects (the replacement of the asset management software and a new ‘client portal’).	2.80
10 – Operation & maintenance of asset infrastructure – extensive capital works programs in recent years require increases in operating expenditure to maintain the assets. <sup>20</sup>	-0.25

<sup>17</sup> The company “proposed adjustment to base line” column presents the figures once adjusted for customer growth, as described above in Step 2.

<sup>18</sup> Note that Yarra Valley Water’s proposed increase to water conservation expenditure in step 3 is made in addition to a proposed decrease to water conservation expenditure in step 1. The net effect of these two changes is a decrease to total proposed water conservation expenditure. Table 25 details Yarra Valley Water’s overall proposed water conservation expenditure.

<sup>19</sup> Once adjustments were made to the proposed increase for labour to account for customer growth, Yarra Valley Water’s proposed increase for labour is negative (i.e. it is proposing a growth in labour costs that is less than the growth in customer numbers).

<sup>20</sup> Once adjustments were made to the proposed increase for operation & maintenance of asset infrastructure to account for customer growth, Yarra Valley Water’s proposed increase is negative (i.e. it is proposing a growth in operation & maintenance of asset infrastructure costs that is less than the growth in customer numbers).

<b>Name and description</b>	<b>Company proposed adjustment to base line<sup>17</sup></b>
	<b>Total for 5 years of Water Plan 3</b>
11 – Customer contacts – no clear justification was provided	1.92
12 – Debt collection - based on forecasts of growing customer hardship	5.71
13 – Bill payment costs - justified on the basis of a growing service population	1.10
14 – Merchant service fees – justified on the basis of rising input prices	1.56
15 – Bill generation costs – justified on the basis of rising input prices	0.92
16 – Metering - justified on the basis of rising input prices	2.96
17 - Supporting customers in hardship - justified on the basis of growth in the service population and a likely increase in customers in financial hardship	1.13
18 - Hardship initiative – (water audit and retrofit program) - justified on the basis of growth in the service population and a likely increase in customers in financial hardship	0.75
19 - Operating expenditure that declines annually – expenditure that occurs at lower levels in the base year relative to Water Plan 3.	2.52
<b>Total</b>	<b>43.23</b>

South East Water

South East Water’s proposed adjustments to the baseline are outlined in Table 21.

**Table 21: Proposed adjustments to the baseline, South East Water (\$M)**

Name and description	Company proposed adjustment to base line <sup>21</sup> Total for 5 years of Water Plan 3
1 Agency collection – justified by the increase in merchant service fees; as water bills rise the variable transaction charge rises with it	4.95
2 Meter reading - justified on the basis of growth in the service area and the number of serviced properties	2.24
3 Lease – buildings - justified on the basis of the office relocation	-5.63
4 IT Costs - justified on the basis of a new customer relationship management program and a software system that passes on the cost of credit card fees	3.54
5 Fringe benefit tax - justified on the basis of legislative changes affecting South East Water’s motor vehicle fleet	0.87
6 Chemicals - justified on the basis of a growing service population and the change of treating sewerage to Class A levels	3.09
7 Electricity – justified on the basis of rising input prices, including the carbon tax	12.59
8 Postage - justified on the basis of a growing service population as well as rising postage costs and sending more reminder notices to customers as a result of rising water bills	1.57
9 Efficiency savings primarily related to office relocation, net of input price increases	-15.11
10 Desludging - justified by the volume of activity in the base year being lower than normal due to bad weather	0.80
11 Water conservation efficiency - the continuation of expenditure on water efficiency, but at a lower level, is justified on the willingness to pay of customers	-1.51
12 Treatment Plants – Other - this relates to the operating expenditure costs associated with the commencement of Class A sewerage treatment facilities	9.44
13 Debt Collection - justified on the basis of a growing service population and increased forecast customer hardship	1.10

<sup>21</sup> Note: \* The company “proposed adjustment to base line” column presents the figures once adjusted for customer growth, as described above in Step 2.

<b>Name and description</b>	<b>Company proposed adjustment to base line<sup>21</sup></b>
	<b>Total for 5 years of Water Plan 3</b>
14 Consulting - no clear justification was provided	0.26
15 Compliance - justified on the basis of a change in activity relative to the base year	0.58
16 Remedial maintenance (various projects) - justified by the volume of activity in the base year being lower than the preceding five year average level of activity	2.25
17 Reticulated sewer repairs, cleaning, mono pumps - relates to operating expenditure driven by the sewerage backlog capital projects and to changes in sewer repairs and cleaning activities	4.59
18 Rural bulk water <sup>22</sup> - justified on the basis that this is expenditure that was not within the base year	0.77
<b>Total</b>	<b>49.20</b>

<sup>22</sup> Bulk water is out of scope of this review.

City West Water

City West Water’s proposed adjustments to the baseline are outlined in Table 22.

**Table 22: Proposed adjustments to the baseline, City West Water (\$M)**

Name and description	Company proposed adjustment to base line* Total for 5 years of Water Plan 3
1 – Alternative Water – Altona Stage 2 – operating expenditure associated with Altona Stage 2, a capital project proposed in Water Plan 3.	6.99
2 – Alternative Water – Stormwater – operating expenditure associated with Stormwater projects proposed in Water Plan 3.	1.00
3 – Alternative Water – West Werribee – operating expenditure associated with the dual pipe networks at West Werribee, a capital project started in Water Plan 2.	16.58
4 – Carbon Tax - justified on the basis of increased energy costs resulting from the carbon tax	2.06
5 – City West Water Office Relocation - justified on the basis of operating and capital expenditure savings and other non-quantified benefits of the relocation	17.46
6 – Superannuation – Guarantee Levy - justified on the basis of changes in Government policy	1.29
<b>Total</b>	<b>45.36</b>

Western Water

Western Water’s proposed adjustments to the baseline are outlined in Table 23.

**Table 23: Proposed adjustments to the baseline, Western Water (\$M)**

Name and description	Company proposed adjustment to base line* Total for 5 years of Water Plan 3
1 – Intelligent Water Network (IWN) Contribution - \$1.25 per property - justified on the basis of ESC Guidance Paper suggesting IWN trialling is to be encouraged	0.38
2 – Electricity Prices - justified on the basis of higher input costs (including as a result of the carbon tax), and growth in the service population	4.20
3 – Additional Super Guarantee to 12% - justified on the basis of increased superannuation contribution rates	0.72
<b>Total</b>	<b>5.31</b>

#### 4.4.2 *PwC analysis and findings*

We have considered the company proposals with regard to the methodology outlined in section 3.2.3. Below, we describe the analysis and findings.

##### **Expenditure which qualifies as a new initiative or obligation: New or changed government obligations**

New or changed government obligations that will come into being during the term of Water Plan 3, or those that came into being in Water Plan 2 but for which the operating expenditure only came into effect in Water Plan 3, should be included in addition to the base line in determining the maximum operating expenditure allowance for the companies. This is because the baseline (being derived from the base year) only includes an expenditure allowance for those activities undertaken in the base year. This is discussed in the methodology, in section 3.2.3.

The companies have identified a number of examples, which we consider to be appropriate to add to the baseline. These are discussed below.

##### **Carbon tax scopes 1, 2 and 3**

All the companies proposed additional expenditure to the baseline relating to the carbon tax scope 2 (through increases in electricity prices). We agree that such expenditure should be allowed in addition to the baseline, regardless of whether other increases to energy prices should be allowed (as discussed below). We have used SKM/WSAA's<sup>23</sup> medium scenario to determine the quantum of the increase to the base line. This has required adjustments to the companies' proposals. The price per tonne of carbon we have applied are given in Table 24 below.

**Table 24: Price of carbon per tonne, as per SKM/WSAA medium scenario**

<b>Price per tonne of carbon (\$2012/13)</b>	<b>2012/13</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>
SKM/WSAA carbon price forecast – medium scenario	22.92	23.48	24.10	20.32	21.03	21.77

Melbourne Water proposed additional expenditure to the baseline relating to the carbon tax scope 1 (direct emissions) and 3 (increases in their supply chain costs).

For scope 1, the quantum of the increase proposed by Melbourne Water is based on a one per cent per annum increase on the Eastern and Western Treatment Plants' historical emissions<sup>24</sup>, as reported under the National Greenhouse and Energy Reporting scheme<sup>25</sup>.

For scope 3, the quantum of emissions is based on the estimates of tonnes of carbon equivalent produced from the goods and services Melbourne Water consumes in its

<sup>23</sup> Water Services Association of Australia and Sinclair Knight Merz – McLennan Magasanik Associates, Energy Price Forecasts 2013 to 2032: Final draft 1.0, 13 November 2012.

<sup>24</sup> The proposed increase in emissions in Water Plan 3 is based on the one per cent per annum increase in emissions historically observed, less emissions related to nitrogen to the marine environment, which are assumed by Melbourne Water to decline to zero between 2012-12 and 2012-13. This is a roughly 13 per cent reduction in total greenhouse gas emissions at the ETP and WTP between 2011-12 and 2012-13.

<sup>25</sup> <http://www.cleanenergyregulator.gov.au/National-Greenhouse-and-Energy-Reporting/published-information/greenhouse-and-energy-information/Greenhouse-and-Energy-information-2011-2012/Pages/default.aspx>



operating expenditure. Melbourne Water calculated its allowance by allocating its expenditure to various industries and then inserts that expenditure into an Integrated Sustainability Analysis (ISA) model developed by the University of Sydney. Melbourne Water notes this is a reputable tool as it has been applied and accepted by the IPART in its 2012 price review of Sydney Water. However, the tool requires judgement in allocating its forecast expenditure to various industries. Melbourne Water has included operating expenditure on the VDP as part of this increase. We removed the part of the proposal associated with the VDP (which should, in any event, depend upon the arrangements for pass through under the VDP contract), but is otherwise satisfied with the Melbourne Water's approach and proposals for scope 3 expenditure.

### Treatment plants

There are a number of new projects that were undertaken in Water Plan 2 for which the associated operating expenditure increases after the 2011-12 base year. These are the Eastern Treatment Plant tertiary upgrade and South East Water's Class A treatment plant upgrades:

- Eastern Treatment Plant tertiary upgrade by Melbourne Water is in line with the 2006 Victorian Government decision to improve the quality of the treated effluent from the plant. For ETP Tertiary, we have characterised this as the outworking of an existing obligation, and hence something for which the expected prudent and efficient cost needs to be added on to the baseline operating expenditure. Melbourne Water proposed recovering its actual energy costs in respect of this site. We observe that the use of actual energy costs for this site is inconsistent with the approach to energy costs for other major sites and could lead to windfall gains or losses in future Water Plans.<sup>26</sup> We have instead applied a benchmark energy cost, calculated as follows.
  - First, we commenced with the benchmark price for “black” electricity in 2011-12 calculated as described in step 1 above. This was then adjusted to reflect the change in wholesale contract prices predicted by the SKM/WSAA reports, and so implicitly included an allowance for both the effect of the introduction of the Carbon Price Mechanism and the expected inflation in contract prices subsequent to this.<sup>27</sup>
  - Secondly, we replaced Melbourne Water's forecast of its actual energy cost (net of renewable energy certificate sales and updated for a forecast \$6.6 million reduction in the total energy estimate relative to what was submitted in the Water Plan) with the benchmark calculated as above.<sup>28</sup>

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<sup>26</sup> That is, while the long term contractual rates are currently higher than the market benchmark, this situation may reverse in future Water Plans. By proposing a benchmark in this review, we are assuming that the same approach is applied in future reviews, and so if the market benchmark price rises above the contract price in future periods, Melbourne Water may recover some, all or more than the shortfall it will bear in the next period (with this risk being borne by Melbourne Water rather than consumers). However, if the contract price is recovered for ETP Tertiary in the next period and a benchmark price is applied in future periods, the potential exists for Melbourne Water to recover the higher contract price in Water Plan 3 and then the higher market benchmark price in periods thereafter.

<sup>27</sup> An alternative would have been to use the SKM/WSAA forecasts of future contract prices to calculate the benchmark directly (that is, commencing with the SKM/WSAA contract price and adding a 10 per cent margin). The two benchmarks were not materially different.

<sup>28</sup> Melbourne Water may have understated its energy costs for the ETP by overstating the expected revenue from the sale of renewable energy certificates. Melbourne Water's implied REC sale price is above the \$65/MWh fine a company incurs for not surrendering RECs. This fine effectively caps the price of RECs at \$65/MWh. However, this does not affect the effect of our adjustment as we are replacing the Melbourne Water's estimate of its energy charges. The other components of the cost were left unchanged, and so the addition already includes a forecast of the expected increase in network charges. Refer to the following website for information regarding the fine that a company incurs for not surrendering RECs:

<http://ret.cleanenergyregulator.gov.au/Forms-and-Publications/Forms/Compliance-Year-Update>

The energy costs made up about two-thirds of the cost of the ETP tertiary project. The other material components were external services (maintenance costs) and materials (chemicals). Unlike with its energy costs, Melbourne Water did not provide clear information on the build up of these costs. After submitting the final water plan, Melbourne Water reduced its estimates of the energy costs by \$6.6 million due to updated network and usage charge costs, increased its estimates of maintenance costs by \$1.7 million to correctly account for CPI in its forecasts and increased its labour costs by \$1.9 million to account for revised staff numbers. Through the information provided, it was unclear whether or not the ETP estimate already included (or was meant to include) CPI. For these reasons, we have adjusted the ETP estimate in the final water plan submission to account for energy and labour changes but excluding the proposed adjustments for maintenance.

- South East Water argued that extra operating expenditure is required as a result of its Class A treatment plant upgrades, in turn required to meet EPA requirements. The categories of costs which South East Water has claimed an increase in addition to the baseline include chemicals, electricity and labour ('treatment plant – other') costs associated with the plant upgrade. We accept the requirement for operating expenditure increases above the baseline associated with the Class A upgrades, owing to the increase in cost being the outcome of a change in regulation in Water Plan 2. With regard to the allowed electricity increase to the baseline, we applied the same SKM industrial index for price increases, as per our recommended adjustments for "option 2" of the electricity input cost analysis. This is discussed in more detail below.

#### Fringe benefit tax

From 2011, fringe benefit tax arrangements for motor vehicles changed. The current progressive rates were replaced with a flat statutory rate of 20 per cent for motor vehicles that applies regardless of the distance travelled. This legislation is currently being phased in and while some of the increased costs may have been in the base year for the water companies, the changes will continue until 1 April 2014.<sup>29</sup>

South East Water has allocated an extra \$0.87 million to this over Water Plan 3, which we accept as a new obligation.

#### West Werribee

In accordance with its (then) Statement of Obligations to target a percentage of potable water substitution, City West Water made recycled water infrastructure investment in West Werribee.

As the operating expenditure related to this infrastructure was not incurred (in full) in 2011-12, the baseline does not include operating expenditure related to the recycled water in West Werribee.

While it is no longer an obligation to target a percentage of recycled water, given the capital investment has been made it is likely that utilising the assets (and hence incurring additional operating expenditure) is economically efficient. As such, we recommend that operating expenditure related to West Werribee's recycled water be added to the base line.

We applied the WSAA/SKM price indices to the energy component of the increased operating expenditure above the baseline at West Werribee. This resulted in a small upward adjustment to the City West Water's proposed increase to the base line.

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<sup>29</sup> <http://www.pwc.com.au/tax/federal-budget/2011/fbt-changes.htm>

### Enhanced nutrient removal at sewage treatment plants

Yarra Valley Water identified additional expenditure relating to its obligation to meet increasing standards for 'licensed point source discharges with approved mixing zones' for enhanced nutrient removal at sewage treatment plants. We are satisfied that this represents a new obligation, and recommend this expenditure is allowed in addition to the baseline.

### Expenditure which qualifies as a new initiative or obligation: Customer service demands

As per the methodology as described in section 3.2.3, where customer willingness to pay for expenditure has been demonstrated by the companies, this expenditure should be included in addition to the baseline, to the extent to which the forecast level of expenditure is efficient. These instances are discussed below.

### Water conservation and drought management initiatives

The companies are obliged to undertake water conservation measures, but the obligations give no steer as to the quantum of expenditure that is prudent and efficient.

Despite adjustments downwards on the part of the companies to their 2011-12 expenditure to account for the reduced nature of this expenditure as a result of the end of the drought, only some companies have justified that their proposed level of expenditure in Water Plan 3 is suitable, by the way of willingness to pay surveys.

We accept South East Water's, Yarra Valley Water's and Western Water's willingness to pay surveys as evidence of the required level of expenditure on these issues.

We found no evidence of significant water conservation or drought management initiatives from Melbourne Water.

City West Water's level of water conservation expenditure was not, in our view, justified by City West Water. We therefore recommend that the additional operating expenditure be adjusted downwards by \$6.46 million to reflect the per customer willingness to pay of Yarra Valley's customers.

The levels of water conservation expenditure are summarised in Table 25.

**Table 25: Water conservation expenditure in the base year and proposed for Water Plan 3**

<b>Water company</b>	<b>Water conservation expenditure in 2011-12 (\$M)</b>	<b>Average annual expenditure proposed in Water Plan 3 (\$M)</b>	<b>Company proposals Supported by WTP studies?</b>	<b>Average PwC recommendation in Water Plan 3 (\$M)</b>
Yarra Valley Water	1.89	1.70	Yes	1.70
South East Water	4.21	3.91	Yes	3.91
City West Water	2.4	2.4	No*	1.29*
Western Water	0.25	0.24	Yes	0.24

Note: \* This is the level of water conservation expenditure recommended for City West Water based on Yarra Valley Water’s willingness to pay (WTP) studies as City West Water did not provide evidence of such studies.

#### Stormwater harvesting

City West Water proposed capital and operating expenditure relating to stormwater harvesting assets. As discussed in section 6.3, these capital investments and the related operating expenditure are made at the request of, and are paid for by, the individual customers using the assets (various Local Government Authorities).

As such, we recommend that this operating expenditure be added to the baseline to determine the maximum recommended allowance. In view of the income received from Local Government Authorities, there will be no impact on other customers’ prices.

#### Hardship initiative – water audit and retrofit program

Yarra Valley Water undertook willingness to pay studies to establish whether customers were prepared to increase the business’ hardship support expenditure to help vulnerable customers. We therefore recommend this expenditure is added to the baseline for Yarra Valley Water.

#### **Expenditure which qualifies as a new initiative or obligation: operating expenditure savings that are driven by capital expenditure projects designed to improve business efficiency**

As discussed in section 3.2.3, operating expenditure savings that are driven by capital expenditure projects designed to improve business efficiency qualify as new initiatives. The 1 per cent hurdle is assumed to be met under BAU conditions, and would become an easy target, if it could be ‘bought’ through capital expenditure. Therefore such operating expenditure savings need to be treated as in addition to the productivity savings included in the baseline.

Where capital expenditure is made on the basis of operating savings compared to the baseline, such savings should be reflected in the maximum recommended allowance.

### Operating savings as a result of office relocation

South East Water made a strong case that moving offices is the lowest cost option to meet its regulatory obligations and satisfy customer requirements. A discussion of our analysis of this is found in section 6.6.

Much of the reduced cost of the office move is driven by increased operating efficiency and savings of lease costs. South East Water has proposed that these costs be removed from its baseline operating expenditure. We agree with this proposal.

We note that the business case for the office relocation includes a forecast revenue of \$0.3 million per year from the leasing of retail space within the building<sup>30</sup>. South East Water argues that the retail space was a planning requirement from Frankston City Council, a position that PwC has not assessed. The revenue has not been netted off South East Water's lease savings, nor included in South East Water's non-prescribed revenue. We recommend that a further \$0.3 million per year be removed from South East Water's proposed lease savings from 2015/16, to reflect that this revenue is non-prescribed.<sup>31</sup>

### Operating savings as a result of IT capital expenditure

The Arrow program is a major IT and business process reform project that City West Water is currently undertaking with the aim of achieving business efficiencies, including reducing operating expenditure (refer to section 6.5 for further analysis of the capital element of this program). In step with the review of new initiatives and obligations category 6 (outlined in the methodology in Section 3.2.3), the operating expenditure savings from capital projects needs to be included as a reduction to the baseline operating expenditure. For this reason we have included a line item for operating expenditure savings from the Arrow program.

As City West Water had not factored an estimate of this into its forecast, we estimated the operating expenditure savings using information contained in the Arrow program business case.<sup>32</sup> The business case divided its operating costs and benefits into categories including:

- IT operating costs
- IT operating benefits
- business efficiency benefits.

The difference between the IT costs incurred in the base year and the annual forecast IT benefits throughout Water Plan 3 are approximately the same, and hence cancel one another out. We recommend therefore that the baseline is reduced by the difference between the business efficiency benefits in the base year and the forecast business efficiency benefits throughout Water Plan 3, adjusted into 2012-13 dollars.

For Melbourne Water, we accept the proposed projects within the Systems strategic IT program (which were largely based on forecast business efficiency) as prudent and appropriate. However, the substantial increase in proposed capital expenditure for this program in Water Plan 3 compared to Water Plan 2 expenditure (from \$8 million to \$38.6 million) suggests that this is a 'game changing' investment akin to City West Water's Arrow

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<sup>30</sup> Top Ten Project – Future Accommodation, Business Case - June 2012, South East Water, page 23.

<sup>31</sup> Alternatively, the ESC could not remove the lease revenue from operational expenditure allowance and instead include it as non-prescribed revenue, with identical price outcomes.

<sup>32</sup> CWW - Arrow Program - Business Case Supplement v1.0 (16May 12) (post mtg), page 19.

project. As a result, we have adjusted Melbourne Water's operating expenditure to ensure that customers benefit from these IT investments.

In determining the appropriate quantum and timing of any operating expenditure adjustments, we considered the business cases provided for projects within the Strategic systems program.<sup>33</sup> The quantum of the operating expenditure adjustments was based on the quantified operating expenditure benefits outlined in each projects' respective business cases. Capital expenditure benefits (such as avoided future IT capital expenditure investments) and benefits provided directly to customers were not removed from the operating expenditure baseline.

We have, however, not removed the IT efficiencies from Melbourne Water's waterways and drainage operating expenditure. As discussed in 4.5, we analysed Melbourne Water's waterways and drainage operating expenditure using a bottom-up, rather than top-down, approach. As we have accepted (the majority of) Melbourne Water's proposed waterways and drainage operating expenditure forecast on a bottom-up basis, we have assumed (upon the advice from Melbourne Water) that these forecasts already include the forecast operating savings as a result of IT capital investment.

For Western Water, IT capital expenditure relating to business efficiency as proposed we largely accept. However, we do not recommend any adjustment to its operating expenditure as a result of these investments. The reasoning for this is explained in detail in section 6.5.2.

### **Expenditure which does not qualify as a new initiative or obligation: changes in volumes**

The ESC's methodology, as described in section 3.2.3, allows for an increase in volume of inputs at the forecast rate of growth in customer numbers, starting from the base year.

A number of companies have proposed that expenditure relating to increases in volume of an input above the proportionate increase in customer numbers should be added to the base line.

Allowing for additional expenditure for increases in volume above the baseline is not in keeping with the ESC's methodology. While we acknowledge that the volume of some inputs may be increasing at a rate greater than customer growth, the chances are that other inputs will be increasing at a rate lower than customer growth. Companies should be able to manage any variations in the volume of an individual input by offsetting against another variation elsewhere in the business.

On a number of occasions, companies have claimed increases to the baseline on the basis that the base year was not representative of the typical volumes for a particular input. As such, they argue that, as the base year is extrapolated forwards to form the baseline, the baseline is also too low, and hence should be increased. Typically, companies have made these claims on the basis that the weather in 2011/12 (the base year) was unusually wet, causing decreasing volumes for some inputs.

We are not persuaded by this argument. While we acknowledge that the volumes in some inputs in the base year may have been unusually low, the chances are that other inputs are likely to have been unusually high, and would therefore need to be reduced from the baseline in order to be symmetric. In keeping with the ESC's top-down methodology, we did not

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<sup>33</sup> We note that business cases were provided for seven of the thirteen projects within the Strategic systems program and acknowledge that business cases are yet to be developed for projects likely to occur towards the end of Water Plan 3. Operating benefits during Water Plan 3 are unlikely to be significant for projects developed during the final years of Water Plan 3, and hence no adjustments have been made to the operating expenditure baseline for these projects.

individually examine the volume for each input in the base year to ascertain that it is representative going forwards, but instead assumed that, at a business wide level, input volumes will increase at the rate of growth in customer numbers less the 1% productivity hurdle. Furthermore, as discussed in section 3.2.1, we have not completely removed from the base year all lumpy items, as other lumpy items not in the base year may appear in Water Plan 3.

We recommend the following are *not* added to the baseline<sup>34</sup>:

- Customer contacts, debt collection, bill payment costs, bill generation costs (variously Yarra Valley Water and South East Water)
- Compliance (South East Water)
- Water mains cleaning (Yarra Valley Water)
- Expenditure related to metering (Yarra Valley Water)
- Supporting customers in hardship (other than with regard to the willingness to pay survey which justifies increased expenditure on Yarra Valley Water's water audit and retrofit program, as discussed above) (Yarra Valley Water)
- Backflow prevention (Yarra Valley Water)<sup>35</sup>
- Integrated sewerage quality management for trade waste (Yarra Valley Water)<sup>36</sup>
- Desludging (South East Water)
- Postage (South East Water)
- Maintenance, other than where related to the sewerage backlog or other new obligations (Yarra Valley Water)
- Remedial maintenance (South East Water)
- Recycled water compliance and cross connection prevention (Yarra Valley Water)
- IT support and maintenance (Yarra Valley Water)

We re-emphasise that our recommendation is that the ESC should not make an allowance above the baseline as part of its operating expenditure forecasting methodology for these items. To be clear, we are not recommending that the companies do not increase expenditure on these items, but merely that it is reasonable to expect that this increase can be offset at a company-wide level given the potential for decreases in expenditure elsewhere in the business.

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<sup>34</sup> We have recommended that a large number of items proposed by South East Water and Yarra Valley Water not be added to the baseline. However, this is a reflection of these companies' bottom-up forecasting methodologies (which identify a large number of often small items), rather than on the materiality of our recommendations or the quality of their proposals.

<sup>35</sup> The ESC has informed us that backflow prevention does not represent a new obligation.

<sup>36</sup> The ESC has informed us that integrated sewerage quality management does not represent a new obligation.

### **Expenditure which does not qualify as a new initiative or obligation: likely immaterial input price changes**

The ESC's methodology, as described in section 3.2.3, does not allow for a change to the baseline for input price changes. Instances where the companies have proposed such changes, and such changes are sufficiently immaterial to not require further consideration by the ESC, are discussed below.

#### **Superannuation**

The companies claimed a new obligation to increase the superannuation contribution from 9% up to 12% over the course of Water Plan 3. Despite company claims that the onus is on companies to increase total remuneration, we do not consider that (all else equal) the case has been firmly made that companies cannot keep total remuneration constant (in real terms), and offset increases in employee's take-home pay in order to increase the superannuation contribution. The legislation implies that the increase the superannuation contribution should not be funded by an increase in total remuneration, a position also taken by the Superannuation Minister:

“Superannuation Minister Bill Shorten has previously rejected claims that businesses will be slugged with higher wage bills as compulsory super rises, on the grounds that workers will forgo part of these rises for more super.”<sup>37</sup>

The legislation appears merely to imply that the employer is responsible to facilitate the transaction of the superannuation charge (as opposed to paying the employee their total remuneration in full, and it being the responsibility of the employee to then pay the superannuation charge out of this total remuneration).

“Superannuation guarantee charge imposed on an employer's superannuation guarantee shortfall for a quarter is payable by the employer.”<sup>38</sup>

While in practice, the labour market will determine the extent to which the increase in the superannuation contribution will contribute to an increase in total labour costs, we consider the best assumption is that any increase in total labour costs should be borne by the employer.

Furthermore, if “option 2” is applied with regard to labour cost escalations (as discussed below), then the effect, if any, of the superannuation contribution increase on total labour costs has already been factored in to these labour cost escalations.

The fact that many of the businesses have committed, through their EBA, to increase total remuneration as a result of this change is not relevant (within a strict interpretation of the ESC's methodology) in determining whether the increase is a obligation and therefore should be added to the baseline to determine the overall maximum operating expenditure allowance.

Costs relating to the superannuation contribution rate therefore should not be added to the baseline.

#### **Other proposed increases to the base year relating to input price increases**

The companies have also proposed a number of additional increases to the base year relating to other input price increases. These are as shown in Table 26.

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<sup>37</sup> Sally Patten, 'Super rise to hit pay: survey', The Australian Financial Review, 26 February 2013, page 5.

<sup>38</sup> Superannuation Guarantee (Administration) Act 1992 (Cth), Part 3, Section 16.



**Table 26: Other proposed increases to the base year relating to input price increases (\$M)**

Description	South East Water Water Plan 3 Total	Yarra Valley Water Water Plan 3 Total
Agency collection fees or ‘merchant service fees’ relating to the likely increase in water bills for customers, increasing fees paid to credit card companies	4.95	1.56*
Charges relating to meter reading	2.24	2.96*
Postage charges	1.57*	
Debt collection fees	1.10	5.71*
Bill payment costs		0.92*
Supporting customers in hardship		1.13*
IT costs relating to increases in Microsoft’s licensing fees		1.60

Note: \* These amounts are not only increases in prices but are also driven in part by changes in volumes.

In our opinion, allowing each of these increases to the base year is not in keeping with the ESC’s top-down methodology. While we accept that these inputs might be increasing in price, we are not persuaded that alternations to the baseline should be made, and expects the companies to be able to manage these increases with decreases in other input costs elsewhere in the business. For this reason, we recommend no adjustment be made to the base line for these input price rises.

#### **Expenditure which does not qualify as a new initiative or obligation: operating expenditure items that are not required by regulatory obligations**

The ESC’s methodology, as described in section 3.2.3, does not allow for a change to the baseline for items which are not regulatory obligations in Water Plan. Instances where the companies have proposed such changes are discussed below.

##### **Altona Stage 2**

In accordance with our recommendations for City West Water’s proposed capital investment for Altona Stage 2 (section 6.3) we do not recommend that operating expenditure related to this item be included in addition to the base year. We do not consider that City West Water has established a justification for this project to be undertaken.

##### **Renewable energy**

Melbourne Water’s forecast renewable energy expenditure has been discussed above, as part of our discussion of the Eastern Treatment Plant. Renewable energy expenditure forecast by Melbourne Water is not a regulatory obligation and has therefore not been allowed in addition to the baseline.

#### **Expenditure which does not qualify as a new initiative or obligation: Operating expenditure that was not clearly justified**

Yarra Valley Water made a claim for “operating expenditure that declines annually”. We recommend that this not be included on the basis that it has not been sufficiently justified by Yarra Valley Water, both prior to and in response to our Draft Report. Yarra Valley Water has accepted this recommendation.

South East Water has made a claim for “consulting” but has not provided sufficient comment on why this is justified, both prior to and in response to our Draft Report.

**Expenditure items recommended for further consideration by the ESC:  
material changes in input prices**

A number of additions to the base year proposed are on the basis of rises in input prices above underlying inflation (CPI). In accordance with the ESC's methodology, additional expenditure related to these items is required to be absorbed by the company, and assumed to be accommodated by real falls in prices for other inputs.

However, as described in the methodology in section 3.2.3, the assumption that businesses can accommodate input price growth is particularly challenging during times when prices for material inputs are growing at much faster rates of inflation.

For this reason we have presented the ESC with options as to whether input prices rises above CPI should be allowed in addition to the baseline for individual items, and the arguments for and against doing so.

**Electricity**

In strict accordance with the ESC's methodology (as described in Chapter 3) and excluding the increases to electricity prices as a result of the carbon tax (considered to be allowed as a result of it being a new Government obligation), claims made by companies for extra expenditure relating to energy prices rises should be not be allowed.

However, it is clear that over the period of Water Plan 3 electricity prices (even excluding the carbon tax) are likely to be materially higher than the base year.

We present two options to the ESC:

- Option 1: Not include expenditure related to the (non-carbon tax related) increase to energy prices in addition to the base line.
- Option 2: Include expenditure related to (non-carbon tax related) increases to energy prices in addition to the base line. For this option, the quantum of the increase would be in accordance with the WSAA/SKM final report medium scenario, which we consider to be the most current authoritative source. As the final WSAA/SKM report has a baseline of 2012-13, we have been unable to use the final WSAA/SKM report to establish the change in energy price between 2011-12 and 2012-13. We have taken the midpoint of the low and the medium scenario of the draft WSAA/SKM report for the change in energy price between 2011-12 and 2012-13. The midpoint of the low and medium scenarios of the draft report approximates the medium scenario of the final report for those years where the data exists. We have generally applied the WSAA/SKM industrial index except for where the water companies have used the commercial index and where such use appears reasonable. The real escalation factor recommended for option 2 (inclusive of the carbon tax) is given in Table 27 below:

**Table 27: WSAA/SKM electricity price escalation factors (multiplication factor vs. 2011/12)**

		2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
SKM/WSAA <b>industrial</b> retail price index, Victoria <sup>39</sup>		1.000	1.370	1.416	1.518	1.486	1.617	1.664
SKM/WSAA <b>commercial</b> retail price index, Victoria <sup>40</sup>		1.000	1.190	1.236	1.312	1.319	1.406	1.452
Escalation factor applied for MW	Industrial	1.000	1.370	1.416	1.518	1.486	1.617	1.664
Escalation factor applied for YVW	Industrial	1.000	1.370	1.416	1.518	1.486	1.617	1.664
Escalation factor applied for SEW	Weighted average of industrial and commercial	1.000	1.352	1.397	1.496	1.468	1.594	1.640
Escalation factor applied for CWW	Industrial	1.000	1.370	1.416	1.518	1.486	1.617	1.664
Escalation factor applied for WW	Commercial	1.000	1.190	1.236	1.312	1.319	1.406	1.452

If option 2 was to be implemented by the ESC, the additional increase (in addition to the allowance for the carbon tax) to the baseline is outlined in Table 28.

<sup>39</sup> Average of low and medium scenarios of draft report for 2011/12 and medium of final report 2012/13 onward

<sup>40</sup> Average of low and medium scenarios of draft report for 2011/12 and medium of final report 2012/13 onward

**Table 28: Electricity input prices - Additional increase to the baseline from under option 2 (\$M)**

<b>Company</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
Melbourne Water	2.44	3.54	3.58	5.34	6.43	<b>21.33</b>
Yarra Valley Water	0.74	1.03	1.02	1.40	1.53	<b>5.72</b>
South East Water	0.27	0.50	0.56	0.86	0.93	<b>3.12</b>
City West Water	0.27	0.41	0.41	0.59	0.64	<b>2.33</b>
Western Water	0.09	0.24	0.32	0.49	0.58	<b>1.71</b>

Note: the above numbers are the difference between the carbon-only component of forecast energy price rises (option 1) and the whole forecast energy price rise (option 2).

The implementation of option 2 across all businesses would represent an upward adjustment compared to the business' own forecasts, owing to the use of the WSAA/SKM medium scenario of the draft report.<sup>41</sup>

In the case of Melbourne Water, the additional increase to the baseline of \$21.33 million should be considered in light of the \$19.27 million reduction to the total Water Plan 3 baseline made in Step 1, as described in Appendix A.

As described in the methodology in section 3.2.3, we consider that option may be appropriate as the rise in electricity prices may be considered to be material.

We have presented the recommended expenditure allowance resulting from both options in chapter 2 for the ESC's consideration.

#### Labour, sub-contractors and consulting

As with electricity, in strict accordance with the ESC's methodology (as described in Chapter 3), claims made by companies for extra expenditure relating to labour, sub-contractors and consulting price rises should not be allowed.

However, as with electricity, and in accordance with the methodology described in section 3.2.3, labour cost increases above CPI may be considered to be sufficiently material to warrant their inclusion in addition to the baseline.

As with energy, we present two options to the ESC:

- Option 1: Not include expenditure related to the increase to labour prices in addition to the base line.

<sup>41</sup> PwC could not replicate Yarra Valley Water's increase in energy costs calculations. Yarra Valley Water's Water Plan states the low scenario of the draft WSAA/SKM report has been used but this does not seem to agree with the indices implied by what Yarra Valley Water has calculated. In the case of City West Water, it appears the wrong year of the WSAA/SKM index has been used. This understates the forecast increase in energy costs. Regardless, we have used the medium scenario of the WSAA/SKM final report.

- Option 2: Include expenditure related to the increase to labour price in addition to the base line. We recommend that the quantum of the increase be in accordance with a Deloitte Access Economics report<sup>42</sup> commissioned by the AER to inform its 2012 draft decision for SP AusNet. We consider this to be a recent authoritative source. The forecasts are for ‘internal labour – specialist’ in the electricity, gas, water and waste services (EGWWS) sector in total (the lowest level of disaggregation the ABS produces) and are for Victoria.

The forecasts are for the labour price index - all else constant, this will overstate the increase in the cost of labour because the cost of labour falls with productivity growth - so these forecasts have to be paired with a reasonable assumption about labour productivity growth, which has been done by applying the 1% productivity target. For this reason, we prefer using the labour price index measure to rates in Enterprise Bargaining Agreements because these may be affected by expectations of making productivity gains that are above the industry average - and, equally, to the extent that the water businesses or their contractors make superior productivity gains, then this provides a source of funds to pay higher wages.

The real escalation factor recommended for option 2 is given in Table 29 below:

**Table 29: Labour escalation factor (year-on-year percentage increase)**

<b>Calendar year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Labour escalation factor	1.70%	1.10%	1.10%	1.20%	0.90%	1.10%	1.50%
<b>Financial year</b>	<b>2012/13</b>		<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>
Labour escalation factor	1.40%		1.10%	1.15%	1.05%	1.00%	1.30%

Were option 2 to be implemented by the ESC, the additional increase to the baseline is outlined in Table 30.

<sup>42</sup> Forecast growth in labour costs in Victoria: Report prepared for the AER, 28 May 2012, page 66

**Table 30: Labour input prices - Additional increase to the baseline from under option 2 (\$M)**

<b>Company</b>	<b>2013/14</b>	<b>2014/15</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>Water Plan 3 Total</b>
Melbourne Water	2.26	3.32	4.30	5.24	6.47	<b>21.59</b>
Yarra Valley Water	0.95	1.40	1.81	2.20	2.72	<b>9.08</b>
South East Water	1.18	1.73	2.24	2.73	3.37	<b>11.25</b>
City West Water	N/A	N/A	N/A	N/A	N/A	N/A
Western Water	0.34	0.50	0.65	0.79	0.98	<b>3.28</b>

We note that City West Water did not present its labour expenditure in 2011/12, so we have been unable to calculate the increase.

As described in the methodology in section 3.2.3, we consider that option may be appropriate as the rise in labour rates may be considered to be material, and because there is regulatory precedent (in the case of the AER) for doing so.

We have presented the recommended expenditure allowance resulting from both options in chapter 2 for the ESC's consideration.

#### Land tax

Melbourne Water has proposed an increase in land tax of 2.02% - 2.88% real per year from 2012/13 to 2017/18 (depending on the year) and 7.77% real between 2011/12 and 2012/13, resulting from forecast increased land valuation. In strict accordance with the ESC's methodology, this is an input price change and should not be allowed in addition to the baseline.

However, in accordance with our discussion in section 3.2.3, we acknowledge that land tax may be considered to be sufficiently material to warrant its inclusion in addition to the baseline. We therefore present the ESC with two options:

- Option 1: Do not allow the increase to the base year resulting from land tax
- Option 2: Allow an increase of 1.4% per year, in accordance with the Department of Treasury and Finance forecasts<sup>43</sup>

We note that neither options recommended for consideration are for Melbourne Water's own land tax expenditure forecasts to be allowed in addition to the baseline.

<sup>43</sup> Department of Treasury and Finance 2012, Budget Paper No. 2 Strategy and Outlook, May, p.39.

Were option 2 to be implemented by the ESC, the additional increase to the baseline is outlined in Table 31.

**Table 31: Land tax input prices - Additional increase to the baseline from under option 2 (\$M)**

Company	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
Melbourne Water	0.55	0.84	1.12	1.42	1.71	5.64

We have presented the recommended expenditure allowance resulting from both options in chapter 2 for the ESC’s consideration.

### Other expenditure items assessed on a case by case basis

A number of expenditure items have been considered on a case by case basis.

#### City West Water’s office relocation

As discussed in section 6.6, we are satisfied that City West Water office relocation is justified, and therefore acknowledges that additional expenditure required over and above the baseline is required.

However, City West Water has not accounted for the decrease in operating expenditure relating to the lease once the Arrow project is complete, when its contractors vacate the premise and it will sub-lease the space. We have pro-rated the expenditure for the lease downwards to account for this from the time after which the Arrow program concludes.<sup>44</sup>

#### Intelligent Water Networks

Western Water proposed an increase to the baseline resulting from trials in innovative intelligent water network solutions. We are satisfied that this expenditure is in keeping with obligations placed on the companies, in accordance with the ESC’s Guidance Paper, which states:

“We [the ESC] support proposals to validate the benefits of IWNs through small scale pilot projects before any widespread adoption by the water industry.”<sup>45</sup>

#### Melbourne Water’s office accommodation

Due to the timing of Melbourne Water’s office move part way through 2011/12, Melbourne Water’s 2011-12 expenditure is not a good starting point from which to extrapolate its expenditure relating to its accommodation. We therefore recommend that the additional proposed expenditure relating to the part of the 2011-12 when Melbourne Water were not in its new accommodation be allowed as an increase to the baseline.

<sup>44</sup> This was calculated by taking the staff and contractor capacity of the new office (418) and reducing this by the contractors working on the Arrow project (60) in order to establish the required capacity after the conclusion of Arrow (358 staff). The ratio of the number of staff after the conclusion of the Arrow project to the total capacity of the office (0.86) was multiplied by the lease payments forecast by City West Water for each year of Water Plan 3, in order to determine the recommended increase to the baseline. PwC notes that while this approach assumes that there will be 100% utilisation of the sub-lease, it also assumes that the value of the sub-lease is equal to (on a per seat basis) City West Water’s own lease. These two assumptions, while individually not likely, also have opposite effects on the forecast value of the sub-lease to City West Water, to the extent that the assumptions in combination are reasonable.

<sup>45</sup> Essential Services Commission, 2013 Water Price Review, Guidance on Water Plans, October 2011, p52.

#### South East Water's IT expenditure

South East Water initiated a new IT contract part way through 2011-12. Thus, 2011-12 is not a reliable starting point from which to extrapolate its expenditure relating to its IT functions. As with Melbourne Water's office accommodation, we recommend that the additional IT expenditure proposed be allowed in addition to the base line.

#### Yarra Valley Water's defined superannuation contribution

Yarra Valley Water has provided evidence (by means of an actuarial report by Mercer) that it will be required to make payments to meet a shortfall in its defined superannuation scheme. These payments are forecast to occur in the first two years of the upcoming regulatory period. We accept these proposals. This change is made in addition to a reduction to the base year; the net effect of these two changes is a reduction to the maximum regulatory allowance.

### **4.5 Melbourne Water's waterways and drainage expenditure**

Melbourne Water argued that operational expenditure for waterways and drainage is poorly correlated to the growth in customer numbers. Much of the expenditure is related to the maintenance of assets, and the number of these assets, across a range of measures has and will continue to increase at a rate far in excess of customer growth. For instance, between 2007 and 2012:

- sediment ponds increased in number by 51.4%, and by volume (m<sup>3</sup>) by 28.0%
- the length of waterways which have been revegetated and now require maintenance has increased by 128.3%
- wetland cells increased in number by 83.3% and by surface area (m<sup>2</sup>) by 40.1%
- litter traps increased in number by 212.2%
- urban lakes increased in number by 134.3%.<sup>46</sup>

The majority of the increase in waterways and drainage expenditure proposed by Melbourne Water versus 2011-12 was with regard to the maintenance of waterways and drainage assets. While it was difficult to directly correlate the proposed increase in expenditure to proposed increase in assets, such large increases in assets versus the increase in customer numbers was sufficient evidence for us to consider that the three step methodology utilised for the rest of Melbourne Water's expenditure, and all of the expenditure for the other companies analysed, is not appropriate in the case of waterways and drainage operating expenditure.

As noted in our methodology at section 3.2.5, instead, we assessed the proposed increase in the expenditure above the level of expenditure in 2011/12.

We have accepted that Melbourne Water's proposed expenditure is required to increase versus 2011-12 levels to the quantity proposed by Melbourne Water for all but four of its categories of waterways and drainage expenditure, based on:

- The proposed increase in assets and the timing of the maintenance required on those assets

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<sup>46</sup> Melbourne Water's response to the Expenditure review - draft findings report, provided by Melbourne Water.



- Change to obligations, requiring an increase in expenditure.

We do not consider that an increase in expenditure is justified for:

- AAV/Cultural Heritage Management (increase versus 2011/12 expenditure levels of \$3.67 million)
- Hydrographic Site Maintenance (increase versus 2011/12 expenditure levels of \$1.46 million)
- Drainage and flood protection level of service engagement increase versus 2011/12 expenditure levels \$0.40 million)

For these three items, Melbourne Water has made the case that the increase is required due to changed obligations, rather than growth in assets. However, the obligations to undertake these activities were in place (and identical) in 2011/12, and assuming the business was compliant with its legal obligations in 2011/12, no additional expenditure is required. We have therefore recommended that expenditure for these items remain at 2011/12 levels.

In the case of the increase of expenditure on minor flood protection works (increase versus 2011/12 expenditure levels of \$0.6 million), this has been justified by Melbourne Water on the basis of Local Government Authority (LGA) support. We observe that this is not an obligation and nor are LGAs Melbourne Water's customers (ie, they do not pay its bills), and so this expenditure has not been sufficiently justified.

## ***4.6 Summary of conclusions***

The tables in chapter 2 summarise the recommendations made throughout this chapter for each companies, in order to derive a maximum recommended allowance. The tables also compare the companies' proposed expenditure allowance to the maximum recommended allowance.

As noted in our discussion in section 4.4.2, the results presented in these tables depend on the treatment of input prices.



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# 5 Capital expenditure methodology

## 5.1 Approach to assessing proposed capital expenditure

Our approach to assessing capital expenditure is as follows.

### 5.1.1 Step 1: Project/program justification

Firstly, we considered whether capital projects or programs are justified. Two potential justifications for capital expenditure are:

- 1 The project is required to meet a clearly defined government objective(s),<sup>47</sup> and/or
- 2 The benefits from the project demonstrably outweigh the costs of implementation, or were demonstrably wanted by customers informed the cost and price implications of the project/program.

If neither of these criteria are satisfied, the recommendation in our report is to remove all the capital expenditure for that project/program from the capital expenditure allowance.

Where projects specific expenditure is substantial, we have undertaken a specific analysis of the justification for the particular project. However, capital expenditure in this Water Plan period for many of the companies is characterised by programs of work, in turn comprising a large number of relatively small projects, relating to growth, renewals etc. Where this is the case, the issue is not whether expenditure is justified at all, but rather whether the quantity of expenditure is justified. As such, we considered the proposed program as a whole (rather than the individual projects of which is it comprised) and:

- assessed the quality of the tools and methodologies used by the companies to determine their proposed expenditure
- undertook macro trend analysis, with consideration of:
  - historic and proposed expenditure levels
  - the historic “allowances” of the current regulatory period (Water Plan 2)
  - historic and proposed/obliged service levels
  - historic and future customer expectations/requirements
  - other exogenous factors that may result in a change in expenditure levels than would otherwise be the case.

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<sup>47</sup>In the particular case of alternative water projects, such projects are justified if they are the lowest cost option (compared to conventional potable only options) to meet the clearly defined Government obligations to supply.

If expenditure within a category is departing from historical levels, that change should be able to be explained with reference to changes to service levels or other drivers of cost. Where this is not the case, or the change in expenditure levels is unexplained, we propose a change to the allowed expenditure.

### *5.1.2 Step 2: Demonstration of prudent approach*

Having determined if a project is justified, or the level of expenditure within a program is justified, analysis has been undertaken to determine whether the project selected is the one that is most likely to meet the defined objectives or agreed outcomes at lowest community cost.

#### *Step 2A: Options assessments for discrete projects*

The assessment involved reviewing the project options that were initially considered by the water business and understanding how they were analysed to determine the preferred option. Key considerations included, but were not limited to:

- Whether a selection (range) of reasonable options was considered
- Whether a comparison of low/no cost options was conducted against higher cost technical solutions
- Whether the business used multi-criteria assessment (MCA), triple-bottom-line (TBL) assessment, or similar to quantifiably rank project options and assess criteria which, while genuine obligations or customer preferences, are difficult to quantify in a pure net present value (NPV) analysis. The review team was mindful to ensure that MCA, TBL or other such analysis was not used by the companies to introduce criteria for assessment which are inconsistent with its regulatory obligations or customer preferences.
- Whether the business consistently selected the lowest life cycle cost option as demonstrated through a comparison of (NPV) for all viable options, or, in cases where the lowest NPV was not selected, whether the business linked the outcomes of the MCA assessment to their justification for selecting an alternative option.

In cases where there is insufficient evidence that a well-defined options analysis has been carried out, and we consider there to be a reasonable chance that doing such an assessment could result in a material change to the project budget, and it is considered by us appropriate to do so given the circumstances of the project, a deferral of project works for one year has been recommended in order for an appropriate level of investigation to be completed.

#### *Step 2B: Scope justification for programs of work*

Capital expenditure characterised by a large number of relatively small projects and better defined as a program of works, such as renewals, were assessed based on how the business defined the 'high priority jobs' included in the program, as distinct from the normal to low priority jobs excluded from the program. Evidence of the business having a clear process for the identification and prioritisation of work was sought, with deviations from approaches in previous Water Plan periods being adequately explained.

In cases where we have not found evidence of an appropriate approach, adjustments to the Water Plan 3 budget are suggested on a case by case basis.

### *5.1.3 Step 3: Consideration of delivery mechanisms*

The delivery mechanisms for the projects were considered for apparent risks that could impede or exceed the proposed capital expenditure spend. Key considerations included, but were not limited to:

- The proposed program of works, staging and timing

- The proposed commercial model/contracting strategies for cost effective/timely delivery
- Funding arrangements or shared resources
- Grouping of similar projects for delivery
- A broader consideration of asset utilisation and rationalisation
- Project specific delivery risks.

We note that at the time of this review several of the businesses were in the process of adopting new delivery mechanisms for WP3. In such cases we have provided commentary on the intended mechanism (as described by the business) based on our observations of and experience with similar arrangements.

#### *5.1.4 Step 4: Assessment of Cost Estimation Methodology*

Capital cost estimates prepared by the business were reviewed in terms of:

- The basis of estimate (the level of detail provided as to how the estimate was formulated, given the project scope and development status).
- The estimating personnel and discipline, and their level of relevant estimating experience in relation to the scope of the project.
- Estimating methodology and procedure, consistency in costing procedures (development and approval) across the water business, and the approach to the development of the P50 estimate for inclusion in Water Plan 3.
- Estimate documentation (whether documents were well organised, presented at an appropriate level of detail, and estimate summary traceable to the estimate detail and other estimate backup documentation).
- Estimate detail (the source of schedules of rates for direct costs and the appropriateness of allowances for indirect costs).

In cases where the above items have been clearly identified, and are in our professional opinion reasonable, no adjustments have been recommended.

Adjustments to the project/program expenditure are recommended in cases where the above information has been clearly identified, but based on our experience appear to be under or over estimated. Note that the review does not provide commentary on the accuracy of the estimates for every individual project, but has instead sought an understanding of a sample of projects in order to inform our review.

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# 6 *Capital expenditure analysis*

We structured this analysis according to the following categories of capital expenditure:

- Growth (not related to other capital expenditure as listed below)
- Sewerage backlog
- Alternative water
- Renewals
- IT
- Office relocation
- Melbourne Water's waterways and drainage
- Melbourne Water's other significant capital expenditure projects/programs.

For each of the above categories, the structure of this chapter is as follows:

- Overview of each water companies' proposals as per their Water Plans (limited to those companies that have proposed capital expenditure in a given category)
- Our analysis of the water companies' proposals, including:
  - project or program justification, based on obligations or demonstrated customer demand for the project
  - options assessment (for discreet projects) or scope justification (for programs of work)
  - the delivery mechanism for the projects or programs
  - the cost estimate methodology for the projects or programs.

We note that a substantial number of adjustments made by the ESC to the companies' proposals for Water Plan 2 were in relation to input cost escalation. In many cases, the companies had proposed input cost escalation above what was considered reasonable by the ESC and its consultants. For Water Plan 3, the companies have not proposed input cost escalation above CPI, which we consider to be reasonable because:

- commodity prices rose through to the peak of the minerals boom, but price rises have more recently been closer to CPI due to the slowing economy and the lower costs of construction

## Capital expenditure analysis

- there is recent regulatory precedent for allowing CPI input price rises in price setting decisions. The AER recently approved SP AusNet's proposed materials cost escalators of CPI.<sup>48</sup>

As such, we have not made adjustments to reflect differences of view between ourselves and the companies with respect to input cost escalation.

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<sup>48</sup> AER, Access arrangement final decision, SPI Networks (Gas) Pty Ltd 2013–17, Part 3: Appendices, March 2013, p5

## 6.1 Growth capital expenditure

### 6.1.1 Water companies' proposals

Specific detail of each of the companies' proposed growth capital expenditure is given below, along with an outline of the companies' justifications for the expenditure and the process used to formulate their proposals.

In general, the companies have followed similar steps in determining their proposals, namely taking population and growth projections and translating these projections into a program of required works to service growth.

#### **Melbourne Water proposed growth capital expenditure**

Excluding alternative water (which is considered in Section 6.3) Melbourne Water is proposing to undertake \$695 million of growth related capital works in Water Plan 3, accounting for 28% of Melbourne Water's overall proposed capital expenditure.

**Table 32: Overview of proposed growth related capital expenditure, Melbourne Water (\$M)**

Total capital expenditure	2,457.1
Total growth capital expenditure (excluding alternative water)	695
Major projects	
Western Treatment Plant (WTP) Capacity Augmentation – Stage 2	187.5
WTP Sludge Drying Augmentation	56.1
St Albans – Werribee Pipeline – Stage 2	96

Source: Essential Services Commission, "Water Price Review 2013-14 to 2017/18 Financial Model Template"

Melbourne Water's capital growth expenditure is characterised by numerous smaller investments (water transfer and sewerage treatment and disposal infrastructure) to service Melbourne's growing west, namely the growth areas of Melton, Wydham North and West Werribee, and to a lesser extent growth occurring in the South East and Northern Growth Corridors.

Proposed growth capital expenditure also is comprised of significant large one-off investments such as:

- Western Treatment Plant (WTP) Capacity Augmentation – Stage 2 (\$187.5 million). This project has been proposed to meet nitrogen discharge requirements given growing sewerage volumes
- WTP Sludge Drying Augmentation (\$56.1 million)<sup>49</sup> has been proposed to handle growing volumes of sludge in the context of growing sewerage volumes; and

<sup>49</sup> Melbourne Water, "2013 Water Plan", October 2012



- St Albans – Werribee Pipeline – Stage 2 (\$96 million).<sup>50</sup> The primary driver behind this project is Melbourne Water’s ability to service growth in Melbourne’s west. This pipeline will connect the western growth area’s sewerage network with the existing sewerage network.

Melbourne Water’s proposed growth capital expenditure for the third regulatory period has been justified with reference to the population growth forecasts as outlined in the three policy and growth documents produced by third parties, as listed below:

- Department of Planning and Community Development’s Victoria in Future 2012;
- Melbourne 2030; and
- Living Melbourne, Living Victoria<sup>51</sup>

Melbourne Water supplemented these forecasts with consultations with industry and the Victorian Government.

During Melbourne Water’s ‘planning’ phase, all proposed projects progress through sequential approval gateways in accordance with Melbourne Water’s overarching capital expenditure framework. Once projects have reached the business need identifier (BNI) gateway, Melbourne Water prepares a detailed business case outlining the following:

- Project overview and need
- Policy drivers – these usually stem from various documents produced by third parties
- Project scope
- Analysis of options, including the selection of a preferred option
- Risk analysis; and
- Project plan.

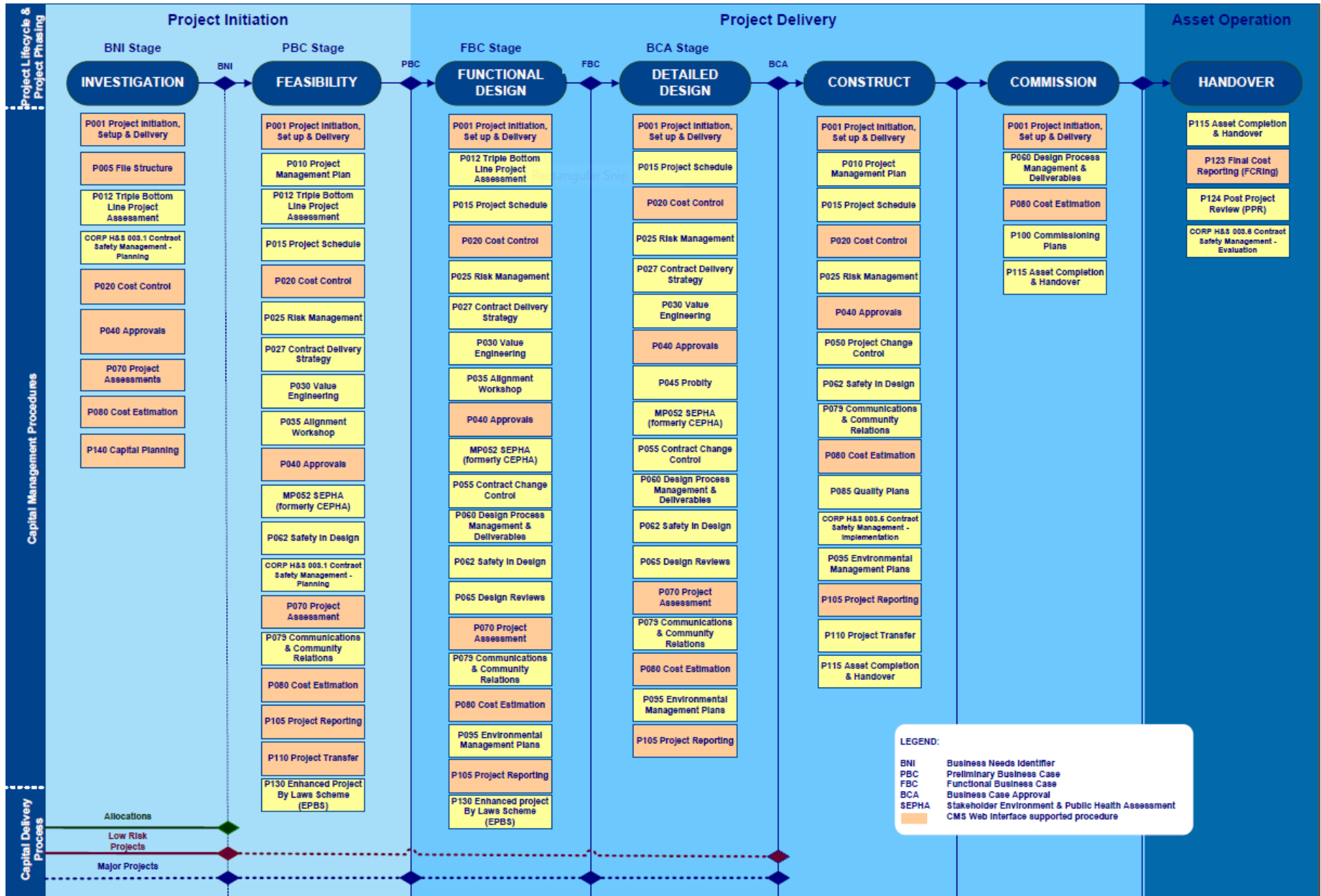
Major projects then progress through the preliminary business case (PBC) gateway, functional business case (FBC) gateway and business case approval (BCA) gateway, where increasing levels of detailed analysis contribute to the decision making process. Figure 2 below outlines Melbourne Water’s capital management process and capital management procedures.

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<sup>50</sup> PwC analysis

<sup>51</sup> Melbourne Water, “2013 Water Plan”, October 2012

Figure 2: Melbourne Water's capital management process and capital management procedures



We were provided with the business cases for Melbourne Water’s major projects as well as the primary, independently-authored documents listed above as part of Melbourne Water’s evidence for the justification of the proposed expenditure.

***Yarra Valley Water’s proposed growth capital expenditure***

Excluding the sewerage backlog program and alternative water (which are considered in Section 6.2 and Section 6.3, respectively) Yarra Valley Water is proposing to undertake \$330.7 million of growth related capital works in Water Plan 3, accounting for 29% of Yarra Valley Water’s overall proposed capital expenditure.

**Table 33: Overview of proposed growth related capital expenditure, Yarra Valley Water (\$M)**

Total capital expenditure	1,147.14
Total growth capital expenditure (excluding alternative water and sewerage backlog)	330.7
<b>Major projects</b>	
Amaroo Branch Sewer	26.6
Epping Branch Sewer Tunnel Extension	25
Lockerbie Branch Sewer	12.4

Source: Essential Services Commission, “Water Price Review 2013-14 to 2017/18 Financial Model Template”

Yarra Valley Water’s capital growth expenditure is characterised by numerous relatively small investments to service projected growth (such as mains and pipes), particularly, but not exclusively in the Northern Growth Corridor (NGC), which includes the cities of Whittlesea, Hume and the Shire of Mitchell. Relatively large projects proposed for Water Plan 3 included:

- **Amaroo Branch Sewer Project (\$26.6 million):** this project will service the Kalkallo Growth Area’s sewerage requirement, where 82,000 new residential lots are expected to be created over the next 20 to 30 years.
- **Epping Branch Sewer Tunnel Extension (\$25 million):** this project will convey flows not required for the production of recycled water from the Epping North Growth Area, and will provide an outlet for a major commercial area within the region.
- **Lockerbie Branch Sewer (\$12.4 million):** this sewer will connect the Wallan Sewerage Treatment Plant to the first stage of the Lockerbie development, which is taking place in the NGC.

In December 2008, the Victorian Government released Melbourne @ 5 Million. Melbourne @ 5 Million specifically outlined the strategy for accommodating a population forecast of five million people by 2030, namely by expanding the Urban Growth Boundary (UGB). Yarra Valley Water observed that the direct consequence of the Victorian Government’s UGB expansion on Yarra Valley Water’s service area is an additional 90,000 residential homes and 2,500Ha of employment land<sup>52</sup>. Yarra Valley Water used residential

<sup>52</sup> Yarra Valley Water, “Servicing Growth Water Plant 3 (2013/14-2017/18)”, October 2012, p.10

growth forecasts provided by the Department of Planning and Community Development, as per the *Victorian in Future (2012)* document.<sup>53</sup>

Yarra Valley Water further justifies its proposed growth projects (including their timing, location and volume) given its obligations as mandated by section 32 of the State Environment Protection Policy, and on-going communication and discussions with:

- developers
- local councils
- the Growth Areas Authority.<sup>54</sup>

Yarra Valley Water's proposed growth capital expenditure also is influenced by the State Government's *Melbourne 2030* strategy that encourages new developments in and around activity centres.<sup>55</sup>

To determine which projects are proposed to be undertaken in the third regulatory period, Yarra Valley Water analyses the economic efficiency of each project, by producing the following:

- planning maps, that detail the proposed timing of projects both during and beyond Water Plan 3
- net present value analyses; and
- business cases.

We have been provided with these documents for major projects, as well as the primary, independently-authored documentation described above as part of Yarra Valley Water's evidence for the justification of the proposed expenditure.

### ***South East Water's proposed growth capital expenditure***

Excluding the sewerage backlog program and alternative water (which are considered in Section 6.2 and Section 6.3, respectively) South East Water is proposing to undertake \$438.1 million of growth related capital works in Water Plan 3, accounting for 39% of South East Water's overall proposed capital expenditure.

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<sup>53</sup> Yarra Valley Water, "Water Plan 2013/14 to 2017/18", October 2012

<sup>54</sup> Yarra Valley Water, "Servicing Growth Water Plant 3 (2013/14-2017/18)", October 2012, p.22

<sup>55</sup> Yarra Valley Water, "Servicing Growth Water Plant 3 (2013/14-2017/18)", October 2012, p.11

**Table 34: Overview of growth related capital expenditure, South East Water (\$M)**

Total capital expenditure	1,134.7
Total growth capital expenditure (excluding alternative water and sewerage backlog)	438.1
<b>Major projects</b>	
Boneo Sewerage Treatment Plant capacity upgrade	47.5
Mt Martha Sewerage Treatment Plant sludge upgrade	22

Essential Services Commission, "Water Price Review 2013-14 to 2017/18 Financial Model Template"

South East Water's capital growth expenditure is characterised by numerous relatively small investments (such as mains and pipes) to service projected growth in the south eastern growth corridor (which includes the Dandenong, Officer, Cranbourne, and Clyde areas) and city infill areas, such as Southbank, Fishermans Bend, Dandenong and Frankston. To a lesser extent, the growth capital expenditure proposed is also comprised of large, one-off projects, namely:

- The Boneo Sewerage Treatment Plant capacity upgrade (\$47.5 million) – this project will upgrade the existing plant, that is currently very near organic and hydraulic capacity; and
- The Mt Martha Sewerage Treatment Plant sludge upgrade (\$22 million) – this project will ensure that the plant has capacity to process all sludge generated, as it has currently almost reached capacity, and ensures that the sludge meets EPA requirements.

All of South East Water's proposed growth capital expenditure for the third regulatory period has been assessed by South East Water against the population growth forecasts as outlined in the four policy and growth documents produced by third parties, as listed below:

- Victoria in the Future 2008;
- Victoria in the Future 2012;
- Urban Development Program 2010; and
- Urban Development Program 2012.<sup>56</sup>

To further support the proposal of growth capital expenditure as a result of the population growth forecasts as outlined in the documents above, South East Water produced the following documents to support the procurement of growth capital in the third regulatory period:

- capacity assessments<sup>57</sup>

<sup>56</sup> South East Water, "2013-18 Water Plan", October 2012

<sup>57</sup> South East Water, "Memorandum: Boneo STP Capacity Assessment: Solids Stream", May 2011

## Capital expenditure analysis

- risk and contingency plans<sup>58</sup>
- master plans.<sup>59</sup>

These documents authored by South East Water, as well as the primary, independently-authored documents listed above, were provided to us as part of South East Water's evidence for the justification of the proposed expenditure.

### ***City West Water's proposed growth capital expenditure***

Excluding alternative water (which is considered in Section 6.3) City West Water is proposing to undertake \$125 million<sup>60</sup> of growth related capital works in Water Plan 3, accounting for 16% of City West Water's overall proposed capital expenditure.

**Table 35: Overview of growth related capital expenditure, City West Water (\$M)**

Total capital expenditure	795
Total growth capital expenditure (excluding alternative water)	125
Major projects: none	

Source: Essential Services Commission, "Water Price Review 2013-14 to 2017/18 Financial Model Template"

City West Water's capital growth expenditure is characterised by numerous relatively small investments (developer reimbursements for the provision of sewer and water services to residential lots) within programs of works to service projected growth in Melbourne's west, which includes the Melton Growth Area, Wyndham North Growth Area and the West Werribee Growth Area. There are no material standalone projects outside of these programs of work.

The key drivers behind City West Water's proposed growth capital expenditure are the population growth forecasts for the three named growth areas, as per the Victorian Government's Melbourne @ 5 Million planning statement.<sup>61</sup> Additionally, City West Water's growth expenditure has been determined with regard to:

- Victoria in Future (2012)
- the 2005 Urban Development Program
- historical growth trends
- hydraulic modelling of demands placed on new and existing system
- optimal integrated servicing solutions to meet demand

<sup>58</sup> Kellogg Brown and Root Pty Ltd, "Boneo Risk and Contingency", 22 November 2011

<sup>59</sup> SKM, "Koo Wee Rup and Lang Lang Sewerage Master Plan. Stage 2 Report", 19 October 2012

<sup>60</sup> This figure was derived from data provided by City West Water that covered only 80% of the proposed expenditure, despite our requests for 100%.

<sup>61</sup> Sinclair Knight Merz, "Alternative Water Infrastructure Servicing Plans for Urban Growth Boundary (West)": Assessment and Recommendation", Final v2, October 2012

- estimates of the value of developer delivered infrastructure.<sup>62</sup>

Additionally, City West Water's proposed capital expenditure on growth projects has been based on a Western Melbourne servicing strategy, produced by a third party.<sup>63</sup>

Using the above documents as forecasts for population growth, City West Water then undertook further analysis to determine the most economically feasible capital options that can be procured to meet predicted growth. This analysis includes options assessments and various development plans<sup>64</sup>. City West Water also engaged the services of external parties to provide such reports<sup>65</sup> - including Melbourne Water and its contractors.<sup>66,67</sup>

The primary, independently authored documents, as well as City West Water's own documentation, were provided to us as part of City West Water's evidence for the justification of its proposed expenditure.

### ***Western Water's proposed growth capital expenditure***

Excluding alternative water (which is considered in Section 6.3) Western Water is proposing to undertake \$140.16 million of growth related capital works in Water Plan 3, accounting for 56% of Western Water's overall proposed capital expenditure<sup>68</sup>.

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<sup>62</sup> City West Water, "Water Plan 3. Price Review 2013-2018", October 2012

<sup>63</sup> GHD, "Melbourne Water. Western Melbourne Servicing Strategy. Report on options Assessment", January 2012

<sup>64</sup> City West Water, "Feasibility Reports Guide", 2012

<sup>65</sup> SKM, "Alternative Water Infrastructure Servicing Plans for Urban Growth Boundary (West). Assessment and Recommendation", October 2012

<sup>66</sup> Melbourne Water, "Bulk Potable Water Servicing Plan for Western Melbourne: For City West Water and Western Water Growth Areas Supplied from Melbourne Water's System", July 2012

<sup>67</sup> GHD, "Melbourne Water. Western Melbourne Servicing Strategy: Report on Options Assessment", January 2012

<sup>68</sup> PwC analysis

**Table 36: Overview of growth related capital expenditure, Western Water (\$M)**

Total capital expenditure	251.9
Total growth capital expenditure (excluding alternative water)	140.16
Major projects	
Sunbury Recycled Water Plant (RWP) <sup>69</sup> upgrade	33.1
Surbiton Park RWP upgrade	8.8
Bacchus Marsh Recycled Water Servicing Strategy, including the individual projects of:	
Bacchus Marsh Winter Storage Lagoon	5.3
Avenue of Honour rising main	4.4
Grant Street sewerage pumping station	2.1
Sunbury additional water storage	4.8

Essential Services Commission, "Water Price Review 2013-14 to 2017/18 Financial Model Template"

Western Water's capital growth expenditure is characterised by numerous relatively small investments (e.g. mains and pipes) to service projected growth in Melbourne's west (including the growth areas of Sunbury, Melton and Toolern), and to a lesser extent larger projects, such as:

- Sunbury Recycled Water Plant (RWP) upgrade (\$33.1 million). This project will increase the capacity of the plant, allowing it to cater for the forecast increase in flow, and will ensure the plant is able to treat effluent to a high quality.
- Surbiton Park RWP upgrade (\$8.8 million). This project will expand the existing plant's capacity to cater for increasing incoming wastewater generated from the Melton, Rockbank and Eynesbury growth areas.
- Bacchus Marsh Recycled Water Servicing Strategy, including the individual projects of Bacchus Marsh Winter Storage Lagoon (\$5.3 million), the Avenue of Honour rising main (\$4.4 million) and Grant Street sewerage pumping station (\$2.1 million). These projects will provide supply to a proposed new zone in the development surrounding South Sunbury.
- Sunbury Additional Water Storage (\$4.8M). This project will address water storage capacity limitations and defer augmentation of bulk transfer systems.

As such, all proposed growth capital expenditure for the third regulatory period has been proposed by Western Water in response to the population growth forecasts as outline in the following documents:

<sup>69</sup> Western Water uses the term "recycled water plant" with regard to plants which treat sewerage to be discharged in accordance with EPA standards. In this context, recycled water plants do not treat water to class A standard which can be used for potable water substitution purposes. For this reason, we have included these plants here as part of our analysis of growth expenditure, rather than alternative water expenditure which is considered in section 6.3.



## Capital expenditure analysis

- Growth Areas Authority
- Western Water's Growth Strategy
- WSDS demand forecasts
- Western Water's Regional Action Plan and Asset Management Strategy<sup>70</sup>

The context for Western Water's proposed growth works is the Victorian Government's Melbourne @ 5 Million policy document, where it is anticipated that by 2030, an additional 111,385 serviced lots will be required to cater for growth in the areas of Sunbury, Melton and Toolern.<sup>71</sup>

The following strategies were approved by the Western Water Board, and form the foundation for the capital works plan for the third regulatory period:

- Western Water Growth Strategy
- Class A Strategy Water Plan 2013-2018 (Board Report)
- Melbourne @ 5 Million Servicing Strategy
- Water Supply Demand Strategy.<sup>72</sup>

In applying these strategies, Western Water then conducts various project analyses. For example, a detailed business case is produced for projects likely to be included in the new Water Plan. These business case reports include:

- project need
- associated risks
- risk rankings
- proposed benefits
- options assessment
- project time lines; and
- cost estimates.

In addition to the business case, Western Water engages an external party to conduct Monte Carlo risk analyses on proposed growth capital expenditure projects.<sup>73</sup>

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<sup>70</sup> Western Water, "Water plan 2013-2018. Final Submission", October 2012

<sup>71</sup> Western Water, "Forecasting Growth. Western Water Growth Strategy: Final Draft Report", December 2011

<sup>72</sup> Western Water, "Water plan 2013-2018. Final Submission", October 2012

<sup>73</sup> CMP Consulting Group, "Risk Based Cost Report: Sunbury RWP Upgrade", 4 October 2012

The documents authored by Western Water and its consultants, as well as the primary documentation authored by independent bodies, were provided by Western Water to us as part of Western Water's evidence for the justification of the proposed expenditure.

### *6.1.2 Analysis of water companies' proposals for growth capital expenditure*

#### **Analysis of project/program's justification**

The majority of the water companies' justifications for growth capital expenditure are based upon, but not limited to, the population growth forecasts as detailed in the documents listed above, as well as their own individual project analysis.

We reviewed:

- the independently authored documents which provide evidence of projected population and development growth
- the consistency of, and link between, the independently authored documents and the water companies own documents, such as growth strategies and individual project business cases

and generally are satisfied that:

- the independent reports provide a justification basis for the water companies' proposed expenditure, given that these forecasts are the product of third parties independent of the water companies
- the process by which the water companies' translate these population forecasts into programs of works is reasonable
- the documentation also provides justification of individual large projects, given the independent growth forecasts.

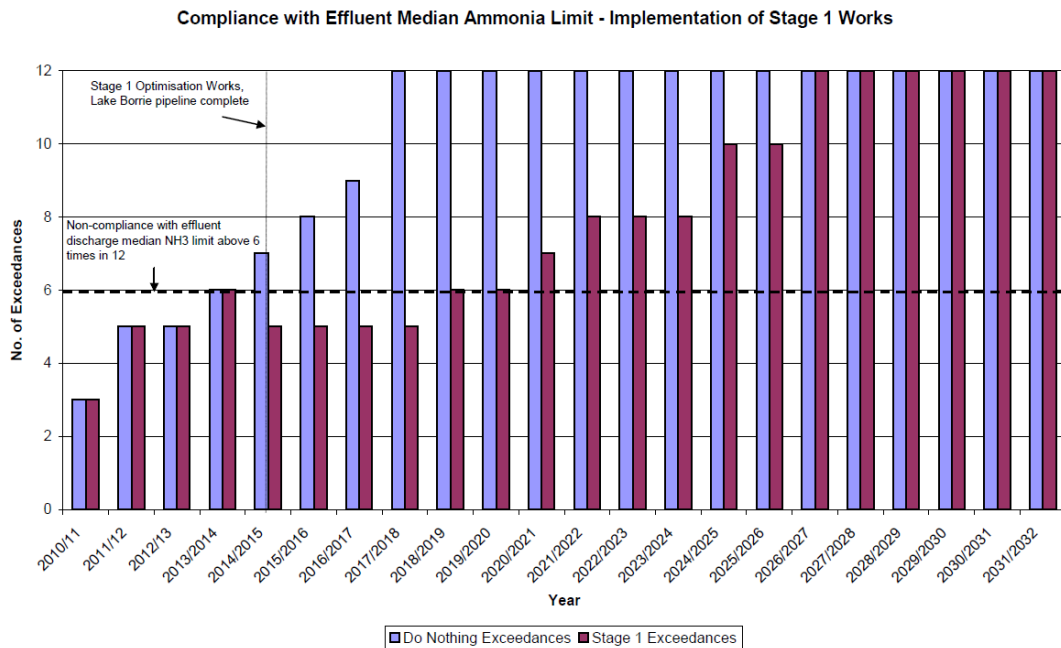
The exception to this is the case of Melbourne Water's Western Treatment Plant capacity upgrade. This project is not fully justified, based on the evidence available to us. However, as we became aware of this matter late in our review we were not able to test our concerns with Melbourne Water. As a consequence, we have recommended to the ESC to pursue further with Melbourne Water whether this project is justified in the time between the draft and final decisions. Our concerns about the justification for the project are as follows.

- In Melbourne Water's initial planning document<sup>74</sup> (the "business needs identifier", or BNI), the evidence considered by Melbourne Water suggested that Melbourne Water would only breach its ammonia discharge requirements in the period from 2020/21, which is reproduced in Figure 3 below. Notwithstanding this, the BNI concluded that the project would need to be completed by the end of 2018/19, one year earlier than it appeared to be required.

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<sup>74</sup> Business Case – WTP Treatment Capacity Augmentation St 2 Business Need Identifier, P8, Melbourne Water

**Figure 3: Melbourne Water’s BNI modelling of forecast compliance with EPA discharge limits**

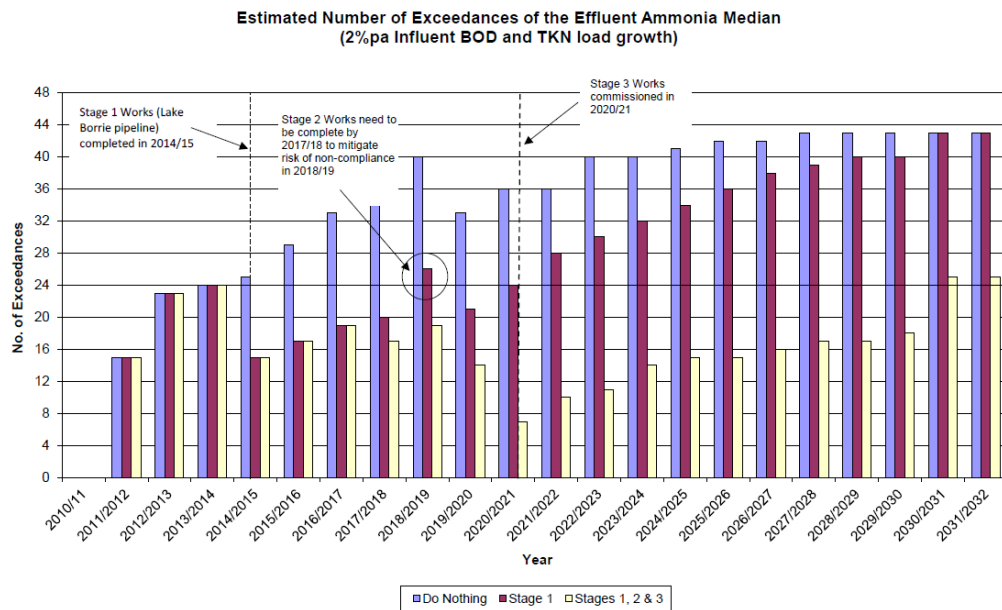


**Figure 2 Modelled Compliance with EPAV Effluent Median Ammonia Limit**

- In Melbourne Water’s subsequent and more detailed analysis<sup>75</sup> (the “preliminary business case”, or PBC), it proposed that the project be completed two years earlier than originally planned, that is by the end of 2016/17. However, again, this timing appeared one year in advance of its need, with the first exceedance of its discharge requirements in the absence of the project to occur in 2018/19. In addition to this, the analysis presented by Melbourne Water suggests that this timing is driven by the assumption that there will be a material, one-off spike in ammonia discharges in 2018/19, with the existing capacity able to meet discharge requirements without augmentation in the following two years. This is shown in Figure 4. This forecast one-off spike in ammonia discharge was not commented upon in the document.

<sup>75</sup> Business Case– WTP Treatment Capacity Augmentation St 2 Preliminary Business Case, P8, Melbourne Water

**Figure 4: Melbourne Water’s PBC modelling of forecast compliance with EPA discharge limits**



**Figure 2 Modelled Compliance with EPAV Effluent Median Ammonia Limit**

We note that although one-off events are commonplace in recorded outcomes (for example, inflows will depend on weather), it is less common for forecasts to assume one-off events. Given the unusual forecasts that drive the timing of the project, we recommend that it be assessed further, as noted above. We note that there are three potential options for the project.

- First, it may be that there is a sound reason for the spike, in which case Melbourne Water’s proposal should be accepted (assuming that there is no potential to negotiate with the relevant environmental regulatory a derogation from this compliance obligation, for this single year).
- Secondly, it may be that the one-off event is the result of an error or otherwise unreasonable, in which case it may be that the project could be deferred by up to 3 years.
- Thirdly, it may be that there is an error in the figure above, but that the error lies in the period after the one-off event (so that the event is not one-off, but was forecast as a new level), in which case Melbourne Water’s proposal should also be accepted (and indeed would be more justified).

Lastly, it is observed that the PBC also comments that the total nitrogen discharge will be within 5 per cent of the allowed amount by 2016/17, which Melbourne Water comments supports this timing<sup>76</sup>. We observe that an alternative view would be that the 5 per cent of capacity available at 2016/17 would be sufficient to cope with at least two additional years of growth.

Melbourne Water also highlighted that upon subsequent analysis undertaken after the submission of its Water Plan, the business identified a number of changes to its original

<sup>76</sup> Business Case– WTP Treatment Capacity Augmentation St 2 Preliminary Business Case, P9, Melbourne Water

capital expenditure forecast, totalling a net reduction of \$43.1 million (with increases in some areas being more than offset by decreases in others). We accept these changes, based on the likelihood that forecasts are likely to improve over time as project planning progresses and costing analysis becomes more accurate.

With regard to growth capital expenditure, Melbourne Water has identified that:

- the St Alban Werribee Pipeline Stage 2 can be deferred for one year based on a review of Melbourne Waters' capacity to deliver the project, and also that a revised design allows for capital savings.
- A decrease in the quantum of land development related to waterways and drainage, resulting in a decrease of forecast expenditure by \$30.7 million.

Given the reliance placed by all the companies on projected population growth, if the ESC or its demand forecasting consultants recommend changes to the growth forecasts, we expect the water companies' growth related capital expenditure forecasts also to change.

### **Analysis of options assessment**

We have examined the process by which options are assessed, and examined whether these processes have been executed in practice for a sample of large or high risk projects. We detail our findings of the options analysis for each company below.

#### **Melbourne Water**

Where an options analysis was applicable for a project, the pros and cons for each option were noted followed by a NPV/net present cost (NPC) financial analysis. While a triple bottom line (TBL)/ multi-criteria analysis (MCA) was used to evaluate the options on a range of criteria, for all reviewed projects, the option with the lowest NPV was selected. Evidence of this decision making strategy being implemented by Melbourne Water is summarised below for a selection of projects reviewed:

- Western Treatment Plant (WTP) Capacity Augmentation Stage 2
  - An NPV analysis was undertaken to assess cost advantages between options and a triple bottom line (TBL)/multi-criteria analysis (MCA) was used to evaluate the options on a range of criteria. The preferred option had the lowest NPV, met all key drivers, and maximised use of existing assets. It had the greatest MCA point score based on comparisons of financial, social and environmental effects.
- St Albans Werribee Pipeline Stage 2
  - City West Water identified to Melbourne Water that an upgrade of the transfer system from St Albans is required to meet future peak day demands due to the significant growth in the Wyndham area. The strategy to address this issue was to construct a pipeline in two stages; this strategy was approved in 2006. Stage one was completed in 2008/09 with stage 2 deferred from Water Plan 2 to Water Plan 3. A review of historical documentation associated with this project indicated the assessment of various pipeline routes. The Preliminary Business Case revisited the alignment options due to possible changes of demands, with pros and cons highlighted for each option and the elimination of options that did not meet the required project outcomes. An NPV analysis was undertaken at the PBC stage, and the selected option had the lowest NPC.
- WTP Sludge Drying Augmentation
  - Options were developed from an options investigation undertaken during the development of the WTP Sludge Processing Strategy. An NPV analysis was undertaken to assess cost advantages between options, and a multi-criteria analysis (MCA) was used to evaluate the options. The preferred option was the

minimum works option, which also had the lowest NPV and the greatest MCA point score. Melbourne Water has stated an intention to reassess the plant capacity during Water Plan 3, and that opportunities for construction staging will be identified.

Melbourne Water's Capital Management Process and Capital Management Procedure summarise the approval gateways through which a project must pass prior to obtaining business case approval. The system assigns more rigorous review (a greater number of gateways) for major projects than for minor projects, as outlined in Figure 2 on page 76. The documented procedure includes the use of TBL assessment for all projects at the BNI stage, and additional TBL assessments for major projects at later gateways. Based on the documents reviewed, Melbourne Water has demonstrated an adherence to the documented procedure and for the projects reviewed has consistently selected the lowest NPV options. For this reason we consider the Melbourne Water approach to options assessment reasonable, and do not recommend any adjustment to its capital expenditure allowance.

During our interviews with Melbourne Water, the process used by Melbourne Water in conjunction with the other water businesses to determine project prioritisation and rationalisation opportunities was described, and a presentation was provided<sup>77</sup>. This identifies three types of projects:

- high risk projects that required funding
- low risk projects that are not recommended for funding
- a 'grey area' including projects that require further consideration, on the basis that the Water Plan 3 capital investment amount (determined based on pricing, funding, and delivery limitations) will limit the number that can be addressed.

Our concerns with this approach are further discussed in our assessment of Melbourne Water's renewals expenditure, in section 6.4. With specific regard to growth expenditure, we are satisfied that the process for selecting options for growth projects and programs is robust, and do not recommend any adjustments to the growth expenditure based on this assessment of options.

### Yarra Valley Water

Yarra Valley Water has provided evidence of a structured process<sup>78</sup> for conducting options assessments, although the templates had been utilised to differing levels of detail for the different projects reviewed. The Expenditure Proposal template requires a project summary, and details of the options assessments that preceded the selection of the preferred option. In all cases the options considered were listed, and the NPCs for each option were listed (or explanations provided if an option was removed from consideration). The reporting of TBL assessment outcomes was not always consistent (in some cases TBL outcomes were reported, in some cases NPV outcomes were reported); however, in all cases the selection of the preferred option appeared justified (e.g. due to prohibitive cost of the alternatives, or due to inability of alternatives to meet the business objectives). Evidence of this decision making strategy being implemented by Yarra Valley Water for a selection of projects reviewed is summarised below:

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<sup>77</sup> 'Prioritisation during the planning process', provided by Melbourne Water

<sup>78</sup> 'Expenditure Proposal template', provided by Yarra Valley Water

- While a Business Case for Amaroo Branch Sewer (similar to that provided for Epping Branch Sewer Tunnel Extension) was not provided, the Expenditure Proposal<sup>79</sup> lists three options for the design of the Amaroo Branch Sewer Section. Of these options (gravity sewer, 100% treatment and reuse, and pumped sewer), treatment and reuse was not a technically feasible solution. The lower NPC and lowest operational risk option of the two remaining options was selected (gravity).

Yarra Valley Water also included a Northern Growth Area Sewerage Outfall Options Assessment<sup>80</sup> that appears to consider Amaroo Branch Sewer (as a gravity sewer) against other options for servicing the region. The review found that Amaroo (as a gravity sewer) had the lowest net present cost, and offers the lowest operational and safety risks. This Growth Area options assessment process was subject to NPC analysis and MCA. From an engineering perspective the preferred option (gravity sewer), appears reasonable and is supported by the outcomes of an NPC assessment. The Northern Growth Area assessment shows evidence that this option is the lowest lifecycle option considered at this stage.

- A Business Case was provided for the Epping Branch Sewer Tunnel Project providing further detail on the options assessment. Options were subject to an NPC and TBL comparison; however it did not include evidence of a business-as-usual scenario or other regional solution (which we would generally consider to be best practice even if these options can be eliminated early). However, it is apparent from a different project document that the planned residential development is high density and is not capable of on-site management and containment, and thus we consider that the exclusion of this lower capital cost option from the assessment is due to early elimination rather than oversight

The preferred option had the highest TBL score, but was not the lowest NPC. Yarra Valley Water justified this decision by stating that the cost saving (\$1.5 million) did not warrant the extra operational and environmental risks associated with the pumped (alternative) option. We consider the approach by Yarra Valley Water to be reasonable, given:

- the <3% NPC difference between the two highest TBL scoring options is negligible given the overall value of the two options under consideration and due to the estimated +/-50% order of accuracy (see the below section on Cost Estimates for further detail) effectively obscuring the slight difference.
  - The TBL assessment including issues that, while reasonable to be considered as part of the options assessment due to regulatory obligations, were not easily quantified in a direct NPV comparison.
- Lockerbie Branch Sewer: The Wallan Sewerage Treatment Plant (STP) Upgrade Lockerbie Branch Sewer report<sup>81</sup> describes four options considered in the development of this project. The options included 100% reuse from the existing STP, 100% reuse from an upgraded STP, sewer mining from the STP and excess flow to the metropolitan system, and 100% flow to the metropolitan system (allowing flexibility to decommissioning the STP). The outcome of an NPC assessment was that the latter two options were almost equivalent costs (within 2%, which is negligible given the likely

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<sup>79</sup> Yarra Valley Water's 2013/14 – 2017/18 Water Plan Expenditure Proposal, Amaroo Branch Sewer, provided by Yarra Valley Water

<sup>80</sup> Northern Growth Area Sewerage Outfall Options Assessment, provided by Yarra Valley Water

<sup>81</sup> Wallan STP Upgrade Lockerbie Branch Sewer, provided by Yarra Valley Water

order of accuracy of costing at this stage). The selection of option 4 as the preferred option, despite it having a slightly larger infrastructure cost than option 3 (due to a larger pipeline diameter), is considered reasonable by the reviewers given:

- the negligible difference in cost
- the added network flexibility provided by having a larger pipeline diameter (e.g. allowing for diversion to the metropolitan system as a longer term strategy, for example in the case of an eventual decommissioning the Wallan STP)

Yarra Valley Water has justified the absence of review of pipeline route alternatives by clarifying that the pipeline alignment shown on the plans provided represents the shortest possible distance between the Wallan STP and the Amaroo Branch Sewer and as such, in that location any alternative alignment is likely to be more costly.

Yarra Valley Water has a standard process to identify and assess project options, and in the examples reviewed where there was little to differentiate the cost of the selected option from the nearest alternatives, Yarra Valley Water has described the engineering judgement used to make a final selection. In addition, we note that the options considered appeared reasonable from a technical perspective. While the level of documentation of the options assessment was somewhat inconsistent, there is no evidence to suggest that the outcomes would be differ significantly if subject to further review (e.g. through a one year deferral to improve documentation). As a result, no adjustments to expenditure on the above projects are recommended.

#### South East Water

For the projects reviewed, South East Water has followed an options assessment process that identifies a number of appropriate technical options, and typically uses an MCA to shortlist to two options. The shortlisted options are compared on the basis of NPC, and in the cases reviewed, the lowest NPC option (of the shortlisted options) was selected. Evidence of this decision making process being implemented by South East Water for a selection of projects reviewed is summarised below:

- Boneo STP capacity upgrade: The STP was constructed in 2009 and included provision for future stages to cater for expected customer growth. The proposed project (expansion of the existing STP) is consistent with the original design intent. South East Water noted that an alternative option of providing primary sedimentation and anaerobic sludge digestion was considered and will be included in an options assessment (yet to be completed), however this option has a higher capital cost than the logical expansion of the existing plant, and South East Water opted to base the Water Plan 3 submission on the lower capital expenditure option. The alternative option will only be pursued if further assessment shows it to have a lower NPC than the lower capital expenditure option. Because this project is essentially the implementation of earlier design effort, the approach adopted by South East Water is reasonable.
- Mt Martha treatment plant - long term sludge upgrade: Four options for managing sludge in the long term were addressed in the long term sludge strategy document, all options appearing reasonable based on ability to meet the technical objective. These options were presented to a stakeholder reference group, the outcomes of which informed a TBL assessment. The preferred option scored significantly better than other options in the TBL assessment, and a review of NPC outcomes indicates that the NPC of the preferred option was comparable to the other lowest NPC option, processing offsite. The approach to the options assessment appears reasonable and demonstrates a consideration of multiple feasible options from a range of perspectives.

Based on our review of the documentation provided by South East Water, it is apparent that the business considers NPC in its assessment of options, and for the projects reviewed South East Water selected an option with an NPC either at or comparable to, the lowest NPC option, with reasonable explanations of the selection of projects which are not the lowest



NPC. This approach is reasonable and there is no apparent basis for reducing the proposed expenditure.

### City West Water

Our review of the City West Water growth projects is structured slightly differently to the other water businesses, because the City West Water growth projects appeared in the Water Plan 3 list of top ten projects as a program of works linked in with supply to growth areas, rather than discrete projects. The Wyndham North Growth Area is an example of City West Water's region wide approach to planning, and the demonstration of linkage between growth forecasts and asset planning.

- Wyndham North Growth Area: City West Water has provided an example of how asset staging and development is linked to population planning, which states that the provision of interim supply to new development areas from spare capacity of existing systems is always investigated. Interim supply options will be further refined as more information becomes available in regards to the location and timings of the new developments. A detailed assessment and shortlisting of options was undertaken, including option refinement considering: capital costs, operating cost (mechanical equipment), net present cost (NPC), system flexibility, technical feasibility, constructability, and location of development. High level conceptual options were developed for water supply and sewerage. The most favourable option for each component combined to form the basis of the preferred overarching serving option, with City West Water then determining the most efficient staging option.

As a result of this example and the process by which City West Water undertakes its options analysis, we recommend no changes to the proposed expenditure. However, we note that this comment applies only to the water supply component of the growth expenditure (dual supply is assessed as part of our assessment of alternative water in section 6.3).

### Western Water

We considered a number of Western Water's individual projects. Western Water provided business cases that demonstrated a consistent approach to options assessment. The decision making strategy being implemented by Western Water is discussed below for a selection of growth related projects:

- Sunbury Recycled Water Plant (RWP)<sup>82</sup> Upgrade: Western Water noted that the existing treatment plant is currently nearing treatment capacity and developments commencing in 2013 will increase flows to the RWP beyond the design capacity. Western Water predicts the treatment capacity of the plant to be exceeded in 2013/14. Consequences of deferring the upgrade beyond Water Plan 3 were considered and it was concluded by Western Water that this was not a viable option. Options to reduce flows were considered to address the limited capacity at the RWP. These included diverting flows, constructing a new plant at an alternate site, constructing a new plant adjacent to existing plant or augmenting the existing plant. Options analysis was undertaken, considering costs (NPC) and environment, social, operability and risks. The option with the lowest NPC was selected. A strategy for staging the upgrades to coincide with forecast growth was considered, and the option with the lowest NPC was selected.

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<sup>82</sup> Western Water names their treatment plants "recycled water plants", in that the product of the plants is class B or C recycled water. We note that we do not consider these to be "alternative water plants" as they do not produce water that is used as a substitute to potable water.

- **Surbiton Park RWP Upgrade:** Western Water expects inflows to the RWP will exceed the existing plant capacity by 2014. Consequences of deferring the project beyond Water Plan 3 were considered and it was concluded by Western Water that this was not a viable option. This project is Stage 3 of a four staged upgrade to achieve a plant capacity of 18.3 ML/day, and will include a sludge thickening upgrade as well as construction of additional digestion capacity. Because this project is essentially the implementation of earlier design effort (and likely subject to option assessment in an earlier water plan), the approach adopted by Western Water appears reasonable.
- **Bacchus Marsh Recycled Water Servicing Strategy:** The Strategy identified a long list of options for addressing issues with effluent disposal, continuity of recycled water supply to customers, and flooding. The outcome for the investigation was the selection of the preferred strategy, which includes a number of projects including the upgrade of the Winter Storage at Bacchus Marsh RWP, upgrade of the Bacchus Marsh RWP, duplication of the Avenue of Honour rising main, followed by upgrade of the Grant Street Sewerage Pumping Station (SPS) and rising main when required.

The options assessment originally considered the advantages and disadvantages of eight of the options, and the timing of works. Capital expenditure and NPV were also considered. The preferred option had a mid-range NPC when compared with the alternatives, and at least three alternatives had lower NPCs. Western Water justified the selection of the preferred option by demonstrating that the alternative options either fail to reduce the risk of a EPA regulatory breach to an appropriate degree, or have significantly longer construction periods (36+ months compared to the preferred option having a construction period of 18+ months). Based on the documentation viewed, it was unclear whether the urgency for this project is such that a 36+ month delivery window is unacceptable, and whether the other advantages of the preferred option (e.g. reduced risk to business) are adequate to discount the lower NPV options from further consideration. For clarity, Western Water could better justify the selection of the higher NPC option by using an MCA assessment to quantifiably rank the available options (and discount those that do not meet the business's needs).

- Based on our review of the Strategy, we note that the winter storage lagoon and Bacchus Marsh RWP upgrade were common to the preferred option as well as the lower NPV alternatives, and that the preferred option avoids the risks to the business (described in the paragraph above) that the other options do not address. Based on the discussion provided in the Bacchus Marsh Recycled Water Servicing Strategy we consider the selection of the non-lowest NPC option to be justified in this case, and recommend no further adjustment to the expenditure on this Strategy proposed in Water Plan 3.
- **Sunbury Additional Water Storage - Bald Hill Tank:** Western Water forecast the current water storage capacity will be exceeded in 2015-16. As part of the Water Supply Strategy for Sunbury it was identified that increased storage is required to service growth. A number of sites were considered for the increased storage. The information reviewed did not include detailed options analysis (financial or TBL), however it appears that the preferred site was selected due to suitability to supply other new water zones, and to defer the augmentation of bulk transfer systems, which was an opportunity unique to the selected site. Our view is that this approach does not demonstrate an appropriate level of rigour around the options comparison process. Western Water has confirmed that work is currently being undertaken to provide more information regarding the decision to locate the tank at the preferred location, including an NPV. This is of particular importance given that the cost of pipe and land purchase could heavily impact the NPV assessment and ultimately the option selected. In the absence of this information, but acknowledging that the selected option will need to proceed, we recommend this project is delayed for one year to allow for Western Water to develop this analysis. Western Water has agreed with this recommendation at our Draft Report stage.

Furthermore, we recommend that the ESC reviews the prudence of the expenditure for this project undertaken between the start and the end of Water Plan 3, when determining the prices for Water Plan 4. Having undertaken this review, if the ESC determines that the expenditure in Water Plan 3 was imprudent, it should consider not rolling the relevant imprudent expenditure into the regulatory asset base at the start of Water Plan 4.

### **Analysis of delivery mechanism**

#### **Melbourne Water**

In Water Plan 3, Melbourne Water is moving from alliance based delivery to a design and construct approach as part of its new “Capital Delivery Strategy”. This new project delivery framework is currently being developed and has therefore not been reviewed by this team. The new arrangement will be ready to start by 1 July 2013.

99% of Melbourne Water’s capital expenditures and 88% (or 75% excluding VDP costs) of operating expenditures are contracted out and are therefore subject to competitive market processes that have the potential to drive significant efficiencies. Melbourne Water is currently tendering for specific aspects of its Capital Delivery Strategy. The approach will require Melbourne Water to develop an individual fit-for-purpose delivery strategy for major (>\$50 million) stand-alone projects.

Melbourne Water notes that the delivery strategy will bundle treatment plant and pipeline projects for delivery by three service providers competitively selected and operating under ‘framework agreements’. Other bundles of work related to waterways and water production are noted to be delivered using the existing Consultancy Services Panel and tendering processes.

During our interviews with Melbourne Water, it confirmed that the service providers will be required to provide fixed fee tenders for packages of work. Budget overruns will be carried by the service provider, and budget under-runs will be shared 70% to the service provider and 30% to Melbourne Water.

During the interviews Melbourne Water confirmed that the business case approval (BCA) include key project milestones. Melbourne Water confirms that it has considered the expenditure per year proposed via the new delivery system, and confirms that it can deliver the quantum of work as set out in Water Plan 3.

We are satisfied that Melbourne Water’s proposed delivery mechanism will result in Melbourne Water receiving competitive rates from the market. In addition, we note that the use of a three member panel will increase Melbourne Water’s capacity to deliver their Water Plan 3 proposals. As a result, no adjustments are recommended to the growth expenditure.

#### **Yarra Valley Water**

Yarra Valley Water completed the design of some designs (e.g. the Epping Craigieburn Tunnel) so that construction can be commenced relatively quickly if growth in the region proceeds faster than expected. This “shelving” of designs is a well-accepted method of ensuring projects can proceed quickly once the need for the project has been confirmed. It also allows for the on-going utilisation of design resources.

Yarra Valley Water documented that for sewer lines <300mm diameter, the developer will typically be responsible for design and construction of the asset. More specialised projects are designed by consultants outside of the Yarra Valley Water design panel and are competitively tendered.

Yarra Valley Water stated that it rarely specifies construction methods in designs unless there is a particular reason for doing so (i.e. a requirement to go underneath an environmentally sensitive area, a road or rail crossing etc.). This enables construction contractors to tailor their tenders to suit the equipment they have available to them and the

particular skills of their crews. Yarra Valley Water stated that this can result in additional cost savings.

Yarra Valley Water demonstrated a considered approach to major project delivery, including evidence of the consideration of a number of contracting strategies. No adjustment to its expenditure is recommended.

### South East Water

The reticulation network to service new developments is constructed by developers and donated upon implementation for management to South East Water - with the exception of shared works for broader development which is fully funded by South East Water. It is understood based on the interviews that the delivery model to be adopted for a number of Water Plan 3 projects is being reviewed and it is assumed that the new delivery model will be supported by the appropriate business case. As the delivery model is yet to be confirmed (an industry briefing is scheduled in March 2013), but noting that historically South East Water has demonstrated an ability to deliver their capital program, we do not recommend any alterations to the growth related capital expenditure.

### City West Water

During the interviews City West Water indicated that a competency based panel was used for one-off project contractors, and that projects were usually tendered as lump sum design and construct (D&C) bids, but that it was possible for unlisted tenderers to bid on works as long as they register for inclusion on the panel. City West Water does not appear to limit the number of tenderers submitting for a job. In the interview, City West Water stated that it is typical to receive more than six responses, often more (up to 10). This raises the question whether City West Water is incurring higher administration costs in reviewing so many tenders, and whether City West Water should consider limiting the tenderers for any one job to an invited list of three to four. However, no adjustments are considered to be necessary for the growth expenditure on the basis that these costs are likely to be immaterial compared to the capital value of the projects. We are otherwise satisfied that City West Water's proposed delivery mechanism is appropriate.

### Western Water

Western Water engages consultants for the development of designs, overarching strategy development, and construction supervision activities, and then engages the market separately for the construction portion of a project. The tenders are publically advertised. Project management is handled in house by Western Water's capital works division. This approach results in competitive tendering for design and construction activities, and as this approach is expected to drive down the price for these activities, there is no reason to recommend an adjustment to the expenditure.

## Analysis of cost estimation

### Melbourne Water

The source of the cost data, unit rates, and other line items used to generate the capital cost are based on information from past projects, with adjustments made to suit each case. The estimates have been completed by factoring known unit costs, and by estimating gross dimensions or quantities once conceptual or preliminary engineering has been completed. Indirect costs are factored using historical data and appear reasonable.

In general we noted an inconsistency between the estimates of the P50 cost of projects in the documents we reviewed and the capital expenditure reported in Melbourne Water's water plan. We consider that this inconsistency (observed across multiple projects) is likely due to the current Melbourne Water delivery mechanism, which relies on an evolving project development and costing rather than freezing the estimates at particular project stages. As a result, documents we reviewed often were a revision more current than the estimates used to generate Water Plan 3 (and are therefore likely to be more accurate). The differences were minor in most cases, and as such no adjustments are considered necessary.

### Yarra Valley Water

Growth project cost rates reports were prepared by a consultant (SKM) in collaboration with Yarra Valley Water's engineering staff.

Yarra Valley Water utilised the "CAPITAL EXPENDITURE curve spreadsheet" as the basis for estimating the cost for Water Plan 3, into which it is clear that Yarra Valley Water has put considerable effort into maintaining and updating the data in the spreadsheet.

The index rates for changing the cost of an asset to current dollars are taken from the Melbourne Building Price Index (MBPI) using Rawlinsons Construction Handbook 2011, which we consider to be a reasonable approach and an acceptable alternative to other approaches such as the use of the consumer price index published by the Australian Bureau of Statistics (ABS).

The costs are preliminary estimates (in the order of +/- 50% expected accuracy range) and as such do not represent accurate cost estimates for the project. This is to be expected given the early stage of project development.

It is noted that Yarra Valley Water does not use a Monte Carlo method for quantifying risks. As such, the risks associated with the figures in the water plan are unknown. We consider that a more prudent approach is to use a risk based methodology to determine preliminary costs. However based on our observations of Yarra Valley Water's cost forecasting, along with their extensive data base of past project costs, no adjustments to the Water Plan 3 expenditure are recommended.

### South East Water

The review found that the project estimates were undertaken by appropriately qualified estimators from reputable consultancies with some being produced under the Alliance arrangement (which are equivalent to a firm tender price being subject to the same level of rigour including review, sign-off, and approval by Alliance management and governance structures). This approach to cost estimation is reasonable, and as such no change is recommended to the value of the cost estimates.

### City West Water

City West Water estimates the cost of future pipelines based on the actual construction rates from recently constructed projects. City West Water then includes design (10%) and contingency (25%) costs to determine total construction rates. The construction rates (CPI adjusted) from past pipelines projects provide a reasonable basis for estimating future projects, which we consider to be a reasonable approach and an acceptable alternative to other approaches such as the use of the MBPI using Rawlinson's Construction Handbook 2011. Therefore, it seems reasonable for these cost estimates to be included in Water Plan 3.

It is noted that City West Water did not provide clear evidence of a Monte Carlo method for establishing P50 estimates. However, City West Water has used appropriate contingency allowances (such as the 25% contingency described above) which we consider to be appropriate for a P50. As such, the risks associated with the figures in the Water Plan 3 are unknown. However, noting that the estimates have been produced using an appropriate source of information/cost data with appropriate adjustments for indirect costs, no change is recommended to the value of the cost estimates.

### Western Water

The basis of estimate (description of how the estimate was generated) and the sources of quotes, unit rates etc, used to generate the capital cost were not clearly documented in the information provided to us by Western Water.

However, our analysis suggests that the unit costs included in the cost estimate for pipeline projects appear reasonable for the current stage of project development. The additional project costs (indirect costs) applied to majority of the projects is reasonable and a standard procedure has been followed when applying these indirect cost allowances. A Monte Carlo risk analysis has been carried out for each project.

We note that for the Sunbury RWP Upgrade the detail provided by the business is at a very high level with limited supporting documentation. The factors applied to the base cost appear somewhat underestimated, and a calculation error was noted within the cost estimate spreadsheet. Were these two issues addressed, we consider the estimate in the supplementary information may be higher than that requested in the Water Plan. We recommend no further adjustments to the expenditure amount, but highlight to the ESC the possibility that Western Water has underestimated its costs for this project.

### 6.1.3 Findings and recommendations

Based on the analysis above, we recommend:

- No alternations to Yarra Valley Water’s, South East Water’s or City West Water’s growth capital expenditure proposals.
- Alterations to Melbourne Water’s and Western Water’s proposed growth capital expenditure as outlined in Table 37 and Table 38
- That the ESC pursues further, in the time between the draft and final decisions, whether Melbourne Water’s Western Treatment Plant capacity upgrade is justified
- With regard to Western Water’s Sunbury Additional Water Storage Tank – Bald Hill, that the ESC reviews the prudence of the expenditure for this project undertaken between the start and the end of Water Plan 3, when determining the prices for Water Plan 4. Having undertaken this review, if the ESC determines that the expenditure in Water Plan 3 was imprudent, it should consider not rolling the relevant imprudent expenditure into the regulatory asset base at the start of Water Plan 4.

**Table 37: Recommended adjustments to growth related capital expenditure, Melbourne Water (\$M)**

<b>Recommended adjustments</b>	2013/14	2014/15	2015/16	2016/17	2017/17	Water Plan 3 total
St Alban Werribee Pipeline Stage 2	-69.20	41.53	8.15	0.00	0.00	-19.51
Waterways and drainage - Land Development Change	3.32	-2.19	-9.29	-10.60	-11.93	-30.69
<b>Total recommended adjustments</b>	<b>-65.88</b>	<b>39.34</b>	<b>-1.13</b>	<b>-10.60</b>	<b>-11.93</b>	<b>-50.20</b>

**Table 38: Recommended adjustments to growth related capital expenditure, Western Water (\$M)**

<b>Recommended adjustments</b>	2013/14	2014/15	2015/16	2016/17	2017/17	Water Plan 3 total
Sunbury Additional Water Storage - Bald Hill Tank	-0.2	0.2	0.0	-4.6	4.6	0.0
<b>Total recommended adjustments</b>	<b>-0.2</b>	<b>0.2</b>	<b>0.0</b>	<b>-4.6</b>	<b>4.6</b>	<b>0.0</b>

## **6.2 Sewerage backlog capital expenditure**

Backlog properties refer to those properties that are not connected to the main sewerage system and using septic tank systems to manage their waste. For South East Water, there are approximately 16,200<sup>83</sup> properties that remain on the backlog program, while Yarra Valley Water has 14,000 properties that remain on the backlog program. No other companies are proposing sewerage backlog capital expenditure in Water Plan 3.

### **6.2.1 Water companies' proposals**

#### **Yarra Valley Water's proposals for sewerage backlog capital expenditure**

Yarra Valley Water is proposing to connect 5,110 backlog properties to the main sewerage system over Water Plan 3.<sup>84</sup> The proposed capital expenditure for this program is \$97 million in Water Plan 3.

Yarra Valley Water states that the backlog project is driven by a State Government obligation which is outlined in section 33 of the State Environment Protection Policy (Waters of Victoria), requiring Yarra Valley Water provide a sewerage service to all properties which are identified by local Councils in their Domestic Wastewater Management Plans as being unable to contain their domestic wastewater onsite.

#### **Figure 5: Environmental Protection Policy (Waters of Victoria), Part 33**

##### Part 33, Sewerage planning

If reticulated sewerage is identified in a domestic wastewater management plan as the preferred option for improved domestic wastewater management, water authorities or water companies, in conjunction with the Environment Protection Authority and municipal councils, and in consultation with the local community, need to develop and submit to Government a sewerage management plan that:

- (1) reviews available wastewater management options;
- (2) identifies the preferred types and levels of sewerage services to be provided, together with costs and funding options;
- (3) identifies priorities and possible timelines for the provision of services;
- (4) identifies how the wastewater collected will be sustainably managed in accordance with the waste hierarchy; and
- (5) provides for a three yearly review of the plan and priority areas for sewerage.

Furthermore, Yarra Valley Water states that it is obliged to connect all backlog properties not connected to the main sewerage system by 2025, based on the previous government's

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<sup>83</sup> South East Water - Water Plan 3 - Top Ten project - CLASS Backlog program, p16

<sup>84</sup> Water Plan, Yarra Valley Water, p76

January 2006 statement to prioritise the replacement of septic tanks with a reticulated sewerage system over the next 20 years<sup>85</sup>.

Yarra Valley Water proposes to roll out the backlog program in a relatively consistent manner over Water Plans 1 to 6, in terms of capital expenditure, consistent with completing the backlog of all of the unsewered properties with sewerage systems by 2030<sup>86</sup>. Yarra Valley Water currently is making the case to relevant parties (such as the EPA) that extending the program to 2030 will allow more time to trial and implement improvements to servicing solutions resulting in lower costs.<sup>87</sup>

Yarra Valley Water is proposing to connect comparatively more properties in Water Plan 3 and Water Plan 4, which reflects its proposed prioritisation of connecting those properties which are most expensive to connect last:

**Table 39: Proposed backlog roll out, Yarra Valley Water<sup>88</sup>**

Period	Water Plans 1 & 2	Water Plan 3	Water Plan 4	Water Plans 5 & 6
Anticipated connections (properties)	3,900	5,110	3,709	4,531

***South East Water’s proposals for sewerage backlog capital expenditure***

South East Water proposes total sewerage backlog expenditure for Water Plan 3 of \$208 million.<sup>89</sup> South East Water argues that it is obliged to connect all backlog properties not connected to the main sewerage system by 2025, based on:

- EPA guidance for the 2008-2013 Water Plan<sup>90</sup>
- The previous Government’s commitment to completing the backlog program by 2025 (if not sooner where appropriate)<sup>91</sup>
- The current Government’s *Cleaner Yarra River and Port Phillip Bay Action Plan*<sup>92</sup>

<sup>85</sup> Yarra River Action Plan, Department of Sustainability and Environment January 2006, pp 4, 17, 20

<sup>86</sup> Water Plan, Yarra Valley Water, p76.

<sup>87</sup> Yarra Valley Water 2012, Water Plan 2013/14 to 2017/18, p79

<sup>88</sup> Yarra Valley Water 2012, Water Plan 2013/14 to 2017/18, p79

<sup>89</sup> South East Water - 10 year Capital expenditure program – 20121115, provided by South East Water

<sup>90</sup> Letter from EPA to South East Water, 1/10/2007, regarding the Draft 2008-2013 Water Plan. Letter provided by South East Water.

<sup>91</sup> Letter from John Thwaites MP (then Minister for Water) to South East Water, 5 July 2005, regarding the Metropolitan Backlog Sewerage Program. Letter provided by South East Water.

<sup>92</sup> *Cleaner Yarra River and Port Phillip Bay Action Plan*, Department of Sustainability and Environment October 2012, Priority 11, p19



Major projects within the sewerage backlog program for Water Plan 3 include:

- Southern Mornington Peninsular Backlog Sewerage Scheme (including the Customer Led Sewerage Program)
- Other backlog areas (Belgrave, Selby)

South East Water is proposing to accelerate the backlog program (versus its obligation to complete the backlog by 2025), through the proposed Customer Led Sewerage Program in the Sorrento/Portsea area. The program involves bringing forward construction of the main sewerage network in the backlog area compared to the conventional rollout program. This will allow properties to connect to the main sewerage system earlier than otherwise possible in a conventional rollout program, with a significant financial contribution to the program from those customers.

South East Water is proposing to connect 4,650 backlog properties to the main sewerage system during Water Plan 3:

- 3,500 properties on a standard connection basis<sup>93</sup>
- 1,150 properties on an early voluntary connection basis.<sup>94</sup> Early connections will incur a charge of approximately \$15,000 per property.

South East Water argues that bringing forward construction to allow early connections in the Sorrento/Portsea area results in the lower NPC that a conventional role out option. The lower NPC is driven by:

- customers paying (and being willing to pay) a substantial fee (up to \$15,000) to connect to the main sewerage system earlier than otherwise possible<sup>95</sup>
- lower construction costs through economies of scale.<sup>96</sup>

The table below outlines the proposed expenditure in Water Plan 3.

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<sup>93</sup> South East Water, Water Plan 2013-18, p36

<sup>94</sup> Customer Led Sewerage Program

<sup>95</sup> South East Water Top Ten Project – CLASS Sewerage Backlog, p16, Backlog low, medium, high options - 2 and 5 yr retic - 20130110

<sup>96</sup> South East Water Top Ten Project – CLASS Sewerage Backlog, p17

**Table 40: Proposed backlog expenditure (major backlog programs), Water Plan 3, South East Water<sup>97</sup> (\$M)**

\$m	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Southern Mornington Peninsular Backlog Sewerage Scheme	48.2	49.7	40.5	20.3	24.1	182.8
Other Backlog Areas (Belgrave, Selby)	12.9	7.6	0.0	0.0	0.0	20.5
Total	61.1	57.3	42.5	20.3	24.1	202.7

## 6.2.2 Analysis of water companies' proposals

### Analysis of justification of project/program

#### Yarra Water

We are satisfied with the obligation for Yarra Valley Water to complete its sewerage backlog by 2025, based on the evidence provided by Yarra Valley Water and also evidence provided by South East Water.

As noted above, Yarra Valley Water currently is seeking an extension to the requirement to complete its sewerage backlog program to 2030. Regardless of a change in the regulation, Yarra Valley Water's proposal to undertake a level of expenditure in Water Plan 3 that reflects a 2030 deadline does not breach its obligations (as Yarra Valley Water could accelerate its program in later water plans) and has a downward impact on customer bills. As such, we consider the backlog program in Water Plan 3 to be justified.

#### South East Water

We are satisfied with the obligation for South East Water to complete its sewerage backlog by 2025, based on the evidence provided by South East Water and Yarra Valley Water.

We also are satisfied that the customer led approach for the Southern Mornington Peninsula, in which construction of the main sewer is brought forward, is prudent, based on:

- evidence provided, which identifies substantial customer demand for the program to be brought forward, and customer willingness to pay additional for an accelerated connection<sup>98</sup>
- financial analysis indicating a lower net present cost (NPC) for the customer led approach in comparison to the conventional roll out (base case)<sup>99</sup>, driven by the demand for (and financial contribution because of) early connection

<sup>97</sup> South East Water - Water Plan 3 - Top Ten project - CLASS Backlog program, p25

<sup>98</sup> C00196 Southern Mornington Peninsular Backlog Sewerage Scheme – Final FTR rev, p23

<sup>99</sup> Backlog low, medium, high options - 2 and 5 yr retic - 20130110

- reasonable assumptions underpinning the financial analysis (i.e. the assumptions for uptake given the survey results, revenue generated through early connections and construction efficiencies appear reasonable)<sup>100</sup>

However, adjustments may need to be made by the ESC to proposed revenue (customer contributions) to reflect the anticipated revenue generated by uptake under South East Water’s ‘medium’ scenario, rather than its ‘low’ scenario currently adopted. Table 41 below outlines the estimated number of early connections under different scenarios.

**Table 41: Early connections scenarios, Backlog, South East Water <sup>101</sup>**

Scenario	Early connections
Low	1,184
Medium	2,160
High	3,140

We considered whether the timing of Belgrave and Selby investments could be pushed back, given that the Peninsula scheme will substantially reduce the number of outstanding backlog properties in comparison with South East Water’s 2025 target. However, given that an investment has already been made to reduce backlog in these areas, we are satisfied that the proposed timing for supplementary investment for these two backlog areas is reasonable<sup>102</sup>.

### Analysis of justification of scope

#### Yarra Valley Water

Yarra Valley Water has a backlog prioritisation model that was developed in partnership with all key stakeholders (including EPA, Melbourne Water, Government, and Councils). The model is populated with data by Yarra Valley Water, as well as supplementary data provided by Councils.

Prioritisation takes place prior to the start of each regulatory period to take into account any new information gathered by Councils over the previous regulatory period. Yarra Valley Water plans to complete their Sewerage Backlog Program in 2030, noting that Yarra Valley Water is taking on the risk that the extended program is acceptable to the relevant parties.

Yarra Valley Water has demonstrated that a number of options for addressing backlog were assessed and the lowest cost/ lowest risk option was selected, for example:

- **Warrandyte North Sewerage Project:** Yarra Valley Water assessed seven technical options for the North Warrandyte backlog program. The cost estimates for each option were calculated from concept designs prepared by Yarra Valley Water’s consultant. Yarra Valley Water confirmed that the hybrid system was the lowest cost and lowest risk solution, and best suited to the conditions at North Warrandyte, and allows the

<sup>100</sup> Backlog low, medium, high options - 2 and 5 yr retic – 20130110, C00196 Southern Mornington Peninsular Backlog Sewerage Scheme – Final FTR rev, p29

<sup>101</sup> C00196 Southern Mornington Peninsular Backlog Sewerage Scheme – Final FTR rev, p23

<sup>102</sup> South East Water - Water Plan 3 - Top Ten project - CLASS Backlog program, p22

majority of sewers to be constructed in road reserves (not within customer properties). The NPC analysis results are documented and show that the lowest NPC option has been selected.

Yarra Valley's approach to options analysis for sewerage backlog appears reasonable and there are no recommended adjustments.

#### **South East Water**

As discussed above in establishing the justification for the project, an NPV analysis demonstrated that the lowest cost option for sewerage backlog is the customer led approach.

Although South East Water's proposed backlog program for Water Plan 3 is dominated by the customer led approach, (identified as one of the top ten projects and accounting for almost 90% of the overall backlog forecast spend), South East Water note that backlog connections for a number of the smaller townships have yet to be prioritised. The remaining 10% comprises three other areas, one relating to the development in Officer and the others relating to works in Belgrave and Selby in which reticulation assets will have been installed by the end of Water Plan 2 and only require property connections.

The backlog area prioritisation process<sup>103</sup>, and appears to be a robust process including customer consultation.

#### **Analysis of delivery mechanism**

##### **Yarra Valley Water**

Yarra Valley Water noted during the interview that it has a limited appetite for the use of tier 2 and 3 contractors for delivery of the backlog program, preferring to use local contractors instead. As a result of this preference, the timing of the project rollout is somewhat limited by the capacity of the local contractors to deliver the work. However, Yarra Valley Water also noted that the slow proposed roll out means that the work will not be subject to increased prices to fast-track the works.

The use of local contractors is suited to the proposed roll out timeframe, and as such no alterations are proposed to Yarra Valley Water's expenditure proposals.

##### **South East Water**

South East Water has assumed that Customer Led Connections (CLCs) will likely occur in the Portsea, Sorrento and to a lesser extent, the Blairgowrie backlog areas. South East Water should monitor the appetite for CLCs throughout the project and be prepared to adjust the delivery program accordingly. Given that South East Water has assumed a fast tracked program for the South East Water backlog program, any changes to the project program are likely to result in an extension to the program rather than a tightening. As a result, the budget for backlog in Water Plan 3 has a greater potential for being an overestimate of the overall spend (assuming the cost per property is well understood), rather than an underestimate.

Were the program to be extended, and hence less customers uptake early connection in Water Plan 3, there would be a detrimental financial impact on South East Water. Were adjustments to be made by the ESC to the capital allowance for this program to account for a possible extension, adjustments to the forecast revenue would also have to be made, with the

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<sup>103</sup> Reprioritisation of Sewerage Backlog Areas, provided by South East Water

effect of an overall increase in prices in Water Plan 3. As such, we see no reason to recommend an adjustment to the proposed expenditure.

Nevertheless, given the scale of this work, South East Water needs to consider how the capacity of the contractor/s engaged to deliver an accelerated program will manage the delivery of the works assuming all CLCs are approved as per the proposed program.

### **Analysis of cost estimation**

#### **Yarra Valley Water**

The commentary regarding the cost estimates for backlog can be taken as the same as for the growth projects (e.g. the use of the costing spreadsheet is common for both). As per our commentary under growth projects for this business, the Yarra Valley Water approach is reasonable and no further adjustments are recommended.

#### **South East Water**

We consider it likely that South East Water's cost estimates process is similar for the backlog program as for its other growth expenditure (considered reasonable as discussed in section 6.1.2), and as such we have no reason to recommend an adjustment to the backlog proposed expenditure.

Furthermore, Given that South East Water's NPV analysis for the customer led approach to sewerage backlog was likely to have been created to support the customer led approach, it is likely that the cost estimate is, if anything, underestimated. This is because lower cost estimates increase the NPV of the project (or else equal), strengthening the case for the customer led approach to sewerage backlog. As such, despite limited costing information for South East Water's proposed backlog program, we do not propose any changes to the proposed expenditure.

### ***6.2.3 Findings and recommendations***

Based on the analysis above, we consider that the capital expenditure proposed in Water Plan 3 for the sewerage backlog program for both Yarra valley Water and South East Water is justified.

The ESC should note that possible changes may need to be made to South East Water's forecast capital contributions resulting from the backlog scheme.

## **6.3 Alternative water capital expenditure**

### **6.3.1 Water companies' proposals**

#### **Melbourne Water's alternative capital expenditure proposal**

Melbourne Water is proposing \$25.4 million of capital expenditure on alternative water during Water Plan 3. Of this, \$8.6 million is renewals of existing assets at the WTP and is considered as part of our assessment of renewals in Section 6.4. Of the remaining \$16.8 million, significant projects include:

- An upgrade to the WTP's Class A treatment facility (\$7.5 million), and
- An upgrade to the capacity of Class A recycled water at the WTP (\$4.8 million).

Melbourne Water justifies its proposed expenditure on the WTP's Class A upgrade on the basis of DoH requirements to maintain the production of fit for purpose water.

Melbourne Water justifies the capacity upgrade of Class A recycled water at the WTP primarily on City West Water's forecast demands at City West Water's proposed Altona Stage 2 plant.

#### **Yarra Valley Water's alternative capital expenditure proposal**

Yarra Valley Water is proposing to spend \$101.66 million on alternative water capital expenditure during Water Plan 3<sup>104</sup>. Proposed expenditure is<sup>105</sup>:

- third pipe recycled water schemes in the Northern Growth Area (NGA) (\$92.9 million)
  - Brushy Creek (\$7.5 million)
  - Epping North (\$37.2 million)
  - Hume (\$22.3 million)
  - Kalkallo (\$15.4 million)
  - Wallan (\$10.5 million)
- A stormwater harvesting third pipe scheme in Coburg, co-funded by the Federal Government (\$2.9 million of expenditure for Yarra Valley Water)
- Sewer mining for recycled water in Doncaster Hill (\$4.3 million)

The expenditure in these schemes is made up of numerous small items of expenditure on distribution and reticulation infrastructure, treatment plant upgrades, pumping stations, balancing tanks etc.<sup>106</sup>

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<sup>104</sup> ESC Financial Template

<sup>105</sup> Providing Infrastructure to new suburbs, presentation from Yarra Valley Water to PwC, p28.

<sup>106</sup> (100 per cent) Yarra Valley Water CAPITAL EXPENDITURE Project list 20 Dec 2012.xlsx, provided by Yarra Valley Water.

The NGA alternative water expenditure is justified by Yarra Valley Water on the basis of net present value analysis<sup>107</sup>, which it argues demonstrates third pipe recycled water supply to have a lower net present cost as compared to potable water only supply for the specific areas:

- Option 2, a recycled water option has a net present cost of \$1,333 million, with the following additional characteristics:
  - 5 Star Homes standards
  - no rainwater tanks
  - stormwater treatment
  - local treatment plant
  - third pipe recycled water supply
- Option 5, an option without recycled water, has a net present cost of \$1,427 million, with the following additional characteristics:
  - 5 Star Homes standards
  - 30% of homes have rainwater tanks<sup>108</sup>
  - Stormwater treatment
  - Sewer flows to the metro system
  - No recycled water supply

Although Yarra Valley Water qualitatively note other ancillary benefits of the recycled water option (e.g. to the environment, liveability etc.), its NPV analysis as part of its options assessment only takes account of financial cash flows.

### ***South East Water's alternative capital expenditure proposal***

South East Water is proposing to spend \$68.3 million on alternative water infrastructure during Water Plan 3. This aligns with South East Water's strategy to provide recycled water services to all development areas currently mandated to be serviced with recycled water within its service area.

Significant areas of expenditure include:

- Cranbourne: \$35.2 million of augmentation works are proposed to create a new recycled water distribution zone in Cranbourne East and Cranbourne West.

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<sup>107</sup> Northern Growth Area Integrated Water Cycle Management Plan - Options Assessment At The Growth Corridor Scale, October 2012, provided by Yarra Valley Water.

<sup>108</sup> PwC was concerned that Yarra Valley Water's Options 2 and 5 (with and without recycled water infrastructure, respectively) were not identical in other respects. Option 5 includes additional expenditure compared to Option 2, namely that associated with 30% of homes obtaining rainwater tanks. A direct comparison of the NPV of Option 2 and Option 5 does not, therefore, reveal a direct comparison of the relative benefits of recycled water. However, PwC analysis shows that in the case of removing expenditure related to rainwater tanks in Option 5 (so that Options 2 and 5 are identical other than recycled water expenditure), the NPC of Option 5 is still greater than Option 2.

## Capital expenditure analysis

- Officer: \$12.9 million of augmentation works are proposed for the Officer East distribution zone.
- Supply from the Eastern Irrigation Scheme (EIS): \$6 million of investment is proposed to
  - upgrade the existing pumping station at the Eastern treatment plant
  - construct a new 50 ML/day pumping station in Cranbourne West.
- Keysborough South: \$5.3 million investment proposed for augmentation works comprise a three ML tank, a pumping station and two km of inlet distribution main.

All the projects are based on the following justifications forwarded by South East Water<sup>109</sup>:

- 1 Various statements by the Minister for Water and the Office of Living Victoria that the substitution of potable water by other sources remains a core policy of the Government.
- 2 The effect of pre-existing obligations for recycled water:
  - Prior to Water Plan 2, South East Water mandated the provision of recycled water to those residential developments which were lowest cost to supply, based on the then Government policy (as set by the Central Regional Sustainable Water Strategy document (2006)) for all metropolitan water authorities to deliver in combination 10GL/year of potable substitution by 2030. South East Water's portion of this target was 4.1 GL/year of potable water substitution.
  - As a result of these mandates, South East Water has contractual commitments with developers and residents to install and provide some recycled water. Furthermore, where firm commitments have not been established, South East Water has established expectations with customers, developers and planning authorities.
  - Breaking these commitments and expectations will have considerable financial and reputational implications:
    - Compensation for current and future developers and customers who have already made recycled water infrastructure investments (e.g. reticulation networks in developments, plumbing in houses), and the legal and other costs associated with these claims.
    - Reputational damage, including breaking commitments to current and future customers.
- 3 The capital and operating costs of implementing potable water supply as an alternative to the proposed expenditure:
  - The alternative cost of meeting 6 star building standards (either through solar water heaters or rainwater tanks)

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<sup>109</sup> Alternative Water: Capacity Plan (P3.0), August 2012, p.18, 22. Provided by South East Water. Capital Expenditure Review – South East Water response, provided by South East Water.



- Additional costs of potable water infrastructure and bulk water charges
- Inefficiencies arising from operating a “patchwork” of water supply systems
- Avoided costs of recycled water infrastructure in areas more expensive to connect than areas proposed
- Costs of additional customer-facing work effort (e.g. call centre staff)
- The cost of South East Water’s stranded assets

### ***City West Water’s alternative capital expenditure proposal***

City West Water has proposed alternative water projects totalling \$278 million. These include:

- Stormwater projects (\$41 million)
- Altona recycled water project (stage 2) (\$80 million)
- Sewer mining in Docklands (\$28 million)
- Footscray Activity Area Redevelopment (\$5 million)
- Integrated water supply and Aquifer Storage and Recovery (ASR) projects in growth areas which have already been approved in Water Plan 2 (West Werribee dual supply (\$51 million))
- Integrated water supply and ASR projects in new growth areas (Ravenhill (\$3.5 million), Greek Hill (\$62 million))
- Capitalised labour related to the above projects (\$4 million).

Details of the projects and the City West Water’s justification for them are given below.

#### ***Altona recycled water project (stage 2)***

Altona Stage 2 is a project to provide recycled water to a number of industrial customers. City West Water justifies its proposed investment the Altona recycled water projects based on the following<sup>110,111</sup>:

- An inability to meet demand for recycled water which harms the competitive advantage of manufacturing in Melbourne’s West
- An ongoing threat to water security which places greater pressure on water authorities to invest further in augmentation infrastructure
- A failure to utilise locally available water sources will result in earlier, expensive augmentation of the east-west transfer system

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<sup>110</sup> Altona Recycled Water Project (Stage II) Business Case, 14 November 2012, City West Water

<sup>111</sup> Water Plan 2013-18, Response to PwC Draft Report, p11.

- Altona Stage 2 will reduce prices for other the customer base as a whole, demonstrated by the positive net present value of the project based on financial analysis. This is driven by the proposed price of recycled water from Altona 2 being above the levelised cost of providing it
- The project is consistent with City West Water's Statement of Obligations
- Not undertaking Altona 2 will be damaging to City West Water's reputation, given the extensive customer consultation it has undertaken to date.

The cited benefits of the proposed investment are:

- Minimised cost increases for all water customers
- Improved certainty for industrial investment in Melbourne's West
- improved business customer satisfaction.

#### Stormwater projects

City West Water is proposing to undertake a number of stormwater harvesting projects to service public open space and redevelopment sites with alternative water supplies. These projects have been requested, and are paid for, by Local Government Authorities (LGAs).

#### Footscray Activity Area Redevelopment

City West Water is proposing to invest in alternative water infrastructure as part of the Footscray activity area redevelopment.

City West Water justifies its expenditure on this project on:

- the provision of significant drinking water savings compared to conventional potable water only infrastructure, with resulting benefits such as the Greening the West initiative, and environmental benefits<sup>112, 113</sup>.
- Consistency with City West Water's Statement of Obligations, Government Policy and the Office of Living Victoria's position.

#### Integrated water supply and Aquifer Storage and Recovery (ASR) projects in growth areas which have already been approved in Water Plan 2

City West Water is proposing to finish installing recycled water infrastructure, including aquifer storage and recovery to balance seasonal supply and demand discrepancies, in the growth area of West Werribee. City West Water justify this expenditure on the basis of the ESC's approval of recycled water infrastructure in West Werribee in Water Plan 2, on the basis of the (then) obligation to target 20% recycled water use.

#### Integrated water supply and ASR projects in new growth areas

City West Water is proposing to undertake further recycled water infrastructure, including aquifer storage and recovery to balance seasonal supply and demand discrepancies, in new growth area of at Ravenhill and Greek Hill. Unlike at West Werribee, this project is new and so was not considered by the ESC for Water Plan 2.

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<sup>112</sup> Docklands Recycled Water Project, Functional Design Report, CH2MHILL, August 2012, p. v, provided by City West Water.

<sup>113</sup> Water Plan 2013-18, Response to PwC Draft Report, p16-17.

City West Water justifies this expenditure on:

- the provision of significant drinking water savings compared to conventional potable water only infrastructure, with resulting benefits such as the Greening the West initiative, and environmental benefits<sup>114</sup>.
- consistency with City West Water's Statement of Obligations, Government policy and the Office of Living Victoria's position
- consistency with Draft Precinct Structure Plans (PSPs).

#### **Sewer mining in Docklands**

City West Water proposes to invest in sewer mining in Docklands in order to provide recycled water to 50 per cent of the Docklands site that is as yet undeveloped. This expenditure is also based on:

- consistency with City West Water's Statement of Obligations, Government policy and the Office of Living Victoria's position
- the provision of significant drinking water savings compared to conventional potable water only infrastructure

#### **Capitalised labour**

City West Water has separately identified capitalised labour associated with the above alternative water projects. The costs associated with capitalised labour are distributed between the projects above.

#### ***Western Water's alternative capital expenditure proposal***

Western Water is proposing to spend \$36.4 million<sup>115</sup> of capital expenditure on alternative water projects in Water Plan 3.

The three projects that constitute this expenditure are<sup>116</sup>:

- The Toolern stormwater infrastructure project (\$18.7 million). Roughly half of this project will be funded by the Federal Government if certain triggers for the project are met, including a positive business case.
- Investments other than the Toolern stormwater infrastructure project<sup>117</sup> relating to the Melton Class A recycled water investments (\$17.3 million) to provide recycled water to new developments.
- Investments other than the Toolern stormwater infrastructure project<sup>118</sup> relating to the Melton Class A recycled water investments (\$0.4 million) to provide recycled water where pre-existing contractual arrangements have been made to supply recycled water, namely at Eynesbury.

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<sup>114</sup> Water Plan 2013-18, Response to PwC Draft Report, p16-17.

<sup>115</sup> Memorandum, Alternative Water Capital Expenditure, 12 February 2013, provided by Western Water

<sup>116</sup> List of all proposed capital projects in Water Plan 3, as provided by Western Water

<sup>117</sup> Toolern is part of the Melton area as defined by Western Water.

<sup>118</sup> Toolern is part of the Melton area as defined by Western Water.

### **Toolern stormwater project**

A business case for the Toolern stormwater project, to be submitted to the Federal Government to secure co-funding for the project, is currently under development and is due to be complete by May 2013 in order to meet the Federal Government's timeline.

Western Water has stated that the "business case [provided to the Federal Government to secure funding] will need to ...ensure best value for money for the community."<sup>119</sup> Western Water suggests that "the Toolern project be included in the Water Plan 2013-18 subject to a favourable business case being prepared."

### **Melton Class A recycled water – new growth areas**

Western Water is proposing to invest in a dual pipe recycled water scheme to service the new developments of Rockbank North and Toolern, both in the Melton area. These investments are justified by Western Water on the basis of<sup>120</sup>:

- The Government's response to the Living Melbourne Living Victoria implementation plan
- Western Water's Statement of Obligations to "facilitate efficient investment in all water cycle services, including recycling sewage or tradewaste, stormwater capture and re-use, and demand management".
- Community willingness to pay consultations
- Precinct Structure Plan targets for 50% potable water consumption reduction
- The requirement for 6 star building standards
- An independent study, conducted by Marsdon Jacob Associates (2013) which states that "the results of the economic assessment demonstrated that providing Class A water was more economic i.e., had a lower present value cost compared to the Conventional Supply option"<sup>121</sup>

### **Melton Class A recycled water – existing contractual commitments at growth areas**

In addition to the areas of Rockbank North and Toolern, Western Water is proposing \$0.4 million of expenditure for the Eynsbury area of Melton, to service its contractual commitments to supply Class A recycled water to customers in these areas.

## ***6.3.2 Analysis of water companies' alternative water capital expenditure proposals***

### **Analysis of justification of project/program**

One of the most challenging issues for this review has been the assessment of the alternative water projects that the businesses have proposed. To be clear, in this context, we are referring to projects whereby a higher cost treatment of water than otherwise is undertaken in order to allow that water to be reused for certain purposes. In certain circumstances,

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<sup>119</sup> Toolern Stormwater Harvesting Project – Federal Funding, provided by Western Water

<sup>120</sup> Memorandum, Melton Class A Justification, Western Water, January 2013, provided by Western Water

<sup>121</sup> Economic assessment of Class A and dual pipe supply to selected Melton growth areas, Marsden Jacob Associates, February 2013, P17, provided by Western Water

treating water and promoting its reuse can be the lowest cost treatment outcome (for example, if additional or more costly treatment would be required for the wastewater to be discharged into the environment, which is considered under our analysis of growth expenditure in section 6.1).

During the last water plan review, Melbourne was still in the middle of a severe drought, the main water storages were at very low levels and concerns about water security were high. It was during this period that decisions were made to construct the Wonthaggi desalination plant and Sugarloaf Pipeline. At this time, the Metropolitan water authorities were also required to implement projects that collectively would result in 10 GL of recycled water being used as a substitute for potable water by 2030, and their Statement of Obligations included 20% recycled water targets.

Since that time, however, the situation in relation to water security has changed dramatically. Both the Wonthaggi desalination plant and Sugarloaf Pipeline have been constructed and the levels of Melbourne's major dams have increased substantially. In addition, the Melbourne water authorities no longer have explicit obligations with respect to undertaking alternative water projects, but instead have a more general obligation to encourage efficiency in the use of water resources, taking account of the various traditional and non-traditional sources and the different uses of water (and correspondingly different requirements for the water).

In this context, the ESC's position is that:

“Proposals for further supply augmentation projects would require a very strong justification, and would almost certainly need to be based on factors other than security of supply risk in the near term.”<sup>122</sup>

In general, alternative water projects face a number of cost hurdles in comparison to traditional supply and use of potable water. Most importantly for many of the projects considered by the companies, the provision of alternative water for residential or industrial use requires duplicate pipeline infrastructure, and often also additional processing of sewage compared to what would be required if treated sewage was discharged as waste. This is important because where alternative water is a substitute for potable water there is no use to which alternative water may be put that cannot equally be met through the provision of potable water.

Having said that, alternative water projects will deliver benefits, and it is possible that these will more than offset the cost hurdle discussed above. Traditional potable supply and wastewater treatment typically involves the transfer of water often from some distance, and then the transfer of sewage some distance for processing and discharge. Local alternative water schemes reduce the volumes or (in the case of sewage) even need for such bulk transfer, and hence offer cost savings. In addition, water reuse saves in the use of potable water – at current time, the cost saving this presents is low, but the cost saving will increase once the desalination plant and Sugarloaf Pipeline get used, and by even more once augmentations of these assets draw nearer.

As discussed above, in the last water plan period, water companies were obliged to undertake alternative water schemes and hence cost benefit analysis was not required to justify investment (although we understand that similar analysis was undertaken to prioritise the projects required to meet obligations). Noting that such obligations have been made less stringent, we would have expected alternative water projects to have been supported with rigorous cost benefit analysis that demonstrated alternative water to be the least cost option.

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<sup>122</sup> 2013 Water Price Review: Guidance on Water Plans, October 2011, p45.

Instead, we encountered a lack of quantitative analysis from the water retailers (i.e. excluding Melbourne Water) for a total proposed alternative water investment in Water Plan 3 of \$484 million, with the exceptions of:

- Yarra Valley Water, which has done a “state-of-the-art” analysis of the costs and benefits of its alternative water proposals
- Western Water, which has commissioned a cost benefit analysis, but which does not appear to support its proposed expenditure.

For the purpose of this discussion, we have considered the companies’ proposed projects in three categories.

#### 1. Existing projects started in Water Plan 2

A number of the companies have proposed expenditure relating to the completion of projects started in Water Plan 2:

- All of South East Water’s alternative water expenditure
- City West Water’s West Werribee third pipe reticulation scheme
- Western Water’s expenditure in the Eynesbury area.

One interpretation of the water companies’ obligations is that those projects which started under a set of obligations remain under those obligations, even if the obligations are changed subsequently. Under this interpretation, the water companies are obliged to finish those alternative water projects started in Water Plan 2, and hence the projects are justified. This interpretation of the obligation is reasonable, as opposed to the water companies being required to continually reassess all current projects in light of any change in obligations, to ensure that they remain justified.

Furthermore, we acknowledge:

- completion of alternative water projects started in Water Plan 2 may be least cost, given the sunk investment made to date
- the potential reputational damage from halting projects.

In our view, a strict interpretation of efficiency is that, once an obligation is changed, companies should reassess their proposed investments from that point, to determine whether continuing to invest is the least cost means to meet the new obligations.

More generally, we are inclined to accept a more practical interpretation that an obligation in place in Water Plan 2 remains in place for those projects started in Water Plan 2, even if the obligation subsequently has been changed. We acknowledge the reputational risk of halting a project commenced in Water Plan 2, and the likelihood that a project started in Water Plan 2 might be least cost, given that in some instances the ‘full’ project benefit can be bought for the remaining (part) project cost.

Given the above assessment, we consider that projects started under the obligations in place during Water Plan 2 are justified.

Regardless of whether or not Water Plan 2 obligations remain in place for projects started in Water Plan 2, it would have been preferable for the companies to have supported their proposals with a demonstration the economic merit of continued investment.

## 2. New justified projects

For new projects, absent an explicit obligation to undertake alternative water, a supportive economic case for investment is required. In the case of the following projects, this has been achieved by the companies:

- Yarra Valley Water has undertaken supportive cost benefit analysis that demonstrates that alternative water is the least cost means to meet its obligations to supply fit-for-purpose water
- City West Water has demonstrated that for its stormwater projects, the specific customers who will benefit from the projects are willing to pay in full for the projects

As such, we consider these two projects to be justified.

In the case of Western Water's Toolern stormwater harvesting project, a supportive economic case is yet to be made, owing to the timing of this review being prior to Western Water's submission of a business case to the Federal Government for funding.

We recommend that the Toolern stormwater project not be allowed in the regulatory allowance for capital expenditure, but that a trigger should be in place for prices to be adjusted if:

- The business case (to be completed in May 2013) demonstrates that the project ensures best value for money for the community (in addition to a number of other criteria set by the Federal Government, such as improving water security). Notably, should Federal funding be secured on the basis of other criteria without being lowest community cost, the expenditure related to this project should not be allowed; and
- Funding is secured from the Federal Government.

In the case of City West Water's Altona recycled water project (stage 2), we note that a business case has been produced by City West Water which demonstrates a positive net present value. As such, undertaking this project would be to the benefit of the wider customer base in comparison with not undertaking the project.

While Altona 2 is likely to be a project that is required in the future, we believe that City West Water has mischaracterised this project as needing to be undertaken in Water Plan 3. Despite the business case having an NPV positive outcome, a better outcome (one with a greater NPV) is likely to occur if the project is deferred. An economically efficient means to defer the project is to alter the price that Altona 2's prospective customers would otherwise pay (for instance for potable water). This could be achieved by instigating a legally binding contract between the customers and City West Water, whereby the customers receive potable water at a discount (to the level they would have paid were Altona 2 to be undertaken) but that the customers are obliged to receive alternative water at any time as dictated by City West Water (over a reasonable timeframe).

This is not only to the benefit of that group of customers (though lower prices), but also to the wider customer base, due to the avoided capital costs. The NPV of this option will be lower than that of Altona Stage 2 due to the avoided capital costs. Investment in the Altona 2 project could then be made at a future date (with guaranteed customers to receive the recycled water), when concerns security of supply in Melbourne are more pressing, and Altona 2 is an efficient means to reduce potable water consumption.

## 3. Other alternative water projects which have not been justified

The majority of other projects proposed by the companies have not been justified on the basis of either economic cost benefit analysis which demonstrate them to be the lowest cost means to meet the companies' obligations, or on the basis of customer willingness to pay. We remain unconvinced of the arguments put forward by the companies for these projects:

- We consider that the Statement of Obligations is the primary mechanism through which obligations are set. Given that the requirements within the Statement of Obligations for alternative water have been reduced, we do not consider other documents provided by the companies are indicative of an obligation to invest specifically in alternative water.
- Developers may be able to meet the required “star ratings” for developments through lower cost means than alternative water
- Precinct Structure Plans (PSPs), some of which are still in their draft stage, contain “guidelines” as opposed to firm requirements to provide alternative water. Furthermore, we are concerned with the input that the companies have had in creating the PSPs.
- We are concerned that some customer willingness to pay surveys conducted by the companies may not have provided sufficient information for customers to make informed decisions, potentially reducing the validity of the surveys.

#### Justification for expenditure: findings

An individual analysis of each of the companies’ proposed projects is given in Appendix B. Here, we summarise our findings for each company. These recommendations are made on the basis of our analysis of the generic justifications used by many of the businesses (as discussed above) or based on individual analysis made on a project-by-project basis (with detail provided in Appendix B).

Where we have recommended removing projects, we note that the companies may require additional expenditure (although less than that proposed by the companies) to meet their obligations through other means. For instance, where we have recommended that expenditure related to a third pipe scheme is not included in the expenditure allowance the companies may require increased expenditure on their potable water supply system. We have not determined what, if any, additional expenditure would be required (as this is a task best undertaken by the companies). We recommend that the ESC invites the companies to propose expenditure requirements in the case that expenditure relating to alternative water projects is not allowed.

- Melbourne Water’s Western Treatment Plant Class A facility upgrade is justified based on compliance requirements, and hence we consider justified. However, the Its Western Treatment Plant Class A treatment capacity upgrade is not justified based on our recommended removal of Altona Stage 2 for City West Water. We recommend expenditure associated with the Western Treatment Plant Class A capacity upgrade is not included in Melbourne Water’s expenditure allowance.
- Yarra Valley has provided state-of-the-art analysis to demonstrate the efficiency of its NGA alternative water proposals. At Coburg, we accept that, given the Federal funding for the project, it is likely to have a positive NPV and be beneficial for customers. At Doncaster Hill, we accept Yarra Valley Water’s claim that the project has a large positive NPV, given the quality of its analysis for the NGA. We recommend no adjustment to its proposals.
- South East Water’s expenditure proposals are based on prior obligations as set in Water Plan 2. We consider that these proposals should be allowed, based on:
  - the interpretation that obligations in Water Plan 2 remain in place for projects commenced in Water Plan 2
  - the likely reputational impact that halting these projects may have
  - completing the supply of alternative water to pre-mandated areas may be the least cost option.



- Our recommendations for City West Water’s projects are:
  - For the West Werribee dual reticulation scheme, which is based on prior obligations as set in Water Plan 2, we consider that these proposals should be allowed (as is the case for South East Water).
  - For City West Water’s stormwater projects, these should be allowed on the basis that they are being made at the request of, and paid for in full by, individual customers (Local Government Authorities).
  - For City West Water’s Altona Stage 2 project, we consider that while this project has a positive net present value, the net present value is likely to be maximised by delaying the project. This can be achieved through contractual arrangements with the customers of Altona Stage 2, as described above. As such, we recommend that the expenditure related to this project be removed in full from Water Plan 3.
  - For City West Water’s other alternative water schemes, these are not justified based on the analysis of companies’ justifications above, and also on a project-by-project analysis (as detailed in Appendix B). These projects are:
    - Sewer mining in Docklands
    - The Footscray Activity Area redevelopment alternative water scheme
    - Integrated water supply to new growth areas
    - The capitalised labour associated with these projects.

We recommended that expenditure relating to these projects is not included in the capital expenditure allowance. However, we recommend that a trigger event should be defined by the ESC so that, should a project be supported by cost benefit analysis (undertaken by City West Water during Water Plan 3) which demonstrates that the project is the least cost means to meet City West Water’s obligations, or that there is rigour customer willingness to pay evidence, then prices should be adjusted accordingly to allow the projects to proceed.

- Our recommendations for Western Water’s various projects are:
  - Proposed expenditure in Eynesbury should be allowed on the basis that Western Water has a contractual obligation to supply the area with recycled water and the obligations in place during Water Plan 2.
  - For the Toolern stormwater infrastructure project, we recommend the expenditure is not included in the expenditure allowance, but that it should be included subject to a trigger, namely:
    - a business case made to the Federal Government which demonstrates it is the least cost supply for Western Water customers (in alignment with our recommendation for Yarra Valley Water’s Coburg stormwater harvesting project, which has secured Government co-funding); and
    - Federal Government funding being secured.
  - Proposed expenditure for Melton Class A recycled water investments to new growth areas is not justified based on the analysis of companies’ justification above, as outlined in detail in Appendix B. However, we recommend that a trigger event should be defined by the ESC so that, should the expenditure be supported by cost benefit analysis (undertaken by Western Water during Water

Plan 3) which demonstrates that the investment is the least cost means to meet Western Water's obligations, then prices should be adjusted accordingly to allow the expenditure to proceed.

### **Analysis of options assessment**

#### **Melbourne Water**

Given the small size of the Melbourne Water proposed alternative water expenditure, no detailed analysis of the options that Melbourne Water considered has been undertaken. We recommend no changes to Melbourne Water's proposals.

#### **Yarra Valley Water**

Details of the project options considered are discussed in our assessment of the project justification, as outlined above. The highest NPV option was selected.

#### **South East Water**

Following the Draft 2013 Water Price Review, South East Water provided a Feasibility Task Report for the Cranbourne South Recycled Water and Potable Water Tanks project. This document was prepared by Utility Services ('us'), a Program Alliance between South East Water and a consortium made up of Thiess Services and Siemens Limited. The Feasibility Task Report provided evidence that multiple configuration options had been considered based on a triple bottom line (TBL) assessment, and that the highest scoring option was selected. An NPV was not conducted because capital costs were very similar and presumably so too are operating costs. Tank materials had been reviewed from the perspective of cost and fit for purpose, and the lowest cost feasible option was selected. The Cranbourne project was the only alternative water project to appear in South East Water's top ten projects for Water Plan 3, and was the only alternative water project for which this level of documentation was requested by this review team.

Subject to whether the program is included in the expenditure allowance, given the discussion of the justification of the program above, and based on our observations from this project, we conclude that South East Water has an established and documented method for assessing project alternatives, and for selecting the preferred option (within a range of options limited only to alternative water options). On this basis we recommend no adjustment to the alternative water capital expenditure, were the ESC to allow the capital expenditure.

#### **City West Water**

We note that for a number of projects proposed by City West Water, we have recommended that they be removed from the capital expenditure allowance on the basis that options analysis has not been provided to the review team (or in many cases undertaken). These projects are:

- Altona Stage 2
- Footscray Activity Area Redevelopment
- Integrated water supply and Aquifer Storage and Recovery (ASR) projects in growth areas which have already been approved in Water Plan 2
- Sewer mining in Docklands

In the case of the stormwater projects, these are at the request of, and being funded by, those customers who are benefiting directly from the projects. As such, these projects do not affect regulated prices, and so no options assessment is required on the part of the ESC or ourselves.

As discussed in Section 6.3.2, City West Water made recycled water infrastructure investments in West Werribee in accordance with its (then) Statement of Obligations to

target a percentage of potable water substitution. While it is no longer an obligation to target a percentage of recycled water, given that the bulk of the capital investment was made prior to this water plan, the project has not been subject to further scrutiny regarding project planning and delivery.

#### **Western Water**

The options assessment indicates that the preferred option is not the lowest cost. It is for this reason that it has been recommended for exclusion from the expenditure allowance.

Western Water confirms that a final Business Case has not been completed for the Toolern Stormwater project, but notes that a \$9.2M grant may be granted by the Federal Government, matched dollar for dollar by Western Water (effectively halving the cost to Western Water of proceeding with this project). The grant has been provided subject to the provision of a favourable business case for the project. Our recommendation is for funding to be allowed subject to a trigger, as discussed above.

#### **Analysis of delivery mechanism**

The delivery mechanisms for alternative water projects were not assessed discretely, rather we have assumed that these projects will be delivered by each business in a similar manner to other projects of similar capital expenditure, utilising the mechanisms as described in the Growth Delivery Mechanism Assessment section (section 6.1). As such, no further commentary on the delivery mechanisms is provided here.

#### **Costing assessment**

As with our analysis of delivery mechanisms, the method of developing cost estimates for alternative water projects were not assessed discretely, rather we have assumed that these projects will be costed by each business in a similar manner to other projects of similar capital, utilising the mechanisms as described in the Growth Costing assessment section (section 6.1). As such, no further commentary on the build-up of cost estimates is provided here.

### **6.3.3 Findings and recommendations**

#### **Melbourne Water**

Based on the analysis above, we consider that the treatment facility upgrade is appropriate, with the benefit of reduced health risks, but that the expenditure relating to Class A capacity upgrade should not be allowed owing to our recommended disallowance of the expenditure relating to City West Water's Altona Stage 2 project. We therefore recommend the following alterations to Melbourne Water's proposed alternative water capital expenditure as outlined in Table 42.

**Table 42: Recommended adjustments to alternative water capital expenditure, Melbourne Water (\$M)**

<b>Recommended adjustments (\$M)</b>	2013/14	2014/15	2015/16	2016/17	2017/17	Water Plan 3 total
WTP capacity upgrade	-	-	-4.8	-	-	-4.8
<b>Total recommended adjustments</b>	-	-	<b>-4.8</b>	-	-	<b>-4.8</b>

#### **Yarra Valley Water**

Based on the analysis above, we find that the proposed alternative water expenditure projects are the least cost way to meet Yarra Valley Water's obligations to provide water and

wastewater services to new customers. We therefore recommend no alterations to Yarra Valley Water’s proposed alternative water capital expenditure.

### **South East Water**

Based on the analysis above, we recommend no changes to the proposed alternative water expenditure, all of which services areas which are pre-mandated.

### **City West Water**

Recommended adjustments to City West Water’s proposed expenditure are outlined in Table 43.

**Table 43: Recommended adjustments to alternative water capital expenditure, City West Water (\$M)**

	2013/14	2014/15	20145/16	2016/17	2017/18	Water Plan 3 total
<b>Recommended adjustments</b>						
Altona Stage 2	-17.85	-29.56	-32.55	0.00	0.00	-79.95
Footscray activity area alternative water	0.00	-1.02	-1.02	-1.02	-2.03	-5.08
New integrated water supply areas (including developer reimbursements)	-0.77	0.00	-5.44	-25.37	-35.67	-67.25
Sewer mining in dockland	0.00	-2.78	-9.74	-15.30	0.00	-27.82
Capitalised labour associated with these projects	-0.30	-0.68	-0.76	-0.75	-0.70	-3.18
<b>Total recommended alterations</b>	<b>-18.92</b>	<b>-34.04</b>	<b>-49.49</b>	<b>-42.43</b>	<b>-38.40</b>	<b>-183.28</b>

We recommend that the ESC define trigger events that allow for the above projects to proceed (and prices adjusted accordingly) if they subsequently are demonstrated to be the least cost means to meet obligations, or where rigorous customer willingness to pay evidence is provided.

We recommend that the ESC invites City West Water to propose alternative expenditure requirements (for instance in its potable water system) in the case that expenditure relating to alternative water projects is not allowed.

As with South East Water, we recommend no changes to the proposed alternative water expenditure at areas already allowed as part of Water Plan 2 (West Werribee).

In addition, as highlighted in Appendix B, we recommend the ESC analyse possible alterations to City West Water’s:

- customer contributions as a result of stormwater projects

## Capital expenditure analysis

- contract revenue as a result of stormwater projects
- government contributions as a result of ASR projects.

### **Western Water**

Recommended adjustments to Western Water’s proposed expenditure are outlined in Table 44.

**Table 44: Recommended adjustments to alternative water capital expenditure, Western Water (\$M)**

	2013/14	2014/15	20145/16	2016/17	2017/18	Water Plan 3 total
<b>Recommended adjustments</b>						
Class A recycled water dual pipe supply infrastructure	0.00	0.00	-8.56	-8.46	-0.32	-17.33
Toolern Stormwater infrastructure	-3.18	-7.14	-7.88	-0.50	0.00	-18.70
<b>Total recommended alterations</b>	<b>-3.18</b>	<b>-7.14</b>	<b>-16.44</b>	<b>-8.96</b>	<b>-0.32</b>	<b>-36.02</b>

We recommend that the ESC define trigger events that allow for the above projects to proceed (and prices adjusted accordingly) if they subsequently are demonstrated to be the least cost means to meet obligations, or where rigorous customer willingness to pay evidence is provided.

We recommend that the ESC invites Western Water to propose alternative expenditure requirements (for instance in its potable water system) in the case that expenditure relating to alternative water projects is not allowed.

## 6.4 Renewals capital expenditure

### 6.4.1 Water companies' proposals

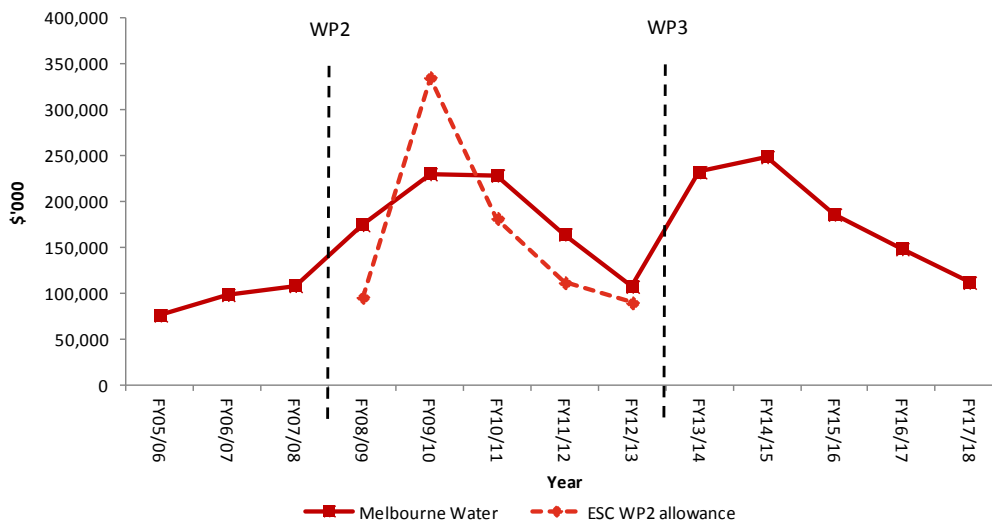
#### Melbourne Water's renewals capital expenditure

Melbourne Water is proposing to undertake \$929 million of renewals capital works in Water Plan 3, accounting for 38% of Melbourne Water's overall proposed capital expenditure.<sup>123</sup>

The figure below illustrates Melbourne Water's proposed renewals expenditure for the third regulatory period. Renewals expenditure for Water Plan 3 peaks in 2014/15, and then follows a downward trend for the remainder of the regulatory period.

The total proposed expenditure of \$929 million is consistent with renewals expenditure incurred in Water Plan 2 (\$907 million).<sup>124</sup>

**Figure 6: Renewals trend analysis, Melbourne Water**



Source: ESC Regulatory Accounts, ESC financial template for Water Plan 2 and Water Plan 3, draft expenditure figure used for 11/12, forecast figure used for 12/13, PwC analysis

Melbourne Water's renewals expenditure is characterised by 86 projects whose values range from approximately \$8,000 to \$79 million. Table 45 outlines the timing of expenditure for the five largest renewal projects by value.

<sup>123</sup> PwC analysis

<sup>124</sup> ESC Regulatory Accounts, 2012-13 expenditure figure is a forecast

**Table 45: Top 5 renewals projects by value, Melbourne Water<sup>125</sup> (\$M)**

	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Allocations - ETP M&E renewals 2013-2018	17.0	16.5	15.8	15.1	14.3	78.8
M102 North Essendon-Footscray Renewal	21.0	27.3	5.5	0.2	0.2	54.2
Replace M040/041 Water Mains	3.9	13.7	20.1	8.5	0.3	46.5
ST Nth Yarra Main MH73-97 Duplication	32.3	12.2	0.0			44.6
ST Hobsons Bay Main Rehab (MH67-107)	2.1	4.2	17.9	17.9		42.0

Melbourne Water adopts a ‘matrix’ approach to determining the status of assets and need for renewal. This matrix approach combines assessments of an assets ‘likelihood of failure’ and also the consequence of failure to determine the priority of renewals.<sup>126</sup> Strategies, which include asset renewals, are then developed to address areas of risk identified. According to Melbourne Water:

“Specific risk mitigation strategies [including asset renewal] are developed and reported for all assets that are categorised as extreme or high risk.

“All assets that are assessed as either Medium or Low risks are also assessed to determine if the identified risk is deemed to be As Low as Reasonably Practicable (ALARP). If a Medium or Low risk is not considered ALARP, then strategies and actions are developed to further manage that risk. These strategies and actions are implemented through the application of Melbourne Water’s Asset Management System.”<sup>127</sup>

### ***Yarra Valley Water’s renewals capital expenditure***

Yarra Valley Water is proposing to undertake \$544 million of renewals capital works in Water Plan 3, accounting for 47% of Yarra Valley Water’s overall proposed capital expenditure.

The figure below illustrates Yarra Valley Water’s proposed renewals expenditure for the third regulatory period. Overall proposed expenditure for Water Plan 3 of \$544 million is substantially higher than in Water Plan 2 where \$366 million of renewals expenditure was incurred.<sup>128</sup>

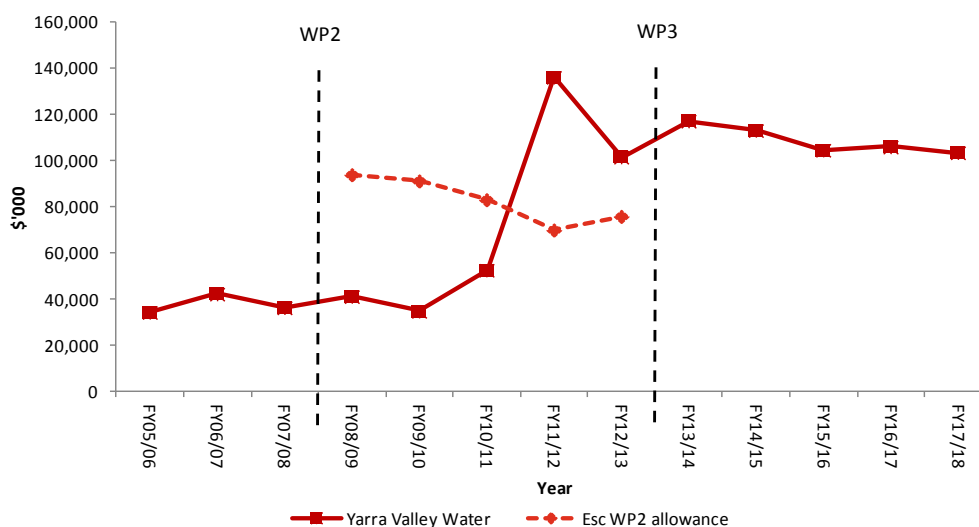
<sup>125</sup> 2013-14 Water Plan (Melbourne Water Capital expenditure list)

<sup>126</sup> Assessment of assets is conducted as part of the ‘Annual State of Assets Report’

<sup>127</sup> Melbourne Water, State of Assets Report 2012, p7

<sup>128</sup> ESC Regulatory Accounts

**Figure 7: Renewals trend analysis, Yarra Valley Water**



Source: ESC Regulatory Accounts, ESC financial template, draft expenditure figure used for 11/12, forecast figure used for 12/13, PwC analysis

Yarra Valley Water’s renewals expenditure is characterised by a number of large renewal programs (comprised of a large number of smaller individual pieces of work) as highlighted in Table 46 below.

**Table 46: Major renewals projects, Yarra Valley Water<sup>129</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017-18	Total	Water Plan 2 avg.	Water Plan 3 avg.
Sewer gravity mains	26.9	26.9	26.9	26.9	26.9	134.5	20.6	26.9
Water reticulations mains renewal	19.7	19.7	19.7	19.7	19.7	99.0	18.0	19.7
Water distributions main renewals	5.9	17.8	11.8	12.7	11.5	59.6	2.1	11.9

Yarra Valley Water is proposing to maintain service levels as described in the ESC template at the current standard<sup>130,131</sup>.

<sup>129</sup> (100 per cent) Yarra Valley Water CAPITAL EXPENDITURE Project List 20 Dec 2012



At the individual project level, Yarra Valley Water justifies undertaking its proposed renewals programs, based on condition and criticality assessments and culminated in risk matrices which determine the priority in which mains should be renewed. Additionally, Yarra Valley Water also carries out reticulation, main and branch sewers inspections to physically inspect their condition.<sup>132</sup>

Although Yarra Valley Water is proposing to maintain current service standards as outlined in the ESC financial template, renewals expenditure for Water Plan 3 is expected to increase, particularly in the sewer related renewals programs. Yarra Valley Water explains that proposed expenditure is greater than expenditure in Water Plan 2 as a result of<sup>133</sup>:

- an estimated 18% increase in costs across Water Plan 3 as a result of more difficult jobs requiring pipe cracking
- poor condition sewers requiring more extensive line preparation and spot excavations
- increased machine and hand excavation required for junctions that cannot be completed via trenchless methods
- additional investment in inspection and prioritisation of reticulation sewers so that Yarra Valley Water can effectively target the worst performing sewer pipes.

Yarra Valley Water has justified the expenditure on water distribution mains renewal based on risk condition and consequence analysis.<sup>134</sup>

### ***South East Water's renewals capital expenditure***

South East Water is proposing to undertake \$217 million of renewals capital works in Water Plan 3, accounting for 19% of South East Water's overall proposed capital expenditure.<sup>135</sup> South East Water incurred \$230 million in renewals expenditure during Water Plan 2.<sup>136</sup>

The figure below illustrates South East Water's proposed renewals expenditure for the third regulatory period, which, although increasing throughout Water Plan 3, is in total less than Water Plan 2. This upward trend within Water Plan 3 in South East Water's renewals expenditure is explained by South East Water by the proposed water system reliability works, that will replace high risk assets such as asbestos cement pipes (50 to 60 years old) and cast iron pipes (80 to 100 years old).<sup>137</sup>

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<sup>130</sup> Yarra Valley Water, Water Plan 2013/14 to 2017/18, p46

<sup>131</sup> Yarra Valley Water claim they have comparatively higher sewer blockage rates in comparison to other water utilities due climatic conditions, geology, dense vegetation and the previous approach of running an asset till it fails ('run-to-fail'). Yarra Valley Water also have more sewer spills than other water utilities. Yarra Valley Water, Water Plan 3 – Capital expenditure Programs Supporting Document October 2012, p41

<sup>132</sup> Yarra Valley Water, Water Plan 3 – Capital expenditure Programs Supporting Document October 2012, p45

<sup>133</sup> Yarra Valley Water, Water Plan 3 – Capital expenditure Programs Supporting Document October 2012, p45

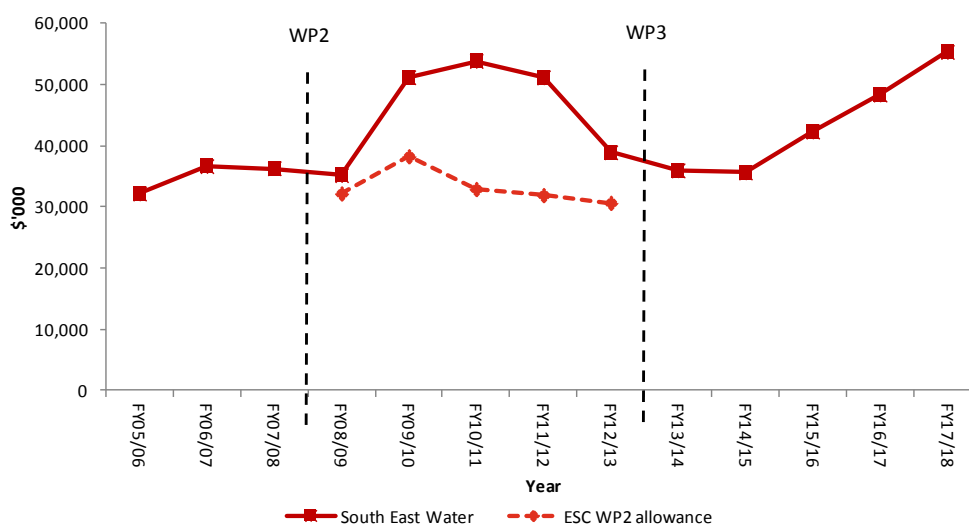
<sup>134</sup> Yarra Valley Water, Water Plan 3 – Capital expenditure Programs Supporting Document October 2012, p25

<sup>135</sup> PwC analysis

<sup>136</sup> ESC Regulatory Accounts, forecast expenditure adopted for 2012-13

<sup>137</sup> South East Water, "Top Ten Project – Water main renewals"

**Figure 8: Renewals trend analysis, South East Water**



Source: ESC Regulatory Accounts, ESC financial template for Water Plan 2 and Water Plan 3, draft expenditure figure used for 11/12, forecast figure used for 12/13, PwC analysis

South East Water has separated its renewals expenditure into sewerage and water system reliability as outlined in Table 47.

**Table 47: Major renewals programs, South East Water <sup>138</sup> (\$M)**

	2013/14	2014/15	2015/16	2016-17	2017/18	Total
Sewerage system reliability	20.8	20.4	23.6	27.4	28.9	121.0
Water system reliability	14.4	14.4	17.9	20.1	25.6	92.5

South East Water have identified the need for renewal expenditure is driven by:

- asset assessment processes which determines and identify assets which need to be renewed
- KPIs and service standards which determine and measure the performance of assets.

South East Water also applies the 'Risk Management Framework' to all assets, which determines how much attention should be paid to an asset based on the asset's likelihood of failure and the consequence of failure.

<sup>138</sup> South East Water - 10 year Capital expenditure program - 20121115.xlsx

South East Water justifies its proposed water system renewals capital expenditure based on the outcome of various modelling techniques used to determine the system's propensity to service disruptions. Modelling tools employed by South East Water include the PARMS software, which assists South East Water to develop a proposed annual budget for water renewals, given a level of service. Following this process South East Water undertakes a priority assessment using the Water main Renewals Analyser and Prioritiser (WRAPS) tool to assess the condition of individual pipes.<sup>139</sup>

Additionally, South East Water conducts CCTV inspections of its sewer assets to determine the structural grade of the asset, and thus enables South East Water to align the asset's structural grade with its likelihood to fail rating.

South East Water also justifies undertaking its proposed renewals programs through the assessment of the performance of its ESC core service standard targets, which include; number of customers experiencing supply interruptions, spills per 100 kilometres of main, and blockages per 100 kilometre of main.<sup>140</sup>

For Water Plan 3, South East Water is proposing to maintain its ESC performance targets in line with historical levels.<sup>141</sup>

### ***City West Water's renewals capital expenditure***

City West Water is proposing to undertake \$242 million of renewals capital works in Water Plan 3, accounting for 30% of City West Water's overall proposed capital expenditure.<sup>142</sup> This proposed expenditure is a small increase on the \$222 million of renewals expenditure incurred in Water Plan 2.<sup>143</sup>

The figure below illustrates City West Water's proposed renewals expenditure for the third regulatory period. The proposed renewals expenditure follows a downward trend, up to 2015/16, where it remains fairly constant for the remainder of Water Plan 3.

City West Water incurred more renewals expenditure than what was "allowed" by the ESC in Water Plan 2, as shown in the figure below.

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<sup>139</sup> South East Water - Water Plan 3 - Top Ten project - Water main renewals, p2

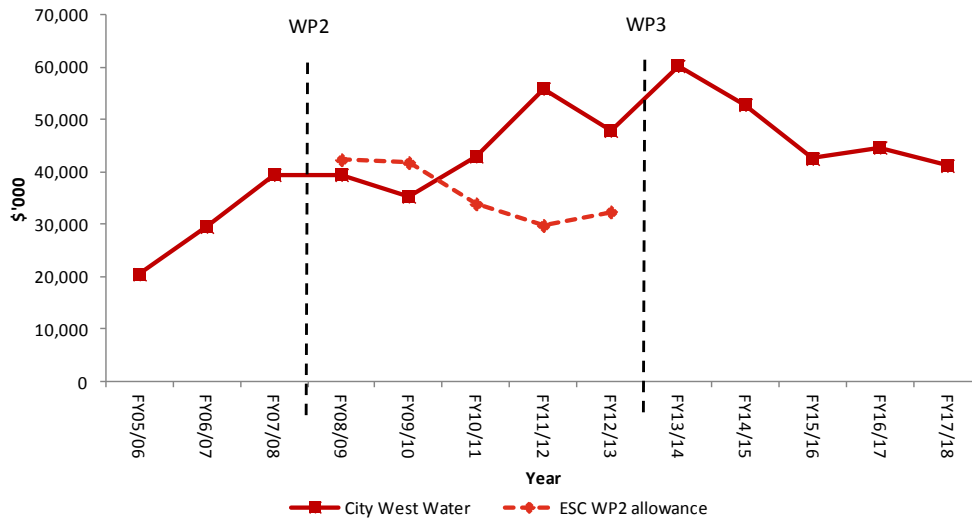
<sup>140</sup> South East Water, "Top Ten Project – Sewer renewals"

<sup>141</sup> South East Water Water Plan 2013-18, p33, South East Water appears to have met the target for all core ESC performance standards, South East Water - Water Plan 3 - Asset Management Plan summary – 20121026, p10

<sup>142</sup> PwC analysis

<sup>143</sup> ESC Regulatory Accounts, forecast expenditure figure adopted for 2012-13

**Figure 9: Renewals trend analysis, City West Water**



Source: ESC Regulatory Accounts, ESC financial template for Water Plan 2 and Water Plan 3, draft expenditure figure used for 11/12, forecast figure used for 12/13, PwC analysis

City West Water’s renewals expenditure is characterised by a number of large renewal programs as outlined in Table 48.

**Table 48: Major renewals programs, City West Water <sup>144</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Risk Management Renewal Program	20.2	20.3	19.3	18.3	18.2	96.4
KPI Attainment Renewal Program	11.3	11.2	11.3	11.3	11.7	56.7
Efficient Renewal Program	4.3	4.0	4.0	4.0	4.0	20.3
Facility Renewal Program	5.1	3.4	2.1	5.7	2.4	18.6

City West Water considers that the need for renewal expenditure is driven by:

- asset assessment processes which determines and identify assets which need to be renewed
- KPIs and service standards which determine and measure the performance of assets

<sup>144</sup> 20121217 City West Water renewal program for Water Plan 3

City West Water undertakes a systematic process to manage its water supply and sewerage infrastructure. The Asset Risk Management Model (ARMM), which has been in use since 2007, allows City West Water to assess the asset risk it is exposed to at any point in time from asset failure/s and take pre-emptive action to ensure this risk is maintained at an acceptable level.<sup>145</sup>

City West Water undertakes a detailed analysis of information when determining whether renewals should occur. This includes the following:

- condition assessments to grade the quality of the asset
- assessments of the consequence of failure
- risk evaluations
- condition monitoring.<sup>146</sup>

Additionally, City West Water inspects mains through the use of CCTV monitoring. This process assists City West Water to assess the asset's requirement for preventative maintenance work.

City West Water further justifies undertaking its proposed renewals program in order to meet the 22 core service standards outlined in the ESC template. City West Water notes that it has met the majority of the core 22 service standards established for all Victorian water businesses, and plans to continue to deliver the same level of service to customers.<sup>147</sup>

### ***Western Water's renewals capital expenditure***

Western Water is proposing to undertake \$38.6 million of renewals capital works in Water Plan 3, accounting for 15% of Western Water's overall proposed capital expenditure.<sup>148</sup>

The figure below illustrates Western Water's proposed renewals expenditure for the third regulatory period. The proposed renewals expenditure follows an upward trend, with the greatest increase in expenditure occurring in 2017/18. Overall proposed expenditure for Water Plan 3 of \$38.6 million is also substantially higher than in Water Plan 2 where \$19.1 million of renewals expenditure was incurred.<sup>149</sup>

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<sup>145</sup> City West Water Renewal Program for Water Plan 3, p2

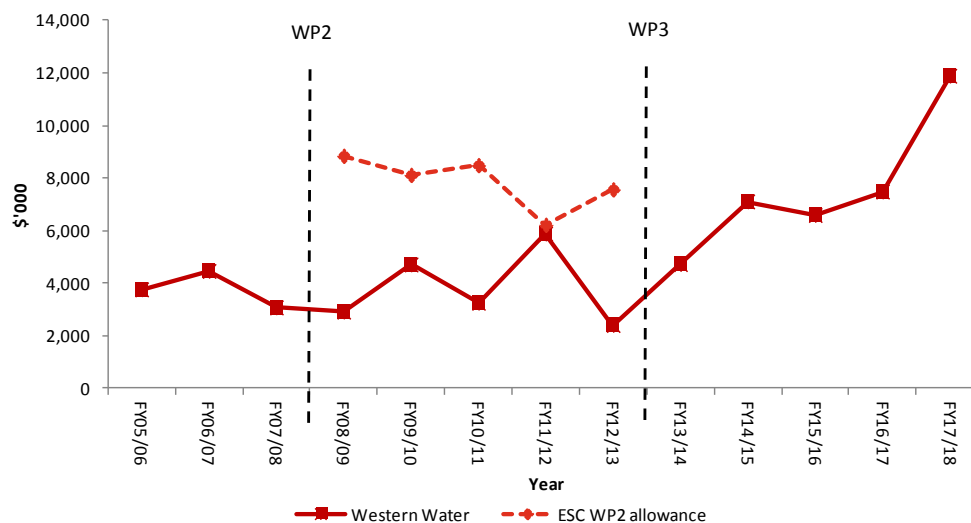
<sup>146</sup> City West Water, "A Risk Evaluation and Management Model for the Water Supply and Sewerage Assets.", version 2-4, July 2004

<sup>147</sup> City West Water Water Plan 2013-18, p15

<sup>148</sup> PwC analysis

<sup>149</sup> ESC Regulatory Accounts

**Figure 10: Renewals trend analysis, Western Water**



Source: ESC Regulatory Accounts, ESC financial template Water Plan 3, draft expenditure figure used for 11/12, forecast figure used for 12/13, PwC analysis

Western Water’s proposed renewals program is characterised by a number of small projects with values ranging from approximately \$50,000 to \$4.4 million. Table 49 below outlines the top five proposed renewals projects by value.

**Table 49: Major renewals projects, Western Water <sup>150</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Bacchus Marsh Rising Main	0.0	0.0	0.0	0.0	4.4	4.4
Sewer Spill Prevention Scheme (SSPS) - Sewer Main Renewals, Melton	0.3	1.1	1.0	0.5	0.6	3.4
Reticulation Renewals / Replacement, All regions	0.3	0.7	0.9	0.7	0.1	2.6
SSPS - Sewer Main Renewals, Sunbury	0.2	0.5	0.3	0.2	0.2	1.5
SSPS - Sewer Main Renewals, Gisbourne	0.2	0.5	0.2	0.2	0.2	1.3

<sup>150</sup> Water Plan 2013-2018 Capital Projects Western Water

According to Western Water, the need for renewal expenditure is driven by Western Water's 'Annual Renewals Identification Process' for water mains assets and 'Asset Renewals Decision Process' for sewer mains renewals.<sup>151</sup> Regarding water main renewals, Western Water notes that:

“Asset replacement is largely based on asset performance, and the key measure of performance known as its Key Performance Indicators (KPI). Measures, targets and initiatives associated with these KPI form the basis of a BSC report on the quality and standard of assets, systems, resources and services.”<sup>152</sup>

Western Water also establishes the long term capital plan which is reviewed annually. The plan is based on the renewal profiles of assets which are developed using the “NESSIE Curve” (developed by South Australia Water). NESSIE, which applies to both water and sewerage assets, considers factors such as:<sup>153</sup>

- asset age
- asset condition
- risk associated with failure
- growth and service demand predictions
- KPIs
- asset cost (whole life).

Western Water notes that customer consultations suggest current service standards largely met customer expectations. For Water Plan 3, Western Water will aim meet the actual average service standards over the past five years.<sup>154</sup>

### *6.4.2 Analysis of water companies' renewals capital expenditure proposals*

#### **Analysis of justification of project/program**

Across all the companies, whether 'project need' has been correctly established depends largely upon the method applied to identify and assess candidates for renewal works. This is discussed for each company in the expenditure forecasting and options assessment section below.

Flexibility in a renewals program within a Water Plan period (as with all capital and operating expenditure) is to be encouraged. It allowed a company to reconsider the risk to customers of not renewing an asset against the cost of doing so on an ongoing basis, increasing the likelihood of efficiently timed renewals. Forecasts made up to five years in advance are inevitably likely to be less accurate than those made nearer the time. The companies are expected to update their forecasts on a regular basis and act in accordance with these updated forecasts.

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<sup>151</sup> Asset Management Plan, Sewerage – Sewer Rising Mains, p16 and Asset Management Plan, Sewerage – Sewer Mains, p17

<sup>152</sup> Asset Management Plan, Sewerage – Sewer Rising Mains, p16

<sup>153</sup> Asset Management Plan, Sewerage – Sewer Rising Mains, p18

<sup>154</sup> Western Water, Water Plan 2013-2018, p4, p16

## Renewals expenditure forecasting methodology/options analysis

### Melbourne Water

Based on the documentation reviewed, Melbourne Water explicitly assesses the do-nothing option along with relevant capital expenditure solutions, as viewed in its Preliminary Business Case (PBC) documents. We note that few of the Melbourne Water projects have advanced beyond the PBC stage until the new project delivery mechanism is implemented at the start of Water Plan 3. As such, the below commentary will be based in the majority on information included in the PBC documents. We comment in more detail below on specific renewals projects and programs included in Melbourne Water's Water Plan 3:

- **Eastern Treatment Plant Mechanical and Electrical (M&E) Renewals:** The ETP M&E renewal model is one of four M&E renewals models maintained by Melbourne Water (the others being for WTP, SPSs, and water treatment assets). The ETP Asset Replacement Cost model is an excel spreadsheet. While the basic accuracy of this model was not reviewed, we note that for ETP in Water Plan 2 the model projected \$55.8 million renewals for ETP, and the actual Water Plan 2 renewals were \$56.3 million. Additionally, Melbourne Water had provided evidence in the form of an Overview of Approach to M&E Renewals and the Predictive Model Development Process, demonstrating the third party review of the accuracy of the model in preparation for Water Plan 3. The renewals models predict the level of expenditure expected across Water Plan 3 based on current levels of service and acceptable risk profile. Renewals projects are prioritised using a risk based approach considering site based asset condition assessments and risk of failure.
- **North Essendon - Footscray Main Renewal:** The two options considered are to do nothing, which presents an unacceptable risk to compliance and level of service (LOS), or to implement the renewal, which is the preferred option since the renewal of the main is a high priority in light of its deteriorating condition.
- **Replace M40 and M41 Water Mains<sup>155</sup>:** Two options were considered for this renewal activity, a do nothing (which would result in a failure to meet Melbourne Water's obligations to provide security of supply), or to replace the water main, which is the preferred option. The base case used for the purposes of Water Plan 3 used the lift and relay with Mild Steel Cement Lining. Details regarding the options for the replacement pipe are not discussed in detail, and while we would expect to see evidence of this review of lining materials, Melbourne Water has clarified that alternative lining options will be considered as part of a Feasibility Study which has yet to be completed. Given the degree of accuracy that would be expected in determining options at this stage in the project, no adjustment to the expenditure is recommended.
- **North Yarra Main Renewal (NYMR):** The Business Case for this renewal activity considers both alignment, and material. An NPV analysis was undertaken on four horizontal alignment options, and a triple bottom line (TBL)/multi-criteria analysis (MCA) was used to evaluate the options on a range of criteria. The preferred option (hybrid combination) had a significantly higher MCA score compared to the alternatives; however, the NPV was second lowest. While it is clear that the best MCA was selected, it is unclear what makes this option more attractive than the alternative, considering that a lower NPV option exists. The Lining Options Study subsequently compared seven options for tunnel lining and pipe material for the NYMR tunnel and trenched sewer sections respectively. The preferred tunnel lining for the NYMR

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<sup>155</sup> The M040 runs from Preston to the south end of St Georges Road and the M041 continues from there to the south side of the Yarra River at Alexandra Avenue where it connects with the M039 Punt Rd St Kilda water main.



tunnelled sections was RCP Jacking Pipe with Internal Plastic Secondary Lining (Option 1). The preferred pipe material for the NYMR trenched sections was GRP (Option 6). An NPV/NPC analysis was not documented; selection was again based on MCA outcomes. Given that we have not observed an NPV/NPC analysis, and instead reliance was placed on MCA, this project has not been demonstrated to be efficient. While we do not recommend that expenditure related to this project is removed from the regulatory allowance, we do recommend that the ESC consider, at the start of Water Plan 4, whether this expenditure was efficiently incurred, and consider not including any inefficient expenditure in the regulatory asset base at the start of Water Plan 4.

Melbourne Water has established processes in place for estimating renewals programs budgets, and utilise the documented gateway approvals process to progress discrete projects. We recommend no changes to the renewals program expenditure, although, as stated above, we do note that in the case of the North Yarra Main renewal (where the linkage between MCA/NPV outputs and the decision making process is not clear) the ESC should consider whether expenditure related to this project was efficiently incurred. If not, the ESC should consider not rolling into the regulatory asset base any inefficiently incurred expenditure related to this project at the start of Water Plan 4.

Notwithstanding our conclusion that Melbourne Water's proposed renewals activities are justified, we are unconvinced about Melbourne Water's proposed timing of these activities over the water plan period. As demonstrated in Figure 6 earlier, Melbourne Water's proposed renewal expenditure is heavily concentrated towards the first half of the water plan period.

From the material we have examined, it would appear that Melbourne Water's process for deciding upon the timing of its actual renewals reserves a degree of discretion, and that the actual timing of its renewals often has appeared to be driven in part by factors that are unrelated to the efficient timing of that renewal (i.e., a consideration of the cost of renewal against the value of the societal risk and additional operating costs of deferring a renewal). For example:

- The North Yarra main renewal was delay from June 2012 to now be proposed to be undertaken in June 2013 as "as a result of a number of strategic project delivery factors"<sup>156</sup>
- Renewal of "significant components of the M102 [the The North Essendon-Footscray pipeline renewal] has been deferred to Water Plan 3 because of a combination of insufficient funding in Water Plan 2 and reprioritisation of that funding in Water Plan 2."<sup>157</sup>

To be clear, the existence of funding constraints – even if caused by an unexpected increase in project costs from other categories – is not a sufficient justification for not undertaking a renewal that was factored into the prices for a particular water plan. The prices that are determined for a water plan are contingent upon the delivery of an assumed set of outputs, which include the delivery of the foreshadowed program of renewals. If the outputs can be provided at lower cost than forecast, then this is an efficiency gain, which deserves to be rewarded, although this is symmetric and so overruns against forecasts give rise to a penalty. However, spending less by not delivering the expected program of renewals is not an

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<sup>156</sup> Melbourne Water's response to the Expenditure Review – draft findings report, p70

<sup>157</sup> Business Case M012 North Essendon-Footscray Renewal Business Needs Identifier, p2.

efficiency gain and so should not be rewarded, or be used to defray a penalty that arises from an overrun in a different program of work.

In view of the flexibility that Melbourne Water has exercised in relation to its historical renewals program, it is reasonable to assume that the same scope for flexibility exists in relation to its forecasts for the next water plan period. While we accept that all the renewals expenditure may be required within the regulatory period, the justification for the expenditure levels to be concentrated in the first half of the period is not strong, and the recommended allowance for renewals expenditure assumes that the works can be smoothed throughout Water Plan 3. Our recommended change to Melbourne Water's allowance is for the average of Melbourne Water's proposed expenditure over the Water Plan period to be provided in each year of the period.

### Yarra Valley Water

We analysed whether Yarra Valley Water's options analysis/expenditure forecasting methodology is reasonable through consideration of the individual programs proposed.

- Sewer Gravity Mains – Yarra Valley Water intends to maintain the 'medium' investment option, which allows for the maintenance of the 5 year average level of service (41.2 blockages/100km) by renewing an average of 61.2km/year over the Water Plan 3 period. This represents a minor increase from the 59.2km/year renewals in Water Plan 2. Because the difference is minor, no adjustment to the budget is recommended. Yarra Valley Water has described at a high level the risk-based approach used to determine which renewals are included in this budget (centred on condition and criticality).
- Water Reticulation Mains – Yarra Valley Water has opted to maintain a renewal schedule (58km/year) adequate to maintain the historical 5 year average burst rate. The budget is calculated by the PARMS model, developed by CSIRO and the Water Services Association of Australia (WSAA), which predicts the required investment to achieve the specified service level. Yarra Valley Water determines the schedule of renewals based on a rolling analysis and prioritisation. Priority 1 assets are renewed immediately, targeting 60% completion within 12 weeks of detection. Priority 2 and 3 are renewed on a rolling basis within the budget set by the PARMS model. The expenditure to achieve this has been relatively evenly split over Water Plan 3 and 4. The PARMS model is an accepted industry standard and thus the use of this tool and the prioritisation methodology used appear reasonable.
- Water Distribution Mains – As the consequence of the failure of these distribution mains is significant, Yarra Valley Water has adopted a proactive renewals program. Pipelines are characterised based on condition (5 to 1) and criticality (AAA to D). Yarra Valley Water has identified a program of works to address all 5AAA rated pipelines, and a selection of 4AAA risks in Water Plan 3. YVW has identified a program of works to address the remaining 4AAA risks and 5A risks by the end of Water Plan 4. We note that the schedule omits a small number of the identified 4AAA and 5A risk projects, which may lead to the overall budget for Water Plan 3 and Water Plan 4 to be slightly underestimated; however, no adjustments to the Water Plan 3 expenditure is recommended as the omitted works are minor compared to the overall program budget. As such, no adjustments are recommended.

We consider the methodology employed by Yarra Valley for establishing renewal program budgets to be robust, utilising known industry methods. There also appears to be a clearly defined prioritisation process to ensure the highest priority renewals are addressed early in the program.

### South East Water

South East Water utilises PARMS models for its water and sewer renewals programs. South East Water then prioritises projects within these two programs of work based on the risk exposure of the particular section of pipeline, based on failure likelihood (condition) and the consequence of failure (criticality). This approach reduces customer exposure to major water

supply interruptions (e.g. the failure of significant water mains), whereas some failure is tolerated for non-critical assets (smaller reticulation mains, hydrants) that are easier to fix and that have a reduced impact on customer service and/or the environment. The risk rankings have been developed based on known pipeline information, including performance data which is available from the asset information system.

We reviewed the development of the sewer, water, and sewer pressure mains renewals programs in further detail below:

- Sewerage System - The budget for this item is calculated by the PARMS model, developed by CSIRO and the Water Services Association of Australia (WSAA), which predicts the required investment to achieve the specified service level. South East Water has opted to maintain the current level of service, resulting in a PARMS output based on renewing 23 km/year of reticulation sewers and 3.2 km/year of branch sewers. South East Water determines the schedule of renewals (prioritisation) based on updated performance information which is downloaded into the prioritising tool SARP (Sewer Asset Renewal Prioritiser).
- Water System – The budget for Water System renewals is also calculated by the PARMS model. South East Water has opted to maintain a current level of service, resulting in a PARMS output based on renewing 31km/year. Prioritisation of this work is completed using WRAP (Water Renewal Analyser & Prioritiser).
- Sewer Pressure Mains Renewals – The South East Water asset management plan for sewers identifies 15 pressure mains due for renewal in Water Plan 3, and while the document does not describe how these mains were identified as being due for renewal, South East Water has commented that over recent years they have experienced a number of rising mains failing prematurely, such that the Board has identified failure of these assets as a significant risk. Additionally, South East Water describes that in 2010 they entered into an Enforceable Undertaking with the EPA after the failure of the Craigie Road rising main. We consider it reasonable to assume that these pipelines have been identified as high risk based on the condition assessments prompted by the Enforceable Undertaking. No adjustments are recommended; however, we note that South East Water should amend the asset management plan document to more clearly describe how the assets in each of the sewer sub categories are identified for renewal and prioritised.

Based on our observations above, and the use of known modelling tools for determining renewals budgets, we consider the South East Water approach to be reasonable and as such make no recommendations for adjustment of this expenditure allowance.

### City West Water

City West Water categorises the renewals programs into four programs; risk, key performance indicator (KPI), facility improvement, and efficiency. These categories are then divided into water, sewer and alternative water categories, and then into components for which budgets are assigned.

City West Water has documented its approach to the four renewals programs in 'State of the Assets' reports, which includes a summary of historical data and expenditure with which to compare the current trends. An overarching renewals plan document clearly describes the scope and cost preparation for each of the renewals sub categories. While we note that the risk and KPI based programs could conceivably be combined and managed as a single program, we do not consider this choice by the business to manage them separately to have any impact on the accuracy of the predictive maintenance budget setting.

We examined City West Water's proposals for the four renewals programs:

- Risk Based Renewals: The risk based renewals program includes water main (distribution and reticulation) renewals and sewer (main and house connection)

renewals. City West Water uses an Asset Risk Management Model to assess risk profiles and prepare work programs. City West Water has opted to manage risk by all mains assessed within the 'extreme' risk category, and those within the 'high' risk category (but only where the consequence of failure is catastrophic and the likelihood of failure has been assessed as a three). City West Water opted to continue to undertake direct physical testing of the metallic distribution mains, limited to the metallic distribution mains laid prior to 1980 and excluding the mains that have been tested to date, as the metallic distribution mains are considered to be of a generally higher risk than other assets. The City West Water approach to renewals budgeting is different to the PARMS model used by other businesses, in that City West Water identifies specific renewals projects (which are then costed) rather than PARMS which models a budget within which the business must then manage to complete a prioritised list of projects. However, we consider the City West Water approach to be reasonable, well documented, and reflective of the extent of renewals work necessary.

- **KPI Based Renewals (pipeline assets):** The KPI based renewals program include water (reticulation, reticulation valves, property connections) renewals and sewer (main and house connection) renewals. City West Water is incrementally renewing its ageing reticulation infrastructure, much of which has reached the end of its functional life. City West Water notes it has analysed all failures that have occurred over the last 15 years enabling it to identify the worst performing mains (by age and material) and group these into categories. In each case the Renewal Program for Water Plan 3 identifies the length of pipe that exceeds or is expected to exceed the City West Water renewals requirement. The City West Water approach is based on known asset conditions and thus appears reasonable.
- **Facility Renewals (non-pipeline assets):** City West Water notes that these renewals are undertaken in order to continue to meet system and operational requirements. City West Water allocates budget for many of the mechanical and electrical assets in accordance with the operation and maintenance manuals. Other civil assets undergo condition assessment as part of the routine preventative maintenance programs and are included in the renewal program if necessary. The approach to setting aside budget for renewals based on supplier recommendations appears reasonable.
- **Efficiency Renewals (bring forward works, meter replacements):** City West Water states that efficiency renewals are comprised of other authorities' work (coordinating the renewal of high risk or poor performing assets with local construction etc.) and non-revenue water renewals (mostly meter replacement). City West Water notes that a decision may be taken to renew an asset after a review of the assets affected by a Council's road reconstruction plans. It is noted that by their nature, efficiency renewals can only realistically be identified in the year when City West Water is notified, or in the case of an emergency renewal, after the asset has failed. City West Water therefore has assigned budget to these renewals based on historical expenditure. This approach to basing expenditure based on historic expenditure is reasonable in this case (and as such no adjustment is recommended); however, the reviewers suggest that City West Water develop an internal guideline that clearly defines the threshold risk rating at which a renewal is eligible to be brought forward (for example a renewal might only be eligible to be brought forward if the risk rating is in the 'high category').

City West Water has demonstrated a methodical and well documented approach to developing, budgeting, and documenting their renewals programs. No adjustments are recommended.

### Western Water

The Western Water renewals program is centred on two separate programs, the sewer spill prevention scheme (SSPS), which addresses issues in particular regions, and a separate program to address reticulation renewals and replacement for water, sewer, and sewer pressure mains across the whole region. We reviewed the development of both programs in further detail below:

- **Water/Sewer Reticulation Renewals/Replacement Program:** Western Water predicts budgetary requirements for future renewals of water, sewer and recycled water assets using a 'Nessie Curve Analysis Spreadsheet'. The Nessie Curve is an infrastructure asset management tool developed by Haydn Reynolds (South Australia) that graphically depicts the annual renewal requirements based on when the assets were installed and expected service life. The predictive accuracy of this tool was not reviewed directly; however, an indirect test was performed by comparing the outputs of this model and Western Water's proposal. Appendix E of the Water, Sewer, and Recycled Water Main Renewals (Feb 2012) document provided by Western Water, sets out the predicted budgets for the three sub-categories by calendar year. For reference we have reported the values below for the calendar years 2014 – 2018 (which for the purpose of discussion we take to be a reasonable approximation of the expected expenditure in Water Plan 3):
  - Water: \$10.675 million
  - Sewer: \$0.299 million
  - Recycled: \$0.017 million

There is a considerable and unexplained difference between the program renewal cost reported in the Water, Sewer, and Recycled Water Main Renewals document, and the corresponding projected expenditure for this program of works (\$2.630 million) as stated in the breakdown of the top 80% (by budget) of projects planned for Water Plan 3.

We recommend that the requested budget of \$2.630 million remain in the Water Plan 3 as there is potential for it to be underestimated rather than over estimated at this stage. We also suggest that Western Water have an independent review of the Nessie Tool, and if it is found to be inaccurate that Western Water explore alternative methods for predicting maintenance budgets.

Within the budget identified above, Western Water has adopted a criticality rating system to rate assets from AAA to D, depending on the seriousness of the consequence of failure. Assets are also assigned service and structural condition ratings (from 1 – 5). Prioritisation of renewals is done using Western Water Risk-Consequence Criticality Ratings, as well as an assessment of Structural Condition and Service Condition information. Western Water has identified that its target is to address all pipelines that have, or are projected to have, extreme risk or high risk of failure during the Water Plan 3 regulatory period. This approach to project prioritisation appears reasonable.

- **Sewer Spill Prevention Strategy (SSPS):** The SSPS addresses sewer spills in four areas (Melton, Sunbury, Gisbourne, and the balance Region). The SSPS Business Case prepared by Western Water indicates that the business has adopted a self-imposed KPI for the number of sewer blockages per 100km of sewer (which appears to be 15 blockages per 100km per financial year as shown in Figure 4 of the SSPS Business Case). This target is based on a business target for Western Water to rank in the 'Top 5' amongst Victorian water businesses (Figure 3 of the SSPS Business Case, which shows Western Water achieving 30 blockages per 100km historically up to the year 2009). The reviewers note that the target shown in the SSPS Business Case is inconsistent with the target reported in the Water Plan (24.68 blockages per 100km). Given that Western Water is already performing well against the 15 blockages per 100km target (seen in Figure 4 as mentioned above), lowering the target to this level appears to be an achievable target and is almost consistent with maintaining current service standards, based on the actual cumulative blockages reported in the SSPS Business Case up to May 2012 (shown in SSPS Business Case Figure 4).

A Failure Mode and Root Cause Analysis of sewage spills is used to assess the causes of spill, and identify management options. Management options fall within one of the following categories: CCTV Inspections and Sewer Main Renewals, Critical Spill Points and Installing Fail Safe Alarms, Monitoring High Risk Rising Mains, Minimise

Stormwater Infiltration and Inflow. Works carried out as part of the SSPS were prioritised on the reduction of residual risk to Western Water meeting its compliance obligations and risk to its customers. Western Water has an understanding of the cost of various activities based on similar works in Water Plan 2, and can therefore build up the budget on this basis. The approach taken by Western Water with regards to SSPS appears reasonable.

In general the documentation provided by Western Water tended towards high level discussion of procedures and concepts, without the quantified outputs seen in other water plans and supporting information for the Melbourne retailers and Melbourne Water, although we acknowledge the material difference in size between Western Water and the other reviewed companies may limit its ability to produce detailed documentation. As a result, the reviewers have had to infer details such as SSPS targets and KPIs from graphs contained in the reports (e.g. the SSPS business case) rather than as quantified values stated by the business. Nevertheless, the approach to SSPS project prioritisation appears reasonable and no adjustments are recommended.

The discrepancy between the Nessie outputs and the water plan allowance for renewals should be addressed. Western Water is strongly recommended to undertake the activities suggested above. However, no adjustments are recommended as there is no evidence to suggest the allowed scope is an over estimate of Western Water's requirements.

### **Analysis of delivery mechanism**

At the time undertaking the capital expenditure analysis, a number of the water businesses were in the process of developing and reviewing their contracting strategies and delivery mechanisms for delivery of WP3.

#### **Melbourne Water**

99% of Melbourne Water's capital expenditures and 88% (or 75% excluding VDP costs) of operating expenditures are contracted out and are therefore subject to competitive market processes which have the potential to drive significant efficiencies. Melbourne Water recently undertook a significant tendering process in relation to its maintenance contracts, and while the new strategy has not been observed in action, Melbourne Water confirmed it will be ready to begin delivery in time for the start of Water Plan 3. In the meantime, the alliance is continuing design activity, with most projects progressing to the PBC stage in preparation for the new contractors to begin. There is no evidence to suggest that Melbourne Water will be unable to deliver the quantum of work required in Water Plan 3. As such, no adjustment is recommended.

#### **Yarra Valley Water**

We analysed whether Yarra Valley Water's delivery mechanism is reasonable through consideration of the individual programs proposed.

- Sewer Gravity Mains – Yarra Valley Water has a service agreement in place with one sewer main contractor (Interflow), whose contract was recently extended. Yarra Valley Water allows contractors to manage the continuity of their own works, and contractors are made aware of the prioritised list of projects ahead of time. Providers are held to KPIs for response times for prioritised activities.
- Water Reticulation Mains – There are two water main renewals contractors engaged by Yarra Valley Water. Yarra Valley Water allows contractors to manage the continuity of their own works, and contractors are made aware of the prioritised list of projects ahead of time. Providers are held to KPIs for response times for prioritised activities.
- Water Distribution Mains – Yarra Valley Water confirmed that the design process for these renewals can take up to two years and is quite complex. The preliminary design phase includes an alignment option assessment, including stakeholder consultation and Multi-Criteria Assessment. Design of the preferred alignment is delivered through

the Yarra Valley Water design panel consultants, and then tendered to the Yarra Valley Water construction panel of 10 contractors.

Yarra Valley Water has agreements with prequalified contractors to manage the timing of the delivery of simple/lower cost projects, while the projects with more complexity are tendered (design then construct) in a competitive environment. We consider all of these approaches to be reasonable and no adjustments are considered necessary.

#### South East Water

Delivery of the renewals program is through an arrangement using a contractor partner ('us' - Utility Services Alliance) which commenced in 2010 for three years using a schedule of rates contract. The Alliance rates were market tested through an independent auditor before awarding the contract. South East Water advised that they will be shortly going to the market for a revised delivery approach/team to commence at the start of Water Plan 3. We suggest that South East Water's delivery approach is reasonable, and that going to market for the start of Water Plan 3 is likely to result in an efficient delivery partnership. We recommend no alteration to the proposed expenditure.

#### City West Water

City West Water has an established Renewals Panel, which has been in place 3-4 years and has just been extended. City West Water confirmed during the interview that the panel typically applies to pipelines up to 150mm. Renewals are issued on a design and construct (D&C), agreed rates basis. The rates for each contractor are revised annually. This approach is reasonable, and there is no evidence to suggest that City West Water will be unable to deliver the proposed works, and thus, no adjustments are recommended.

#### Western Water

Western Water plans to implement contracts for Root Foaming, CCTV inspections, and sewer rehabilitation. Renewal of water reticulation assets is tendered separately for each package (though often multiple similar renewal activities are bundled together). Western Water's approach is reasonable, and there is no evidence to suggest that Western Water will be limited in their ability to deliver the proposed works, and thus, no adjustments are recommended.

### Assessment of costs

#### Melbourne Water

The cost estimate supplementary information provided for North Yarra Main Renewal is a perfect example of the cost information that should be provided to enable a thorough independent review. However, this project also illustrates a key difficulty that we had with reviewing Melbourne Water's proposal, in that the final cost estimate figure in this document (in common with many of its other projects) did not match that listed in the Water Plan 3. We are now aware that the difficulty with reconciling costs across different information sources stems from the fact that the cost estimates in Melbourne Water's business systems are continuously updated (with the RANE being undertaken prior the Final Water Plan's completion). We have reviewed its systems and methods and have recommended no changes; however, we highlight the additional difficulty created for properly reviewing Melbourne Water's proposals.

For the other renewals programs, the source of costs, unit rates, and other inclusions used to generate the capital cost has mainly been based on information from past project with adjustments made to suit each case. This approach is reasonable. The estimates have been completed by factoring known unit costs and by estimating gross dimensions or quantities once conceptual or preliminary engineering has been completed. All project indirect costs are factored using historical data and seem reasonable. Contingency allowances are in most cases being calculated within the Melbourne Water RANE process (Monte-Carlo analysis producing a P50 estimate).

### Yarra Valley Water

The commentary regarding the cost estimates for renewals projects can be taken as the same as for the growth projects (e.g. the use of the costing spreadsheet is common for both). As per our commentary under growth projects for this business, the Yarra Valley Water approach is reasonable and no further adjustments are recommended.

### South East Water

The commentary regarding the cost estimates for renewals projects can be taken as the same as for the growth projects (e.g. the use of the costing spreadsheet is common for both). As per our commentary under growth projects for this business, the South East Water approach is reasonable and no further adjustments are recommended.

### City West Water

We observe that all costing information provided seems to have been produced in-house by City West Water, rather than by external consultants.

For the pipeline assets all expected renewal costs are based on approximate historical renewal costs. Examples of historical data have been provided and the assessment found that this information is suitable cost data to use as a base for future spend. Data from this source has been used to determine historical average costs for various categories of renewals in City West Water's water plan.

For the non-pipeline assets, bring forward works and meter replacements, all expected renewal costs are based on the historical expenditure per year during Water Plan 2, however no additional source detail provided. Given that the scope of works for these activities also is based on historical data, it is assumed by the reviewer that the business has adequate experience to develop reliable estimates for the proposed scope of work.

### Western Water

The estimates have been based actual costs for similar projects and therefore are considered appropriate by this review team. A Monte Carlo risk analysis has been carried out for each project, however there is no evidence of any contingency allowances in the information provided. While we do not recommend an adjustment to the expenditure proposed to Water Plan 3, we note that there is potential to underestimate the expenditure for these programs if appropriate contingency is not allowed.

### Other recommended changes

Subsequent to Melbourne Water submitting its Water Plan it has reassessed its costing and timing of a number of projects. Across the whole of its capital expenditure budget (not limited to renewals expenditure) it highlighted a net reduction of \$43.1 million over Water Plan 3. We accept all these changes, based on a likely improvement in forecasting accuracy as projects approach initiation.

Within the total net \$43.1 million decrease proposed by Melbourne Water, it proposes a net increase of \$12.5 million in renewals. We accept this increase, and include the increase in determining the average renewals expenditure over the Water Plan period.

## 6.4.3 Findings and recommendations

Based on the analysis above, we recommend no alterations to Yarra Valley Water's, South East Water's, City West Water's or Western Water's proposed renewals expenditure.

In the case of Melbourne Water, we recommend:

- An increase to the expenditure of \$12.5 million over the Water Plan, on the basis of revised cost estimates. These increases are more than offset by decreases to cost estimates also provided by Melbourne Water in other areas.
- A smoothing of the new recommended total expenditure so that it is equal for each year of the water plan period



- that the ESC considers, at the start of Water Plan 4, whether expenditure on the North Yarra Main Renewals was efficiently incurred, and consider not including any inefficient expenditure in the regulatory asset base at the start of Water Plan 4.

These recommendations are outlined in Table 50 below.

**Table 50: Recommended adjustments to renewals capital expenditure, Melbourne Water (\$M)**

<b>Recommended adjustments</b>	2013/14	2014/15	2015/16	2016/17	2017/17	Water Plan 3 total
Renewals expenditure	-44.15	-60.66	1.93	39.45	75.97	12.54
<b>Total recommended adjustments</b>	<b>-44.15</b>	<b>-60.66</b>	<b>1.93</b>	<b>39.45</b>	<b>75.97</b>	<b>12.54</b>

## 6.5 IT capital expenditure

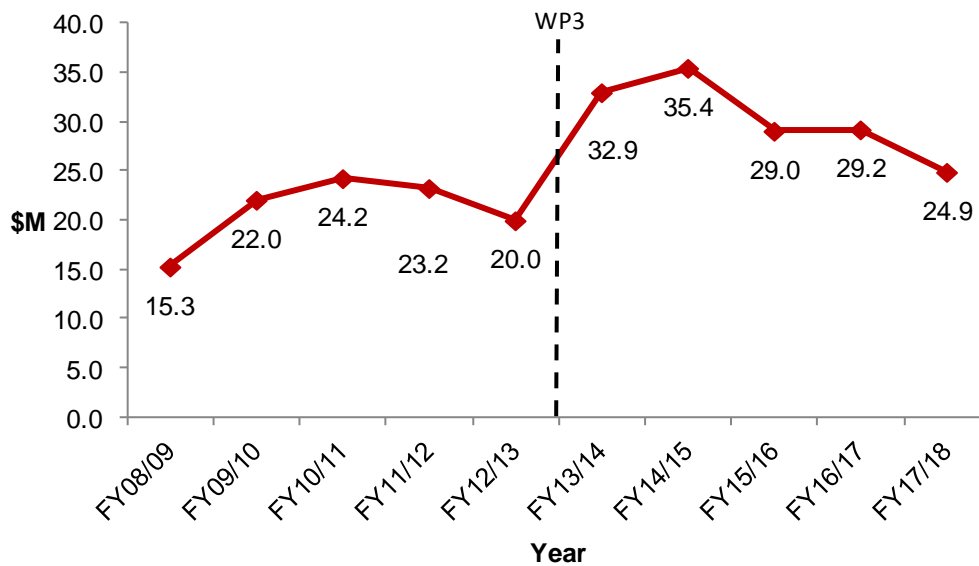
### 6.5.1 Water companies' proposals

#### Melbourne Water's IT capital expenditure proposals

Melbourne Water is proposing to invest \$151 million on IT capital expenditure in Water Plan 3, accounting for 6% of Melbourne Water's overall proposed capital expenditure.<sup>158</sup>

Figure 11 below illustrates Melbourne Water's proposed IT capital expenditure for the third regulatory period. Overall, Melbourne Water's proposed IT expenditure follows a downward trend during Water Plan 3 after an initial uplift in 2013/14; with expenditure on IT decreasing from \$33 million in 2013/14, to \$25 million in 2017/18.

**Figure 11: Proposed IT capital expenditure for Water Plan 3, Melbourne Water**



Source: PwC analysis, ESC IT queries - Water Plan 2 and Water Plan 3 annualised comparisons (presentation)

Melbourne Water's proposed IT expenditure is characterised by seven IT programs as outlined in Table 51.

<sup>158</sup> PwC analysis, ESC financial template

**Table 51: Proposed IT programs, Melbourne Water (\$M)<sup>159</sup>**

IT Program	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 2 aver.	Water Plan 3 aver.
Systems System enhancement	2.8	2.8	2.8	2.8	2.8	2.5	2.8
Systems Strategic	15.8	8.9	4.5	4.7	4.7	1.6	7.7
Systems Minor renewal	1.9	1.9	1.9	1.9	1.9	1.7	1.9
Systems Major renewal	1.1	5.2	6.3	3.1	1.1	2.8	3.4
Infrastructure Strategic	2.9	9.4	1.4	1.8	2.8	4.9	3.7
Infrastructure Minor renewal	4.1	4.3	4.3	4.3	3.9	3.7	4.2
Infrastructure Major renewal	4.5	2.9	7.9	10.7	7.7	3.8	6.7
Total	32.9	35.4	29.0	29.2	24.9	20.9	30.3

Melbourne Water explained in high level terms the justification for its IT investments as follows:

“Sustaining the level of service from existing assets, while ongoing investment is required to maintain technological currency, respond to changing business and customer needs, and address continued growth in the volume and complexity of information.”<sup>160</sup>

Melbourne Water further justified its proposed IT expenditure on efficiency gains and increased effectiveness of corporate processes.<sup>161</sup> Additionally, Melbourne Water’s proposed IT investments for the third regulatory period align with the corporation’s key obligations from their *Statement of Obligations (September 2012)*. These obligations include:

- implementing processes and systems which maintain levels of service while minimising whole of life cost
- opening and transparent processes for engaging customers

<sup>159</sup> ESC IT queries - Water Plan 2 and Water Plan 3 annualised comparisons, slide 5

<sup>160</sup> Melbourne Water, “2013 Water Plan”, October 2012

<sup>161</sup> Melbourne Water, “Spreadsheet: Summary of IT Projects assessment”

- undertaking continuous review and improvement.<sup>162</sup>

Proposed IT expenditure can also be linked to the delivery of key business outcomes, including:

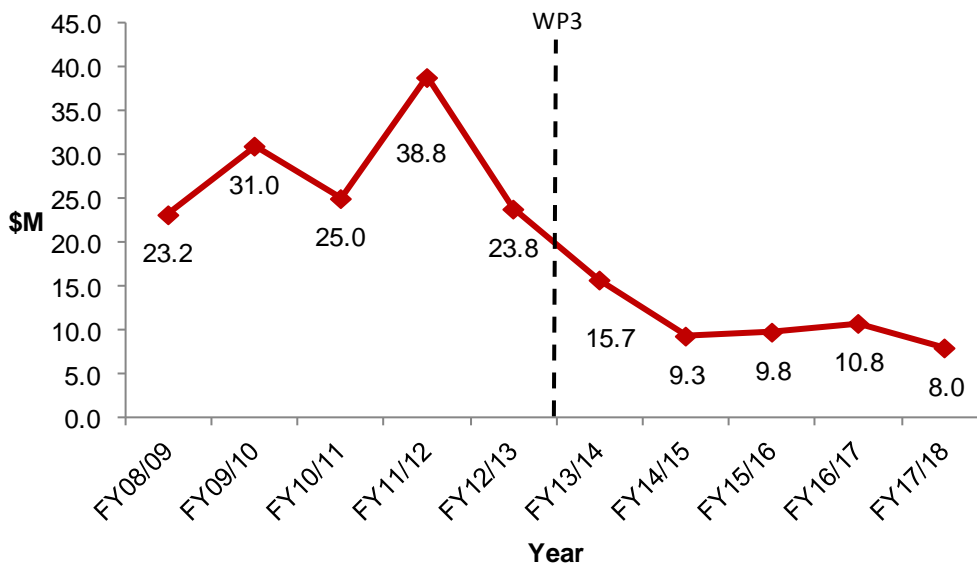
- customer service delivery (\$5.4 million)
- business intelligence (\$8.3 million)
- corporate systems and human resources management (\$8 million)
- asset-centric systems (\$13.9 million)<sup>163</sup>

### **Yarra Valley Water’s IT capital expenditure proposals**

Yarra Valley Water is proposing to invest \$54 million on IT capital expenditure in Water Plan 3, accounting for 5% of Yarra Valley Water’s overall proposed capital expenditure.<sup>164</sup>

Figure 12 below illustrates Yarra Valley Water’s proposed IT capital expenditure for the third regulatory period. Overall the proposed IT expenditure for Water Plan 3 follows a downward trend, with expenditure on IT investments decreasing approximately 50% across Water Plan 3 from \$16 million in 2013/14, to \$8 million in 2017/18.

**Figure 12: Proposed IT capital expenditure for Water Plan 3, Yarra Valley Water**



Source: PwC analysis, ESC financial template, historic figures provided by Yarra Valley Water

Yarra Valley Water’s IT expenditure is characterised by a number of small investments. Five of the larger projects are outlined in Table 52.

<sup>162</sup> Melbourne Water, “Information Technology Program Overview. Presentation of ESC Expenditure Consultants”, December 2012

<sup>163</sup> Melbourne Water, “2013 Water Plan”, October 2012

<sup>164</sup> PwC analysis, ESC financial template. We note that proposed IT expenditure is included under ‘renewals’ in the ESC template.

**Table 52: Proposed IT projects, Yarra Valley Water (\$M)<sup>165</sup>**

	2013/14	2014/15	2015/16	2016/17	2017/18
IT Infrastructure End Of Life Replacement	2.4	2.5	3.0	2.5	2.6
Asset Management System Implementation	5.0	1.0	0.3	0.3	0.5
IT Portfolio Infrastructure and System Provisioning	0.1	0.5	0.1	4.0	0.1
End of Life System Replacements	1.2	1.0	0.8	0.6	0.6
Billing System Improvements	0.5	1.0	0.5	0.5	1.0

Much of this expenditure is of a renewals nature, and is therefore justified on the basis of maintaining customer service levels.

### ***South East Water's IT capital expenditure proposals***

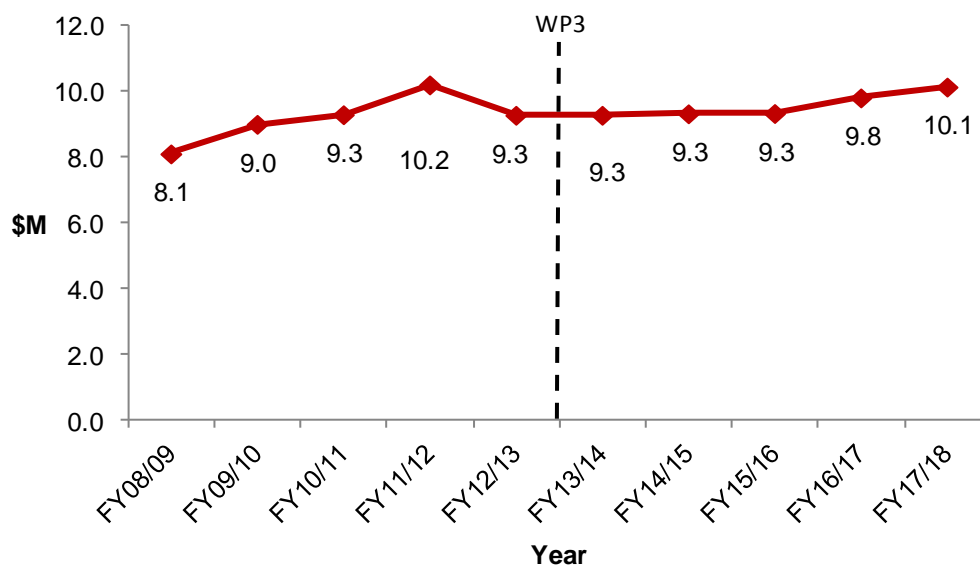
South East Water is proposing to invest \$48 million on IT capital in Water Plan 3, accounting for 4% of South East Water's overall proposed capital expenditure.<sup>166</sup>

Figure 13 below illustrates South East Water's proposed IT capital expenditure for the third regulatory period. Overall South East Water's proposed IT expenditure follows a small upward trend, with IT investment across Water Plan 3 increasing slightly from \$9.3 million in 2013/14, to \$10.1 million in 2017/18.

165 (100 per cent) Yarra Valley Water CAPITAL EXPENDITURE Project List 20 Dec 2012

166 PwC analysis

**Figure 13: Proposed IT capital expenditure for Water Plan 3, South East Water**



Source: PwC analysis, South East Water - 10 year Capital expenditure program – 20121115, ESC financial template

South East Water’s proposed overall IT program is characterised by five specific IT programs as outlined in Table 53.

**Table 53: Proposed IT programs, South East Water<sup>167</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017/18
Infrastructure	1.6	3.9	2.2	1.4	2.9
Corporate applications	1.9	1.5	1.7	2.2	1.7
Information management strategies	2.7	1.5	1.2	1.6	1.3
Customer management	1.3	1.5	3.0	1.3	1.1
Assets management	1.8	1.0	1.2	3.4	3.2

South East Water describes its proposed IT expenditure in the following way:

“South East Water is forecasting ongoing capital expenditure in information technology, consistent with historical expenditure, including replacing and upgrading equipment, customer system initiative and asset management initiatives at approximately \$9.6 million per annum.”<sup>168</sup>

<sup>167</sup> South East Water - 10 year Capital expenditure program - 20121115

<sup>168</sup> South East Water, “2013-18 Water Plan”, October 2012

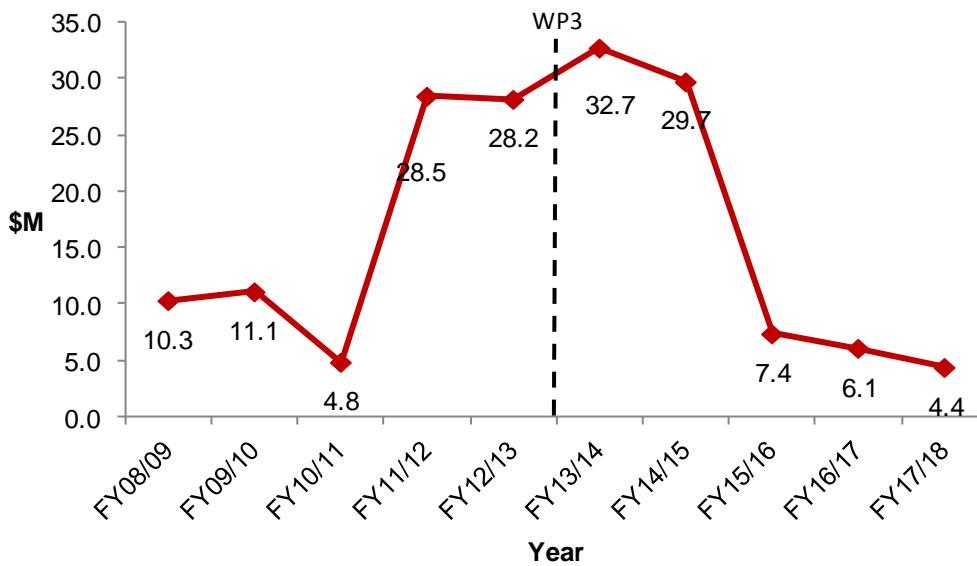
South East Water has outlined that its forecast capital expenditure program will maintain service levels consistent with past performance, except where maintaining service level increases costs without material benefit to the customer.<sup>169</sup>

**City West Water’s IT capital expenditure proposals**

City West Water is proposing to invest \$80 million on IT capital in Water Plan 3, accounting for 10% of City West Water’s overall proposed capital expenditure.<sup>170</sup>

Figure 14 below illustrates City West Water’s proposed IT capital expenditure for the third regulatory period. Overall, City West Water’s proposed IT expenditure follows a downward trend, decreasing from \$33 million in 2013/14 to \$4 million in 2017/18. This downward trend can be explained by the size and timing of City West Water’s Arrow Program (discussed below).

**Figure 14: Proposed IT capital expenditure for Water Plan 3, City West Water**



Source: PwC analysis, ESC financial template, historic figures provided by City West Water

City West Water’s proposed IT expenditure for Water Plan 3 is characterised largely by the Arrow Program (\$51 million), which will be completed at the end of 2014/15, and to a lesser extent two smaller investments.<sup>171</sup>

<sup>169</sup> South East Water, “2013-18 Water Plan”, October 2012

<sup>170</sup> PwC analysis, ESC financial template

<sup>171</sup> PwC analysis, 20121116 City West Water response to PWC preliminary capital expenditure request 20121116

**Table 54: Proposed IT projects, City West Water<sup>172</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Arrow - Implementation	26.7	22.7	0.3	0.7	0.7	51.0
Develop and implement replacement GIS	0.6	0.2	2.2	1.7	0.3	5.0
City West Water labour - IT	0.9	0.9	0.9	0.9	1.0	4.6

City West Water justifies the proposed \$49 million of IT expenditure for the Arrow Program on the grounds of business efficiency.

“The Arrow Program is City West Water’s business efficiency initiative designed to improved business processes and core systems so that City West Water can sustain and support its growth into the future.”<sup>173</sup>

City West Water notes that the Arrow Program will:

- Increase work efficiency;
- Support business growth;
- Improve customer service; and
- Improve customer service.<sup>174</sup>

The Arrow Program has been endorsed by the Minister for Water, and has been approved by the Treasurer to proceed.<sup>175</sup>

### ***Western Water’s IT capital expenditure proposals***

Western Water is proposing to invest \$17 million on IT capital in Water Plan 3, accounting for 7% of Western Water’s overall proposed capital expenditure<sup>176</sup>.

Figure 15 below illustrates Western Water’s proposed IT capital expenditure for the third regulatory period. Overall the proposed IT expenditure follows an upward trend, with proposed expenditure increasing from \$2 million in 2013/14, to \$5 million in 2017/18.

<sup>172</sup> 20121116 City West Water response to PWC preliminary capital expenditure request 20121116

<sup>173</sup> City West Water, “Water Plan 2. Price Review 2013-2018”, October 2012, p38

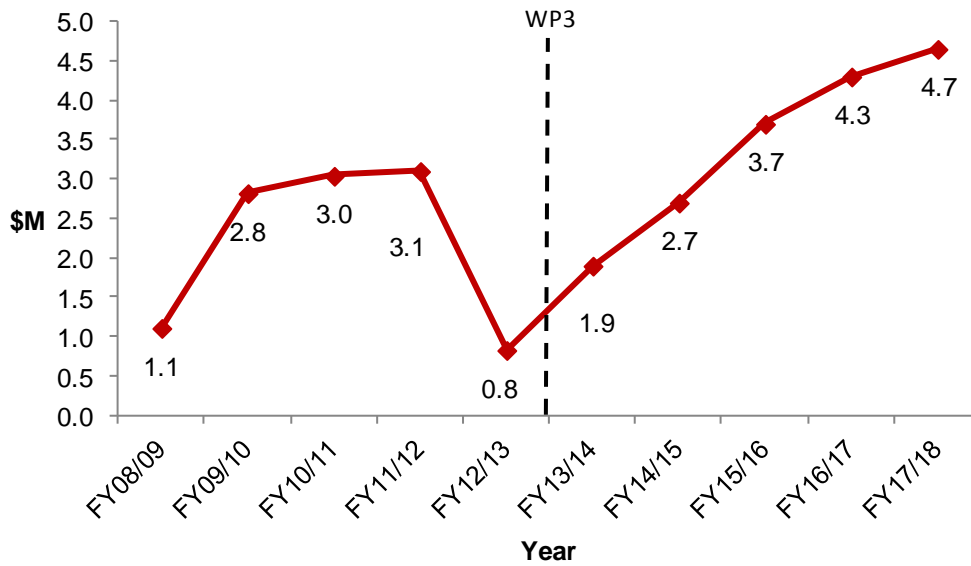
<sup>174</sup> City West Water, “Water Plan 2. Price Review 2013-2018”, October 2012

<sup>175</sup> City West Water, “The Arrow Program – Phase 2 Business Case. Business Case Supplement – Post Enterprise Design.”, Version 1.0, 16 May 2012

<sup>176</sup> PwC analysis



**Figure 15 Proposed IT capital expenditure for Water Plan 3, Western Water**



Source: PwC analysis, Western Water Water Plan – IT Submission, historic expenditure figures provided by Western Water

Western Water’s proposed IT expenditure for the third regulatory period comprises many investments. Some of the relatively larger proposed investments are outlined in Table 55.

**Table 55: Proposed IT programs, Western Water<sup>177</sup> (\$M)**

	2013/14	2014/15	2015/16	2016/17	2017/18	Total
Knowledge Management Program	0.08	0.13	0.24	0.28	1.00	1.73
SharePoint Implementation	0.13	0.18	0.16	0.26	0.99	1.72
SCADA and Telemetry Upgrade	0.05	0.06	0.34	0.26	0.98	1.69
Business Process Improvement Program	0.05	0.07	0.19	0.24	0.80	1.35
Strategic Programs	0.08	0.09	0.18	0.19	0.79	1.33

Western Water justifies its proposed IT expenditure on in its Information Technology Strategic Plan<sup>178</sup> which defined Western Water’s IT priorities:

“The IT Strategy is focused on further establishing the IT environment that enables Western Water to deliver on its strategic priorities to enhance customer value... [The

<sup>177</sup> Water Plan - IT Submission October 2012, Western Water

<sup>178</sup> Western Water, “Information technology Strategic Plan 2011-13 and Water Plan 3 (2013-18). Strategy Review and Update”, November 2011

goal of the IT Strategy is to] build on our IT environment so as to provide reliable, secure and highly available information technology systems supported by best practice possesses and services, ensuring long term value to Western Water's business and our customers."<sup>179</sup>

Western Water further justifies its proposed IT investment in its IT Submission document, noting that Western Water's IT investments are focussed on doing more for less, introducing business process efficiencies and automation into Western Water's manual practices. Western Water also noted that the anticipated efficiency gains from the business improvement IT projects were factored into its forecasts of operating expenditure.

## 6.5.2 Analysis of water companies' proposals

### Project justification

When assessing the prudence and efficiency for IT projects, we looked separately at IT renewal projects and new systems.

For IT renewal projects, the need is established from that fact that service standards need to be maintained. We considered the project descriptions and/or proposed spending trend compared to the previous water plan period in determining whether the proposed projects were a reasonable forecast of project need.

For new IT systems, as with other investments, the project would be justified if it is either required by the obligations applying to the business, or if it generated benefits (to consumers) that exceed the costs.

In relation to this last category of projects, for many of the projects we reviewed, the IT projects were part of broader strategies for improving business efficiency, which is reasonable given that greater use of systems made available by modern IT platforms has been a key source of efficiency improvements in the utility sector. However, a characteristic of these projects is that the magnitude of the likely benefits are difficult to predict with any accuracy in advance depending, amongst other things, upon the likelihood that the business will follow through with what may be difficult organisational changes. Moreover, in common with many IT projects, the costs also have a large degree of forecast error.

Our preferred means for dealing with efficiency-related IT projects for regulatory purposes would be to ignore the projects when forecasting IT capital expenditure and also to ignore the expected efficiency improvements when forecasting operating expenditure, and to rely upon the projects being self-financing if the expected benefits in fact emerge. This approach would have the benefit of leaving with the businesses the risk of whether the forecast of the efficiency benefits are reasonable, and indeed would provide the business with a financial benefit (for a period of time) to the extent that true efficiency gains are generated, which is also desirable.

However, it was put to us that the incentive regime for the Victorian water businesses is not sufficiently well developed so that all *efficient* projects would also be *commercially viable*. A key concern was that the benefits from efficiency initiatives and the holding of any incremental costs both cut-off at the time of the next price review, so that projects whose benefits are expected to arrive at a lag to the costs (and particularly where benefits are expected to increase over time) may see the businesses bear the incremental cost, but have the receipt of the benefits truncated by the next price review, making a socially efficient

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<sup>179</sup> Western Water, "Information technology Strategic Plan 2011-13 and Water Plan 3 (2013-18). Strategy Review and Update", November 2011

project commercially unviable. While we consider that further refinement of the incentive scheme would be a desirable longer term initiative, we accept the position for the current review and have modified our approach.

Accordingly, we have reviewed the business plans for the new IT systems and tested whether the projected benefits exceed the cost. As with other expenditure, we have tested the benefits from the point of view of water consumers, which principally fall into the class of reduced expenditure elsewhere by the water business, although some projects deliver benefits directly to consumers (such as greater convenience). Where we are satisfied that the project is likely to provide benefits in excess of the cost, we have recommended the inclusion of the project.

However, an important principle is the need for consistency between the forecasts of IT expenditure on new systems and the forecasts of operating expenditure. As discussed in Chapter 3, our method for deriving the operating expenditure forecasts is to take the minimum of the company's forecast of operating expenditure and the forecast that is consistent with meeting the ESC's requirement for the operating expenditure forecast to embody a (partial) productivity gain of at least 1 per cent. We have applied this consistency requirement to these two forecasts as follows.

- In relation to the water business's operating expenditure forecast, where there is evidence that those businesses have factored in the expected gains from the new IT systems and associated initiatives to their operating expenditure forecasts, we have assumed that consistency would require the IT capital expenditure also to be accepted. We have, however, recommended the removal of IT expenditure where this evidence does not exist – for example, where the project is such that the projected benefits at this time are unduly speculative.
- In relation to the application of the ESC's threshold, we have assumed that this productivity hurdle is required to be met without undertaking material capital expenditure projects to reduce operating expenditure. Thus, to the extent that capital expenditure projects are undertaken to reduce operating expenditure, then additional productivity gains on operating expenditure should be expected<sup>180</sup>. We have implemented this approach by reducing the threshold by the water business's projected saving in operating expenditure from the IT initiative, taking care to isolate operating expenditure reductions from other quantified benefits (such as reduced capital expenditure) and allowing for any forecast incremental operating cost associated with operating and maintaining the new IT system.

A summary of the approaches implemented for each company is as follows:

- South East Water and Yarra Valley Water have not proposed any material new IT systems which result in (forecast) operating benefits. Instead, these projects are of a renewals nature and are consistent (or a reduction to) historic expenditure on renewals. We also identified a material proportion of Melbourne Water's and Western Water's expenditure that we have regarded as renewals and appropriately justified.
- The remaining expenditure proposed by the companies is related to business efficiency improvements:

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<sup>180</sup> We observe that overall productivity (i.e., total factor productivity) would not be higher to the same extent because there would be a commensurate increase in the quantity of capital inputs used to provide the same outputs. We consider this assumption to be reasonable because, under the converse case – where businesses could achieve the 1 per cent hurdle merely by undertaking capital expenditure projects – an artificial incentive would be created for capital to be substituted for operating expenditure. It would also mean that the extent of benefit to consumers from the 1 per cent operating cost productivity gain would be reduced and also far from obvious given that this would have come at the expense of additional capital costs.

- Our first approach to addressing capital IT expenditure relating to business efficiency improvements is applicable when the water businesses' own operating forecasts have been accepted as the operating expenditure allowance. This is the case for Melbourne Water's proposed waterways and drainage operating expenditure<sup>181</sup>, and all of Western Water's proposed operating expenditure<sup>182</sup>. In these cases, we have accepted the majority of the proposed projects for Melbourne Water and Western Water as being sufficiently justified (the projects and our assessment are set out below). In addition, we have accepted that the benefits from the IT projects were already factored into the companies' forecasts, and so have not recommended any further changes to the operating expenditure allowances.
- Our second approach is relevant for the business efficiency-related IT expenditure for City West Water and the portion for Melbourne Water that is unrelated to waterways and drainage activities. In these cases we have allowed the capital expenditure, but adjusted the operating expenditure maximum recommended allowance accordingly.

Finally, we note that a number of proposed expenditure items were neither renewals, nor well justified on the basis business efficiency. These have been recommended for removal.

### Melbourne Water

Of the \$151.4 million in proposed IT capital expenditure, four programs worth \$80.6 million have been categorised as being 'renewals' with the remaining three programs described as either 'strategic' or 'enhancement' programs. We have analysed the proposed expenditure for each of the seven IT programs individually.

For programs where proposed spending is largely consistent with expenditure incurred during Water Plan 2 and/or of a renewals nature, the project and benefits descriptions provided are sufficient in establishing project need. This applies to the following programs:

- Systems Minor renewal
- Systems Major renewal
- Infrastructure Minor renewal
- Infrastructure Major renewal
- Systems System enhancement
- Infrastructure strategic.

Further analysis was conducted for the Infrastructure major renewal and Strategic systems projects whose proposed expenditure for Water Plan 3 represents a substantial increase from expenditure incurred in Water Plan 2.

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<sup>181</sup> Melbourne Water's operating expenditure for waterways and drainage was excluded from our top-down analysis of operating expenditure and was instead assessed bottom-up. In most categories, the bottom-up forecasts proposed by Melbourne Water were deemed to be efficient.

<sup>182</sup> Western Water's proposed operating expenditure was less than the maximum regulatory allowance derived from the ESC's operating expenditure forecasting methodology, and as such, Western Water's proposed operating expenditure was recommended without alteration.

Proposed expenditure for the Infrastructure Major renewal increases from \$18.8 million during Water Plan 2 to \$33.7 million for Water Plan 3. Melbourne Water has explained that the majority of the increase in proposed expenditure above Water Plan 2 is the result of additional renewal works required for IT assets developed in Water Plan 2 and renewals work required for assets not renewed in Water Plan 2.<sup>183</sup> This explanation, together with the project and benefits descriptions, is sufficient in establishing need for this program.

Proposed expenditure for the Systems strategic program increases from \$8.0 million during Water Plan 2 to \$38.6 million for Water Plan 3.<sup>184</sup> On review of the business cases and project descriptions provided by Melbourne Water, the project need for these projects has been established, some of which relate clearly to compliance obligations, but most of which are justified on the basis of the efficiency benefits that these projects will generate.

However, as discussed already above, we recommend that the forecast operating expenditure efficiency benefits be passed on to water customers via adjustments to Melbourne Water's proposed operating expenditure (see section 4.4.2). Operating expenditure adjustments related to the Strategic systems IT program are described in section 4.4.2.

### Yarra Water

Although no specific documentation has been provided to explain proposed the proposed IT program (nor was it specifically requested), we note that:

- the list of projects proposed suggests the projects are largely of a renewals nature
- the overall expenditure trend is declining following significant IT investment incurred during Water Plan 2
- Yarra Valley Water's statement that it is targeting the maintenance of existing customer service levels

Based on this evidence, the project need for Yarra Valley Water's proposed IT program has sufficiently been established.

Yarra Valley Water's proposed operating expenditure for Water Plan 3 should reflect the substantial capital expenditure investments made during Water Plan 2. Given Yarra Valley Water's modest increase in proposed operating expenditure<sup>185</sup> (and its proposals being close to the recommended maximum allowance derived using the ESC's methodology) we consider this to be met.

### South East Water

As with Yarra Valley Water, South East Water did not provide (nor was specifically requested to provide) detailed documentation to explain proposed IT capital expenditure. However, the listed programs/project within proposed IT expenditure and the historic and forecast expenditure profiles resembles projects of a renewal nature.

On the basis that the projects appear to be renewal type projects and the consistency of proposed overall IT expenditure with historic expenditure, we believe project need has been established.

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<sup>183</sup> Response to PwC draft findings paper\_operating expenditure and capital expenditure, page 50

<sup>184</sup> We note that Melbourne Water has revised proposed expenditure for the AMIS projects up by \$8.229 million. This increase is allocated over the Systems strategic and the Systems major renewal programs.

<sup>185</sup> Yarra Valley Water proposes a 1.6 per cent real increase in the annual average operating expenditure compared to 2011-12.

### City West Water

As City West Water's proposed IT expenditure is dominated by the Arrow Program, we have undertaken an individual analysis of that project. On the evidence that the program:

- is expected to generate both capital and operation expenditure benefits, particularly in the long run, as provided by a detailed business case which demonstrates a positive NPV for the project, and
- has been endorsed by the Minister for Water and approved by treasury,

We believe sufficient evidence has been provided to establish the need for this project.

According to the business case, investment in the Arrow Program will result in efficiencies that outweigh the initial investment cost. As a result, we recommend that the operating benefits as described in the business case be reflected in the City West Water's proposed operation expenditure (see section 4.4.2).

### Western Water

According to Western Water, \$14.5 million of the proposed \$17.3 million in IT capital expenditure is renewals driven. The significant increase in proposed IT expenditure for Water Plan 3 in comparison to Water Plan 2 results from proposed renewals investments that improve on the existing infrastructure. Western Water suggests the decision to in-source IT was a driver behind the increase in investment to improve capabilities and reduce reliance on contractors.

In reviewing Western Water's proposal, we have taken the view that many of the projects that Western Water has characterised as renewals embody substantial enhancements to the existing systems. That is, while a number of the proposed investments may represent a replacement an existing system, in many cases this replacement is proposed to be made either prior to the end of that system's life, or does not even closely represent a like-for-like replacement, or both. Accordingly, for the system enhancing renewals, we have also assessed the justifications for the projects.

Our conclusion from this analysis is that, other than for two projects (discussed below), we consider that the IT projects proposed by Western Water are reasonable on the basis of improved business efficiency. We therefore recommend Western Water's proposed IT capital expenditure be allowed in full, other than for the two projects discussed below. We also accept that Western Water's operating expenditure factored in these efficiency gains, as discussed at the start of section 6.5.2 and in section 4.4.2.

The two projects that we recommend being excluded are the SCADA and Telemetry Upgrade and the SCADA real-time monitoring and reporting projects. We do not believe that project need has been established based on the evidence provided. At this stage, the benefits from these projects appear quite speculative, and additional work should be undertaken to test their feasibility prior to the projects proceeding. As such, we recommend removing \$1.6 million in proposed capital expenditure for Water Plan 3 associated with these two projects.

### Options analysis

#### Melbourne Water

Based on the information provided, it appears Melbourne Water used a consistent process to assess IT projects, in the form of a template spreadsheet, one dedicated to each of the seven

IT programs.<sup>186</sup> Column headings within each spreadsheet prompt consideration of a number of relevant factors for each project within each IT program, such as project drivers, service outcomes, obligations, benefits, and risks before and after implementation, including the calculation of a ‘costed risk’.

However, we note that only the Major Projects included a column to describe the alternative options considered. Within the Major Projects spreadsheet, identification of alternative options was documented for 13 of the 18 major infrastructure projects, representing \$28 million of the \$33.7 million allowed for this program. The information provided did not demonstrate that alternative options had been considered alongside the selected option e.g. a multi-criteria assessment. This is required to demonstrate that the preferred option is the most cost effective or the best solution to address the project drivers. There is also no evidence of NPV assessments being conducted.

Despite these reservations, we note that stringent options analysis may be inconsistent with IT projects of a renewals nature, and therefore make no adjustments to the proposed expenditure for renewals project. While options analysis would have been expected for IT projects with business efficiency benefits, we consider that our approach to allowing the proposed IT capital expenditure but removing related operating expenditure benefits from the operating expenditure allowance is the preferable approach, as discussed above. We therefore further recommend no adjustments to Melbourne Water’s proposed IT capital expenditure related to business efficiency, although do make related adjustments to its operating expenditure. This is discussed in more detail in section 4.4.2.

#### Yarra Water

We considered the options assessment for a number of significant proposed IT projects including the Asset Management System (AMS), IT Portfolio Infrastructure and System Provisioning and the End of Life System Replacement program.

The AMS program of work has been underway for more than 18 months, and Water Plan 3 includes the final scopes of works including replacement of the ageing Hansen Asset Management system and the FOCUS mobile workforce management system - the replacement of which is considered by Yarra Valley Water to be overdue and has been deferred previously. The Business Case (the “Green”) for AMS demonstrates that an options assessment for AMS replacement was conducted. Furthermore the Green demonstrates that the selection of a system implementer followed an EOI then RFT, the nine responses being ranked, and the highest scoring respondent (IBM) being selected. This process demonstrates a high level of rigour, and thus we recommend no adjustment.

The IT Portfolio Infrastructure and System Provisioning relates specifically to the replenishment of the core enterprise server equipment at end-of-life (occurring during Water Plan 3), and the expansion of storage during Water Plan 3 to match organic data growth. The Green for this project indicated that a 5 year cost of ownership comparison was conducted on four alternative approaches for the support and operation of Oracle databases and application. The preferred option was comparable to the lowest cost option in terms of cost of ownership, and 16 per cent lower than Business as Usual.

For the End of Life System Replacement program, the budget for this item is based on the cost to replace for Yarra Valley Waters existing register of “commodity” assets, which includes computers, printers, conference room equipment, communications and network equipment, generic servers and telephony. Yarra Valley Water estimated which years the existing IT assets were likely to reach end of life, and estimated the replacement cost for each

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<sup>186</sup> Reviewers were provided with a spreadsheet for Systems Strategic projects and a spreadsheet for Major Infrastructure projects.

item. This approach to program development is based on existing asset knowledge and thus appears reasonable.

Based on this evidence, it appears that Yarra Valley Water has demonstrated a thorough approach to developing and justifying IT programs. We recommend no adjustments to the proposed IT program expenditure on the basis of options analysis.

### South East Water

The South East Water IT investment is focussed on five key areas: Infrastructure, Corporate applications, Information Management Strategies, Customer Management, and Assets Management. South East Water did not provide any evidence that these programs of work had been subject to South East Water's business case assessment process. However, given that South East Water has outlined that its forecast capital expenditure program will maintain service levels consistent with past performance, and that the IT expenditure is not a top 10 project expenditure and is less than 5 per cent of the total Water Plan 3 budget, the review team had not requested the same level of documentation be made available from South East Water as compared to other businesses. No changes are recommended.

### City West Water

While we note that the Arrow project is the highest IT spend (as a percentage of total Water Plan 3 budget) compared to the other water businesses reviewed, the business case states that the Phase 1 assessments (prior to Board submission in October 2010) found the solution to be NPV positive over a 10 year period.

The business case provided by City West Water for Arrow states that City West Water reviewed the responses to an open market Expression of Interest for the provision of an integrated software solution and found that the Enterprise Resource Planning solutions from SAP and Oracle Corporation provided the best fit with City West Water's requirements. The final selection of a preferred software vendor was assessed through a closed Request for Proposal issued to SAP and Oracle Corporation. We consider this process to be a robust approach and recommend no changes.

### Western Water

Western Water provided a set of example business cases for the various IT programs proposed for inclusion in Water Plan 3. In most cases assessed, the business case appears to be written with the 'preferred option' already selected (in two cases it is referred to as the Proposed Solution).

The business cases list the options considered, and eliminate those options that do not meet the business needs or are cost prohibitive. Western Water does not follow a quantifiable process (e.g. a multi-criteria or triple bottom line assessment) for the elimination of options on a non-cost basis, but rather provided discussion of why the option was considered. Options are then considered in a pros/cons assessment. While a capital expenditure/operating expenditure comparison is called for in the template, the effort put into populating this section of the template varies, and often contains un-costed alternative options that could represent lower cost options and thus impact the outcome of the review of options significantly.

NPV comparisons are not specifically required by the business case template, which is an amendment Western Water should make to the template as a priority. The business cases often identify preferred options that are not the lowest capital expenditure, and while NPV is not reported for the options, it is apparent that the preferred options are often not lowest NPV.

The justification for selecting the preferred options over the alternatives is not clearly communicated. From the information provided it appears that the business does not have an approval process that places clear priority on achieving lowest lifecycle cost when selecting IT projects.



On the basis of the above, the review team considered that the business cases for a large number of the project programs should be revisited. We recommend that Western Water revisit the business case template used for seeking approval of IT projects, to include:

- A quantified options assessment e.g. multi-criteria assessment (MCA), for the purposes of shortlisting feasible options,
- The inclusion of a 'do nothing' (business as usual) option in the MCA assessment,
- An NPV comparison of the shortlisted options, for the purposes of selecting the preferred option
- A prompt for the project representative to provide justification for any project where the lowest NPV option was not selected.

Despite these reservations, we do not recommend an adjustment to Western Water's proposed IT capital expenditure on the basis that its operating expenditure proposal (which we have analysed to be reasonable and recommend no change to) is predicated on its proposed capital expenditure proposal. An upward adjustment would be required to its operating expenditure were its capital expenditure to be negatively adjusted.

We do, however, recommend that the ESC carefully examine the Western Water's selection process at the end of the upcoming regulatory period and not roll into the regulatory asset base expenditure relating to those projects that fail to demonstrate an appropriate rigour in its analysis of options. An ex post review of expenditure will mean that customers do not bear the (full) impact of poor investment decisions. Projects that the ESC should focus should a review on are:

- Knowledge Management Program
- SharePoint Implementation
- Financial System Implementation
- Data Centre Investment
- HR System
- Smart Board Implementation.

### **Delivery mechanism assessment**

#### **Melbourne Water**

According to a presentation summary provided by Melbourne Water on actual IT spend in Water Plan 2 versus the planned Water Plan 2 spend, it appears Melbourne Water spent \$104.7 million on IT during Water Plan 2 which exceeded proposed expenditure of \$74.6 million. While the overspend indicates Melbourne Water's ability to deliver the extent of works identified in Water Plan 3, it is also indicative of the ease with which IT projects can go over budget.<sup>187</sup>

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<sup>187</sup> We note that Melbourne Water's actual IT expenditure in Water Plan 2 may be higher than forecast at the beginning of the period as a result of Melbourne Water undertaking more IT projects, rather than those projects that were forecast to be undertaken going over budget.

Melbourne Water should consider how project costs will be managed to prevent over runs, however, we do not consider there to be any limitation on the ability to deliver the work and thus no adjustments are recommended.

#### Yarra Valley Water

Yarra Valley Water is traditionally an outsourcing business, with 51 per cent of operating expenditure being outsourced.<sup>188</sup> The IT Portfolio Infrastructure and System Provisioning infrastructure will be purchased as a component of other initiatives such as the I2MS.

Yarra Valley Water's IT Portfolio Infrastructure and System Provisioning infrastructure will be purchased as a component of other initiatives such as the I2MS.

Yarra Valley Water has a procedure for authorising replacement works before they are carried out. All expenditure under these programs is subject to business case ('green') sign-off. The Asset Management System Implementation program is managed by a steering committee comprising most of the Executive team as well as the Managing Director, and is required to provide progress updates to the Yarra Valley Water Board.

While the in-house IT resourcing has relatively little track record, there are no apparent reasons why Yarra Valley Water would be unable to deliver the program of works. For this reasons, no adjustments to the IT expenditure are recommended.

#### South East Water

South East Water has an in-house IT team, and confirms that their projects are focussed on maintaining current service standards (e.g. business as usual). As a result, there is no indication that South East Water will be unable to deliver the works required and as such no adjustments to the expenditure are recommended.

#### City West Water

The City West Water delivery mechanism has been discussed in the body of this report based on the accommodation of the project team, in section 6.6.

The process of engaging with possible suppliers, and the adoption of the systems integrator release strategy appears to be reasonable, as well as the adoption of a temporary team engaged for the roll out of the project. Given that the team is engaged exclusively for the delivery of this project, it is reasonable to assume that planning and resourcing by the team leader will be such that the team will be capable of delivering the full scope of work. As such, no adjustments are recommended.

#### Western Water

IT has recently been insourced (Western Water estimated that it had been outsourced for 15+ years prior). Western Water has provided a Discussion Paper regarding the decision to insource IT, noting the retention of knowledge as a strong benefit, with regards to the scope of IT Operations and Service Management functions provided by the incumbent Poletti consulting. The Discussion Paper provided an assessment of six options, the rating of these options using a traffic light system, with the two shortlisted options being lowest cost and lowest risk rating. Insourcing was ultimately demonstrated as being lowest NPV.

Given that the shift to insourcing is relatively recent, there is little historical evidence from which to draw conclusions regarding the business's ability to deliver the proposed work. However, Western Water notes that it recently successfully implemented a GIS system and

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<sup>188</sup> With the recent exception of IT, which has been brought in house due to the positive business case associated with this decision.

the IBIS billing system. Western Water has confirmed that there are enough FTEs available to take on the roles that are being undertaken in house.

### **Costing assessment**

#### **Melbourne Water**

A costing assessment of Melbourne Water's IT expenditure was not a key focus of our review, owing to IT capital expenditure being a relatively modest proportion of Melbourne Water's total proposed capital expenditure, with no projects being within Melbourne Water's top 10 capital projects. Nevertheless, we did examine the expenditure at a high level.

The greatest level of detail regarding cost estimate development was provided for the Infrastructure Major Renewals program. The estimate has been mainly developed from previous implementation costs with some indicative pricing from suppliers. No method of adjusting this data to account for escalation of costs has been documented.

For the other IT programs, no significant basis to the overall cost estimate has been provided (e.g. quotes, unit rates, etc. used to generate the capital cost have not been documented) despite being requested by this review team.

While we would have expected a greater level of detail to have been provided, we do not recommend any alteration to the proposed capital expenditure, on the basis of our review of Melbourne Water's systems for determining costs for other areas of expenditure, which we considered to be reasonable, and the high level of detail of our costing assessment for IT expenditure.

#### **Yarra Water**

The basis of the cost estimates for IT programs reviewed was historical spend data, calculation of lifecycle replacement costs and specific inclusion of costs when forecasting to replace higher value equipment.

A table was provided showing current estimates (total annual value) of asset replacement value in 2011/12 dollars, and the extrapolated replacement cost over the course of Water Plan 3 using a calculation of 80 per cent of current cost, allowing for reducing cost of IT hardware going forward. This approach is reasonable and no adjustments are recommended.

#### **South East Water**

The basis for the IT program cost estimates were not reviewed as the full set of programs accounts for less than 5 per cent of the Water Plan 3 expenditure for this business and is not within the top 10 projects on which this review is focussed.

#### **City West Water**

Capital costs included in the water plan for Program Arrow are sourced from the Program Arrow business case. The business case describes City West Water's approach to procurement for the Arrow Program including the results of request for information and request for tender processes. These processes revealed competitive market rates and informed the capital cost estimates that were subsequently included in the Arrow business case. The business case and corresponding financial analysis were supplied to the Victorian Department of Treasury and Finance for independent review through the Gateway Process and were subsequently approved by the Victorian Treasurer. No adjustments are recommended.

#### **Western Water**

As with South East Water and Melbourne Water, a costing assessment of Western Water's IT expenditure was not a key focus of our review, owing to IT capital expenditure being a relatively modest proportion of its total proposed capital expenditure, with no projects being within the top 10 projects. On the basis of our high level analysis, we have no reason to recommend an adjustment to Western Water's proposed IT expenditure with regards to costing estimations.

### 6.5.3 Findings and recommendations

Based on the analysis above, we recommend that no adjustments are made to Melbourne Water's, Yarra Valley Water's, South East Water's or City West Water's IT capital expenditure, although we note that in the cases of City West Water and Melbourne Water, the business efficiencies predicted as a result of the IT investment have been removed from the operating expenditure baseline.

We recommend the following adjustments be made to Western Water's proposed IT expenditure.

**Table 56: Recommended adjustments to IT capital expenditure, Western Water**

<b>Recommended adjustments (\$M)</b>	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
IT Program - SCADA	-0.09	-0.11	-0.48	-0.46	-0.50	-1.63
<b>Total recommended adjustments</b>	<b>-0.09</b>	<b>-0.11</b>	<b>-0.48</b>	<b>-0.46</b>	<b>-0.50</b>	<b>-1.63</b>

Furthermore, in the case of Western Water we also recommend that the ESC carefully examine its project selection process at the end of the upcoming regulatory period and not roll into the regulatory asset base expenditure relating to those projects that fail to demonstrate an appropriate rigour in its analysis of options.

We note that these recommendations are made in conjunction with the operating expenditure recommendations as discussed in section 4.4.2.

## **6.6 Office relocation capital expenditure**

### **6.6.1 Water companies' proposals**

#### **South East Water's office relocation capital expenditure proposals**

South East Water is proposing to construct a new head office facility to consolidate the three offices currently in use.

The proposed capital expenditure for this project is \$86.8 million, with expenditures incurred between 2012/13 and 2014/15. The proposed total expenditure for Water Plan 3 is \$72.2 million.<sup>189</sup>

South East Water argues the office relocation and consolidation will result in operating efficiencies, including eliminated leasing costs for three existing facilities.

South East Water claims the reductions in operating expenditure resulting from the consolidation of the current offices are expected to outweigh the capital costs associated with the new facility. As a result, South East Water does not expect customer bills during Water Plan 3 to be affected.<sup>190</sup> The resulting NPC for the proposed office relocation is -\$32.2 million, which compares positively to the status quo NPC of -\$56.7 million<sup>191</sup>.

South East Water expects to occupy the new facility in May 2015 which coincides with the expiry of the lease for the Heatherton facility. The Heatherton facility is the largest of all three sites currently in use with 542 staff and contractors based there out of a total of 753 staff.<sup>192</sup>

#### **City West Water's office relocation capital expenditure proposals**

City West Water is proposing to relocate from its current office in Sunshine to a newly built facility in Footscray in mid 2014, as part of the Footscray Central Activity District redevelopment.<sup>193</sup>

The proposed capital expenditure for the relocation is \$9 million over Water Plan 3, which includes expenditure on the fit-out and fixtures for the new office space. The new facility will be a 5 star green star and NABERS efficient office.

City West Water will also relocate the maintenance facility, currently located in the Sunshine to Brooklyn, at a proposed capital expenditure of \$2.6 million over Water Plan 3.

City West Water argues the move is necessary for the following reasons:<sup>194</sup>

- business requirements – the number of employees and contractors is expected to increase from 315 at 30 June 2007 to up to 418 in 2015

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<sup>189</sup> South East Water - 10 year Capital expenditure program – 20121115, provided by South East Water

<sup>190</sup> South East Water, Water Plan 2013-18, p38

<sup>191</sup> \$32.2 million is largely driven by the anticipated residual value of the office asset at the end of the 20 year period

<sup>192</sup> South East Water, Top Ten Project – Future Accommodation, Business Case June 2012, p5

<sup>193</sup> City West Water, Water Plan 2013-18, P40

<sup>194</sup> Business Case, City West Water Head Office Opportunity, Footscray Central Activity District, p4,5,8

## Capital expenditure analysis

- the annual cost of building maintenance and capital upgrades is expected to increase at a rate of 20% per annum
- business efficiency – reduced operation expenditure from \$0.85 million to \$0.3 million per annum
- sub optimal work spaces meaning it is difficult to communicate across teams
- the non-compliance of the current building with the current Building Code of Australia and Disability Discrimination Act
- the potential to unlock the unrealised value of the current site.

## Analysis of justification of project/program

### South East Water

As outlined above, South East Water has proposed this project on the basis that operation efficiencies will be achieved resulting in cheaper water prices for its customers in the long term. The forecast reduced operating expenditure contained within the office relocation business case is reflected in South East Water's overall operating expenditure forecast (see section 4.4.2) and ensures that customers will be better off as the water price impact of the office relocation will be negative.

Based on these quantitative operating benefits, we believe the project justification has been established. The office move will reduce costs compared to the status quo. In contrast to South East Water's conservative claims that customer bills will be unaffected by the office move, the move is likely to *lower* customer bills more than would otherwise be the case.

### City West Water

We assessed City West Water's justifications for the office move. While options other than the office move may be cheaper (e.g. a 'minor refurbishment' of the current facilities), we acknowledge the existence, highlighted by City West Water, of qualitative benefits that may arise from a relocating to a new facility that may not be captured in the NPV analysis. We understand it is difficult to quantify these benefits, but recognise that they are reasonable and should be considered as part of our assessment.

We also recognise that the 2007 Victorian State Government Accommodation Standards require all new government accommodation to achieve a minimum of 5 Star Green Star rating and 4.5 Star NABERS Energy rating.

Based on the highlighted anticipate benefits, both quantitative and qualitative, we believe project need has been established, based on our professional opinion of the importance of the qualitative benefits of the office move. Customers are likely to benefit in the long term through improved business efficiency, resulting in lower operating costs and, all else equal, lower bills in the long term.

## Analysis of options assessment

### South East Water

Four criteria were used to select the preferred option and following the resulting decision to adopt the co-location of staff in one building, the final solution was determined using additional criteria such as access to public transport, road access etc. Costs for the options were only considered at the final stage of the options assessment between the preferred option and the "Do Nothing" stage.

While the MCA assessment appears to have considered a range of options available to the business, the NPC of the options was only completed on the do-nothing option and the preferred Frankston option, scored very highly on the MCA compared to the alternatives, and

had fewer cons. There are no recommended adjustments to the office relocation capital expenditure.

We note that the business case for the office relocation includes a forecast revenue of \$0.3 million per year from the leasing of retail space within the building<sup>195</sup>. South East Water argues that the retail space was a planning requirement from Frankston City Council, a position that PwC has not assessed. Consistent with this planning requirement and our recommendation for City West Water's excess office capacity, we recommend that the capital expenditure be allowed for this project, but that the forecast non-prescribed revenue either be removed from the operational expenditure allowance or be included as non-prescribed revenue within the ESC's financial template, as discussed in section 4.4.2.

#### City West Water

City West Water's proposed leasing arrangement will require them to lease an area for approximately 60 additional contractors associated with the Arrow project, which will then become vacant on Arrow completion. City West Water appears to have implicitly assumed that there will be no subleasing of the vacant space once the Arrow program is complete. The full cost of the lease has been included in the operating expenditure forecasts, with no apparent reduction in leasing cost or revenue received once the space become vacant.

A more appropriate method, which does not appear to have been investigated, may be to lease only the area required for City West Water employees, and then have a temporary lease for the Arrow staff (albeit in the same area as proposed above).

Although we do not recommend that any change to capital expenditure be made to account for this alternative option, we have recommended a removal to City West Water's operating expenditure baseline relating to a net reduction to the lease (through the sub-letting of its vacant space). This is discussion in section 4.4.2. Under this recommendation, City West Water takes the risk of whether it can sublease the vacant space, which we consider to be appropriate.

#### Analysis of delivery mechanism

The review team did not assess delivery mechanism for office relocations, as the impact the delivery mechanism was expected to have on the cost of the relocations, and hence the cost passed on to consumers, was considered negligible compared to the impact delivery mechanism could have on the infrastructure and IT projects assessed above.

#### Analysis of cost estimation

##### South East Water

South East Water project estimates were undertaken by appropriately qualified estimators from consultancies with some being produced under the Alliance arrangement. The cost estimate appearing in the Accommodation business case has been prepared in a similar method, which we have previously accepted as appropriate, and thus we have no reason to recommend an adjustment to the estimate.

##### City West Water

City West Water has engaged quantity surveyor Rider Levitt Bucknall (RLB) to provide independent advice on capital costs associated with office relocation. RLB has confirmed the assumptions City West Water has used for budgeting purposes for the fit out of the office

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<sup>195</sup> Top Ten Project – Future Accommodation, Business Case - June 2012, South East Water, page 23.

space. The use of an independent quantity surveyor is appropriate and thus no adjustments are recommended.

Based on the analysis above, we recommend no alterations be made to City West Water's proposed office relocation capital expenditure.

### *6.6.2 Findings and recommendations*

Based on the analysis above, we consider that the capital expenditure on the office relocation is justified, in that it serves to reduce customer bills than would otherwise be the case. We recommend no alterations to South East Water's and City West Water's proposed office relocation capital expenditure.

Specific to South East Water's relocation, we note that the operating expenditure reductions that justify the capital expenditure have been reflected in South East Water's operating expenditure proposals.

Specific to City West Water's office relocation, although we recommend allowing the capital expenditure, we have recommended adjustments to City West Water's operating expenditure baseline to account for the sub-leasing income which should be expected once the Arrow contractors vacate the new office.

For both South East Water and City West Water, refer to section 4.4.2 for our assessment of the proposed and recommended operating expenditure relating to the office relocations.



## 6.7 *Melbourne Water's waterways and drainage expenditure*

### 6.7.1 *Melbourne Water's proposals*

In Water Plan 3, Melbourne Water is proposing to spend \$821.9 million of capital on waterways and drainage<sup>196</sup>. Major projects include<sup>197</sup>:

- Growth expenditure for developer instigated waterways and drainage (\$325 million)
- Flood mitigation works (\$106 million)
- Retarding basin spillways upgrades (\$56.4 million)
- Expenditure related to healthy waterways (103.3 million).

Melbourne Water argues that these projects and programs are required to meet its obligations found in its Statement of Obligations and Waterways and Operating Charter (which itself is required by the Statement of Obligations). As stated in its Water Plan, most of these obligations and related targets and key performance indicators remain consistent with those in Water Plan 2<sup>198</sup>. An exception to this, where notable increased expenditure is incurred as a result of changed obligations, is that relating to retarding basin spillways upgrades. In this case, the Statement of Obligations has been changed to explicitly include retarding basins within the definition of dams that must meet ANCOLD safety standards:

“The Corporation must develop and implement processes to identify, assess, manage and prioritise improvements to, and periodically review the safety of, dams, **including retarding basins and wastewater storages**, operated by the Corporation.”<sup>199</sup>

This additional obligation is used to justify the additional expenditure for retarding basin spillway upgrades.

### 6.7.2 *Analysis of Melbourne Water's proposals*

#### **Analysis of justification of project/program**

Given the lack of significant change to obligations, other than that related to retarding basins, we would expect, as an initial hypothesis, for capital expenditure for waterways and drainage to be largely consistent with Water Plan 2 levels.

Average expenditure per year on waterway and drainage projects (excluding proposed spending on Retarding Basins) is proposed to increase from \$146.1 million in Water Plan 2,

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<sup>196</sup> ESC Financial Template. This number differs substantially from the Water Plan quoted figure of \$742.2 million (p. 67 of the Water Plan). This difference can be account for because of accounting differences between the ESC template and Melbourne Water's accounting policy. Melbourne Water's stated categories include includes corporate and IT capital expenditure which are not line items in the ESC's financial template. Melbourne Water have therefore allocated corporate and IT expenditure into the remaining line items within the ESC's financial template (including waterways and drainage) accounting for the difference.

<sup>197</sup> 2013-14 Water Plan.xlsx, as provided by Melbourne Water.

<sup>198</sup> Melbourne Water, “2013 Water Plan”, October 2012, p.44, PwC emphasis

<sup>199</sup> Statement of Obligations, 16/9/2012, clause 5.3.1. Bolded text is included in addition to that found in the Statement of Obligations in existence at the start of Water Plan 2.

to \$152.6 million in Water Plan 3. This is an increase of 4.4%.<sup>200</sup> This rise is reasonable, given the increase in customer numbers, and we propose no adjustments on the basis of this analysis. The benefits that result from the waterways and drainage capital expenditure will be to improve the health and amenity of Melbourne's waterways and bays and facilitate the management of flood risk.

The justifications for expenditure related to retarding basins is clear, given the changes made to the Statement of Obligations to specific include retarding basins in the definition of dams.

We have included Melbourne Water's recommended reduction in land development charges relating to waterways and drainage within our recommendations with regards to growth expenditure, as discussion in section 6.1.

### **Analysis of options assessment**

We have not focused its analysis of options assessment on the waterways and drainage expenditure component of Melbourne Water's proposals, as it was considered unlikely to be a program of works where the scope could be readily influenced by the decision making process adopted by Melbourne Water.

### **Analysis of delivery mechanism**

The delivery mechanisms for the Melbourne Water's waterways and drainage projects were not assessed directly by this review team. Instead, we note that Melbourne Water is adopting a new delivery mechanism which has been commented on in previous sections, in particular section 6.1 on growth capital expenditure. Consistent with our earlier commentary regarding delivery mechanism, we do not recommend any adjustment to expenditure.

### **Analysis of cost estimation**

Of the projects reviewed with regard to cost estimates (flood mitigation works and retarding basins upgrades) we have been provided little information to substantiate the cost estimate. However, given our review of Melbourne Water's systems for determining costs for other areas of expenditure, which we considered to be reasonable, we have not recommended a change to Melbourne Water's proposed expenditure.

### **6.7.3 Findings and recommendations**

Based on the analysis above, we recommend no alterations to Melbourne Water's proposed waterways and drainage or flood mitigation works.

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<sup>200</sup> PwC analysis

## **6.8 Melbourne Water's other significant capital expenditure**

### **6.8.1 Melbourne Water's proposals**

Other significant capital expenditure projects outside of waterways and drainage include corrosion and odour management, on which Melbourne Water proposes to spend \$45.2 million, justified on the basis of EPA requirements. Melbourne Water justifies its proposed expenditure on both corrosion management and odour management, as a lack of sewer vents has the potential to accelerate corrosion, but vents increase odour problems.

As such, corrosion and odour management seeks to:

- maximise return on assets through asset life extension
- ensure no offensive odours are discharged from any Melbourne Water site or asset.

The second point refers to Melbourne Water's obligations to adhere to the EPA's requirements on odour management. Further to the obligations of the EPA, Melbourne Water must also adhere to the State Environmental Protection Policies (SEPPs). With reference to air quality, the SEPP on Air Quality Management (AQM) is particularly relevant. SEPP has specific requirements with respect to fugitive emissions from treatment plants and the transfer system that Melbourne Water must comply to. As such, treatment plant odours and sewage odours from the transfer networks which have the potential to impact on local amenity and aesthetic enjoyment must be managed.

Furthermore, Melbourne Water justifies its proposed expenditure on corrosion and odour management as it will reduce the number of odour driven customer complaints. Melbourne's forecast population growth, as detailed in policy documents, such as Melbourne @ 5 million, will result in developments being established near, or next to, existing sewer vents. As such, the number of odour complaints is set to increase, as odour buffer zones diminish.

### **6.8.2 Analysis of Melbourne Water's proposals**

#### **Analysis of justification of project/program**

We consider that Melbourne Water's proposed expenditure on corrosion and odour management is reasonable and justified, based on the EPA's obligations and requirements, namely the State Environmental Protection Policy: Air Quality Management.

#### **Analysis of options assessment**

The options assessment for the corrosion and odour management considered thoroughly the management of the network as a whole and at the Business Need Assessment stage of program approval provided evidence of a risk based approach for identifying the extent of the work required. Based on the observations on this program of work, we see no reason to recommend adjustments to Melbourne Water corrosion and odour management program.

#### **Analysis of delivery mechanism**

The delivery mechanisms for the Melbourne Water's odour and corrosion management expenditure were not assessed directly by this review team. Instead, we note that Melbourne Water is adopting a new delivery mechanism which has been commented on in previous sections, in particular section 6.1 on growth capital expenditure. Consistent with our earlier commentary regarding delivery mechanism, we do not recommend any adjustment to expenditure.

### **Analysis of cost estimation**

The cost estimates for corrosion and odour management have been developed at a very high level based on past project data. However, given our review of Melbourne Water's systems for determining costs for other areas of expenditure, which we considered to be reasonable, we have not recommended a change to Melbourne Water's proposed expenditure.

### ***6.8.3 Findings and recommendations***

Based on the analysis above, we recommend no alterations to Melbourne Water's proposed corrosion and odour management expenditure.

## 6.9 Other recommended alterations to the companies' proposals

Subsequent to Melbourne Water submitting its Water Plan, the business reassessed its costing and timing of a number of projects. Across the whole of its capital expenditure budget (not limited to renewals expenditure) it highlighted a net reduction of \$43.1 million over Water Plan 3. We accept all these changes, based on a likely improvement in forecasting accuracy as projects approach initiation.

Many of these changes have been reflected throughout our recommendations as discussed above:

- The decrease in expenditure for St Alban Werribee Pipeline Stage 2 has been reflected in our growth recommendations (a decrease of \$19.5 million)
- The decrease in forecast expenditure for waterways and drainage - Land Development (\$30.7 million) has also been reflected in our growth recommendations
- Four renewals projects, totalling an increase of \$12.5 million, have been reflected in our renewals expenditure recommendations.

The remaining changes proposed by Melbourne Water have not been reflected in any other change and are recommended for inclusion. Table 57 below details these changes.

**Table 57: Other recommended adjustments, Melbourne Water (\$M)**

<b>Recommended adjustments</b>	2013/14	2014/15	2015/16	2016/17	2017/18	Water Plan 3 Total
IT cost decreases	4.80	-0.98	-1.60	-1.60	-1.87	-1.24
Air treatment and civil works	1.36	-0.12	-2.85	2.72	0.00	1.11
Kenny St Link Main	-2.51	-21.03	2.32	20.16	0.07	-1.00
Corrosion and odour management	-13.17	-13.78	12.25	-0.07	13.14	-1.63
Northern sewer project	-2.41	0.00	0.00	0.00	0.00	-2.41
Melbourne Water proposed balancing adjustment	-32.61	33.98	-9.82	8.74	-0.61	-0.32
<b>Total recommended adjustments</b>	<b>-44.53</b>	<b>-1.94</b>	<b>0.30</b>	<b>29.94</b>	<b>10.74</b>	<b>-5.50</b>

# ***Appendix A Melbourne Water's operating expenditure for electricity***

Melbourne Water's operating expenditure for electricity has been a complex matter for this review. This appendix outlines the issues and recommended adjustments to Melbourne Water's energy expenditure.

In 2009, Melbourne Water entered into a contract (which commenced in July 2010) for the supply of electricity to its large sites. The relevant characteristics of this contract are as follows:

- The contract has a 20 year term, and so was in existence for the Water Plan 2 period and will not expire until after the end of Water Plan 4
- The price in the contract for the energy cost component is subject to a prescribed escalation formula (the other components of the agreement – such as network costs – are treated as a pass through and are not contentious)
- The contract includes the supply of large renewable energy certificates (RECs/LGCs) that rises to cover 100 per cent of its energy supply by the end of Water Plan 3 (that is, it is equivalent to 100 per cent renewable supply), and
- The contract does not permit any pass through to Melbourne Water of any carbon tax or carbon price (but, rather, the price can be assumed to factor in an allowance for this imposition).

Subsequent to signing the contract, Melbourne Water has changed its commitment to renewable energy, with the Board resolving to sell the renewable energy certificates acquired under the contract and to use the revenue received to reduce consumer prices.<sup>201</sup>

Melbourne Water has made two different proposals as to how its energy costs should be calculated.

- First, its forecasts of operating expenditure that are factored into its proposed prices reflect Melbourne Water's forecast of its actual energy costs. In relation to the energy charges component, this has been calculated by applying its contract price, and deducting the forecast of the revenue expected from the sales of RECs/LGCs.
- Secondly, when demonstrating how it considered that the ESC's productivity test for operating expenditure should be applied, Melbourne Water proposed including a

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<sup>201</sup> To be clear, Melbourne Water informed us that the Board decided to discard the target of 100 per cent renewable energy use by 2018, but retained the target of being a zero greenhouse gas emitter by 2018. The latter is achievable at a much lower cost.

“benchmark” energy cost for Melbourne Water (implicitly, a short term purchase arrangement) when calculating the operating expenditure threshold, with any difference between its actual energy costs and this threshold to be absorbed by, or to the benefit of, Melbourne Water.

For the reasons set out below, we have accepted Melbourne Water’s proposed approach in relation to the application of the ESC productivity hurdle, although we have made several amendments to Melbourne Water’s proposals.

We note for completeness, however, that we would have had some sympathy with an argument that Melbourne Water should be permitted to recover its costs under a long term contract. In particular, long term contracts for material inputs can be efficient purchase arrangements, and have the effect of shielding consumers from risks that are able to be managed more efficiently on their behalf. We have also seen evidence that Melbourne Water received appropriate professional advice on this matter, and that the tendering process conducted was competitive. Having said that, Melbourne Water’s proposed treatment of energy costs when applying the ESC productivity calculation has obviated the need for us to consider and conclude upon a number of challenges with Melbourne Water’s contractual arrangements, including:

- whether entering into a 20 year contract for the renewable component of energy was prudent in view of the company’s short term commitment to renewable supply
- how the contract would best be accommodated into the productivity test in view of the fact that contract price increased materially between the end of Water Plan 2 and Water Plan 3, with this change unrelated to market factors, and
- the desirability of using benchmarks (based on current costs) for material inputs that are purchased in well functioning and transparent markets – an argument presented strongly by IPART in relation to the Sydney Desalination Plant.

We have implemented the benchmark energy cost for Melbourne Water for sites other than ETP Tertiary as follows.

- First, and relevant to the base year adjustments of step 1 (section 4.2.2) , we replaced the energy purchase cost element of Melbourne Water’s base year (2011/12) with a benchmark amount reflecting the cost of purchasing “black” energy.<sup>202</sup> This benchmark, in turn, was calculated as the average price for swap contracts over the 2011/12 year (sourced from AFMA), plus a 10 per cent margin, adopting the method that Melbourne Water proposed. This benchmark assumes, in effect, that energy is purchased under reasonably short term arrangements, like many other inputs.
- Secondly, at step 3, we added the cost caused by the Carbon Price Mechanism, applying the same method that was applied to all businesses – see section 4.4.2.
- Thirdly, also at step 3, for the scenarios that allowed for the pass through of all input price changes, we added on an amount consistent with the approach applied for the other businesses – see section 4.4.2 for the approach (that is, using the SKM/WSAA price indices for industrial consumers, applied to the delivered cost of energy for

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<sup>202</sup> This mechanism was different to what Melbourne Water proposed, but should have delivered a similar outcome. We pointed out to Melbourne Water that it had made an error by not removing the value of REC/LGC purchases from its base year, which it conceded during discussions.

## Capital expenditure analysis

2011/12, but with this amount recalculated to be consistent with the benchmark energy component).



# ***Appendix B Alternative water justification: detailed analysis***

As discussed in section 6.3.2, the alternative water projects proposed by the companies may be categories as:

- Those projects that are the completion of investments started in Water Plan 2, justified in part on the basis of obligations present in Water Plan 2
- Those new projects in Water Plan 3 that are justified on the basis of cost benefit analysis or customer willingness to pay<sup>203</sup>
- Projects not otherwise justified as above.

For those projects not justified as above, we have considered the arguments put forward by the companies to otherwise attempt to justify the projects. This consideration, in addition to our consideration of the argument that obligations present in Water Plan 2 are sufficient to justify expenditure in Water Plan 3 where projects were commenced in Water Plan 2, is discussed below:

## ***Obligations present in Water Plan 2***

Companies have argued that further capital expenditure is required to meet obligations in existence in Water Plan 2, and to satisfy contractual obligations to customers and developers at least cost.

In our view, a strict interpretation of efficiency would hold that, once an obligation is changed, companies should reassess their proposed investments from that point, to determine whether continuing to invest remains the optimal strategy in the face of the change to the obligations.

Against this, we are inclined to accept a more practical interpretation that an obligation in place in Water Plan 2 remains in place for those projects started in Water Plan 2, even if the obligation subsequently has been changed. We acknowledge the reputational risk of halting a project commenced in Water Plan 2, and the likelihood that completing a project started in Water Plan 2 would have a greater prospect of being efficient than a new project, given that in some instances the 'full' project benefit can be bought for the remaining (part) project cost.

Regardless of whether or not Water Plan 2 obligations are assumed to have a continuing effect in relation to projects started in Water Plan 2, it would have been preferable for the

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<sup>203</sup> The exception to this is City West Water's Altona Stage 2 project. In this case, while Altona Stage 2's prospective customers are prepared to pay charges that would recover the cost of the investment, society would be better off from deferring the project until there is a greater value from potable water substitution. The private interests of Altona Stage 2's prospective customers and the feasibility of deferring the project could be protected by offering those customers a lower price immediately (reflecting what they would have received if the project had proceeded immediately) in return for a binding commitment to switch to recycled water when the project proceeds.

companies to have supported their proposals with a demonstration the economic merit of continued investment.

Implicitly, in our advice we have accepted that it is valid to distinguish between changed obligations as to future services, and where decisions (by the business or its customers) have already been committed on account of previous obligations.

The companies claimed contractual commitments to customers, based in part on prior obligations from Water Plan 2. Notwithstanding these contractual commitments, it remains that some commitments may have been mischaracterised by the businesses. Businesses have claimed that recycled water must be supplied to customers via the dual pipe network. Yet the companies' commitments to customers might be satisfied by supplying water (recycled or potable) which:

- is at a price lower than potable water which would otherwise be supplied
- is not subject to any future water restrictions.

Companies could potentially meet these commitments through the provision of potable water through the recycled water pipe network. This could be achieved by discounting this potable water to the recycled water price which would otherwise have been charged, and not subjecting customers using this water to restrictions.

Such an approach would avoid compensating current and future customers and the legal costs associated with these claims, and may be at less cost than the companies' current proposals.

*Statement of Obligations provide primary source of obligations acting upon companies*

We consider that the Statement of Obligations is the primary mechanism through which obligations are set. Alternative water targets have been specifically removed from the Statement of Obligations for Water Plan 3 (in favour of obligations for *efficient* investment). Given that the requirements within the Statement of Obligations for alternative water have been reduced, we do not consider other documents provided by the companies which appear to demonstrate Government support for alternative water are sufficient to justify alternative water investment.

*Provision of alternative water to new subdivisions may assist developers to meet "star rating standards"*

6 star building standards are required for most<sup>204</sup> new residential subdivisions. A requirement of 6 star building standards is that buildings must either have:

- a rainwater tank
- dual pipe alternative water supply, or
- a solar water heater.

Companies have argued that dual pipe alternative water supply is the least cost means to meet this requirement. However, quantitative analysis undertaken by Marsden Jacob on behalf of Western Water indicates that solar water heaters may be the least cost means of meeting 6 star building standards. As a consequence, we do not think that a case has been

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<sup>204</sup> Excluding certain types of buildings such as blocks of apartments.

established that dual pipe schemes are likely to be the least cost means of meeting 6 star building standards. We note, however, that the Marsden Jacob advice did not suggest that it provided a definitive answer to this matter, and we note that a more extensive analysis of this issue may establish that dual pipe alternative water supply are, at least in some circumstances, the least cost means to meet star rating standards.

### *Precinct Structure Plans*

In addition to building requirements, companies argued that PSPs require the provision of alternative water to meet obligations to provide 50% potable water consumption reductions.

It is not clear whether these reductions are firm obligations. Some of the PSPs referenced by companies are still in draft stage, while for others the requirement for potable water consumption reductions are “Guidelines” rather than “Requirements”. Certainly, whether or not PSPs oblige the water companies to invest in alternative water infrastructure is debatable in many cases.

Should PSPs be firm obligations, we accept the companies are required to undertake alternative water investment to the extent required to meet such obligations. However, somewhat beyond the scope of this review, we point out that water companies have a considerable input into the creation of PSPs, which they then argue create obligations for them to invest. Verbally, some companies have stated that it is themselves that influence the content of the PSPs. This results in the somewhat undesirable governance arrangement whereby companies may mandate obligations without a proper assessment of their economic merits, and then use these obligations to justify investment, thus bypassing the normal requirements for economic rigour in investment decisions.

### *Customer willingness to pay*

With regard to customer willingness to pay surveys, there are a number of potential biases which may impact on the results. In particular, in the conduct of some surveys customers have been poorly informed of the costs and benefits of alternative water (given that these have in many cases not been established by the companies).

Detailed company-by-company analysis of the justification for alternative water proposals is presented below. Our analysis should be read in conjunction with section 6.3 of this report.

## ***Melbourne Water***

We have reviewed the Department of Health’s (DoH’s) requirements and accepts that a WTP facility upgrade is justified. A failure to undertake the upgrade would risk the Class A water not meeting DoH requirements, with potential health implications for the community.

Given our recommendation to the ESC to remove expenditure relating to Altona Stage 2 from City West Water’s expenditure allowance (see discussion of City West Water below), a capacity upgrade is not required at the WTP. The full expenditure relating to this capacity upgrade should be removed from Melbourne Water’s capital expenditure allowance. Melbourne Water agrees with this assessment (on the assumption that Altona Stage 2 does not proceed).

## ***Yarra Water***

We reviewed in greater depth the Northern Growth Area (NGA) alternative water infrastructure, given its size, in comparison to other proposed alternative water infrastructure investment.

The analysis undertaken by Yarra Valley Water correctly indicates that, regardless of qualitative benefits<sup>205</sup>, the recycled water option is the most beneficial, based on it having the lowest net present cost. The difference in net present cost between the options is primarily driven by the lower cost of local treatment as compared to the cost of transferring the full flow of sewerage and water from the growth area to and from the metropolitan sewerage and potable water system. The full transfer of sewerage and water is costly as a result of the growth area's location and topography.

The NPV analysis provided by Yarra Valley Water justifies the inclusion of Yarra Valley Water's proposed NGA alternative water projects within its capital delivery plan, based on Yarra Valley Water's rigorous methodology and reasonable assumptions used in its analysis for the NGA. Given their modest size and the rigour of analysis undertaken for the NGA alternative water expenditure, we also are satisfied that its non-NGA alternative water projects are justified. Regardless of any additional (non-obligated) benefits that may result from the recycled water supply, the proposed recycled water schemes are the least cost means to service new growth.

## ***South East Water***

We accept South East Water's proposed alternative water investment on our interpretation that obligations in place in Water Plan 2 remain in place for those projects started in Water Plan 2, regardless of whether the obligations change. Furthermore, given the sunk investment, finishing the projects may be at least cost, and will avoid reputational damage.

Were an alternative interpretation accepted (that obligations, once changed, are changed for all future expenditure, regardless of whether that expenditure is related to projects already started), our view is that the other arguments put forward by South East Water for the expenditure were not compelling:

- As discussed above, the Statement of Obligations represents the primary source of obligations for the companies. Given that the obligations for alternative water have been reduced, we do not consider that South East Water has *new* obligations to undertake the proposed expenditure.
- Again, as discussed above, South East Water may have mischaracterised its contractual commitments to customers, and could instead fulfil them by supplying potable water at reduced cost.
- Work undertaken by Marsden Jacob for Western Water has indicated that solar water heaters may be the least cost method of meeting 6 star building standards (compared to both recycled water supply and rainwater tanks), once the reduction in grid energy consumption is taken into account.

Regardless of which interpretation of historic obligations is accepted, it would have been preferable if South East Water had undertaken economic analysis which demonstrated that its proposals were the most efficient in the context of the obligations currently in place in the Statement of Obligations.

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<sup>205</sup> In addition to the NPV analysis, Yarra Valley Water has also undertaken a multi-criteria analysis which it argues demonstrates that integrated water management expenditure in addition to the expenditure incurred in option 2 may be preferable (option 3). PwC notes two points. Firstly the expenditure incurred by Yarra Valley Water is identical between options 2 and 3 (although other parties, such as Melbourne Water, incur more expenditure through option 3). Secondly, the decision between options 2 and 3 is made by, and at the expense of, Melbourne Water.

## ***City West Water***

Below, we report on each of City West Water's alternative water proposals.

### ***Altona recycled water project (stage 2)***

We acknowledge that City West Water has demonstrated that there is a positive net present value from an investment in the Altona stage 2 project, and in addition to this, that the customers of the Altona stage 2 project are prepared to pay charges that would recover the full cost of the project (i.e., they would get a price reduction, even after considering the additional costs they would incur at their own premises to convert to the use of recycled water)<sup>206</sup>. However, City West Water's analysis also demonstrates that the best timing of the project from society's point of view is not to build the project now but to defer it to future periods – a significant portion of the societal benefit from the project comes from deferring the next augmentation to the desalination plant. This means that the benefit from the project will increase over time as that augmentation nears – that is, by deferring the project.

These positions – a project that would be financially viable but inefficient from society's point of view – may appear contradictory, but are an outcome that can arise from time to time in utility industries. The reason that a project can be financially viable but socially inefficient stem from the fact that much of the charge in utility industries is the recovery of fixed and sunk costs – if users can avoid paying for the fixed and sunk costs by securing their independent supplies then they may benefit personally, but as these costs are not avoided (but merely transferred to be recovered from other customers) there is no benefit to society. Indeed, a situation in a utility where a group of users would be better off by bypassing the network and securing their supplies independently (and at greater societal cost) is a situation of tariff inefficiency – that is, too much of the fixed and sunk cost is being recovered from that class of consumer which, as a consequence, creates a financial incentive for the group of consumers to pursue a socially inefficient action (in this case, agitate for a socially inefficient project).

Accordingly, our recommendation is that the capital expenditure associated with the project be removed in full. To be clear, our reasons for this are that:

- while the customers of the Altona stage 2 project may be better off if the project is constructed, those customers will be making a lower contribution to the fixed and sunk costs of water supply, and those fixed and sunk costs will merely be transferred to be recovered from different consumers, and
- the Altona stage 2 project involves a higher cost alternative than supply of potable water through the shared network when only forward-looking costs are considered – as a consequence, costs will not merely be reallocated between consumers, but rather the total charges paid across all consumers will be higher if the project is constructed than if it is not.

As noted above, however, this calculus is expected to change as the next augmentation of the desalination plant draws nearer and (on the basis of City West Water's analysis) there is expected to be a time at which the incremental cost of supply through Altona stage 2 project is lower than the supply of potable water through the shared network. It is at that time that the Altona stage 2 project should proceed (also being the time at which the net present value of the project is maximised).

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<sup>206</sup> Altona Recycled Water Project (Stage II), 14 November 2012, City West Water Pg

This then leaves two interrelated issues – the customers of the Altona stage 2 project are currently paying above their stand alone cost of supply (supply by means of the Altona stage 2 project being a real-life stand alone cost) and City West Water’s argument that if the project does not proceed now, then the consumers’ expectations may not be met and the project may never proceed. We say that these issues are interrelated because what those consumers clearly want and value is the lower price (and price certainty) that the Altona stage 2 project would bring. In our view, the most appropriate mechanism to ensure that the Altona stage 2 project consumers’ expectations are met and that the project remains a live option into the future are to:

- reduce the price to those consumers immediately to that they are in an equivalent position to what would have happened if the Altona stage 2 project had proceeded as proposed, and
- in return for the lower price, receive a binding commitment from the consumers to switch to the use of recycled water in the future when the Altona stage 2 project does proceed.

Reducing the price to the Altona stage 2 project consumers would benefit all consumers – while the Altona stage 2 project consumers would be making a lower contribution to the fixed and sunk costs of the shared (potable) water network, they would continue to make some contribution. In contrast, if the project were to proceed, then the Altona stage 2 project consumers would be making no contribution to the fixed and sunk costs of the shared network.

### *Stormwater projects*

City West Water justifies the stormwater projects on the basis that they are paid for by those requesting it (and not by the general customer base). Given demonstrable customer willingness to pay (we have confirmed that line items have been included in the customer contribution row of the ESC’s financial template), these projects are justified.

The ESC should note that capitalised labour to the value of \$5 million has not been included in City West Water’s calculation of contract revenue, and is therefore not being recovered through non-prescribed revenue under City West Water’s proposals. The ESC should consider whether City West Water’s proposed customer contribution sufficiently offsets the justified capital expenditure.

Furthermore, City West Water highlighted that some customer contributions to capital expenditure had been misallocated to contract revenue within the financial template. We recommend that the ESC assess these misallocations.

### *Integrated water supply and Aquifer Storage and Recovery (ASR) projects in growth areas that have already been approved in Water Plan 2*

The appropriate treatment of integrated water supply in growth areas is dependent on whether or not the recycled water investment in the growth area was approved in Water Plan 2.

As with South East Water’s alternative water projects, for those areas mandated in Water Plan 2 (namely West Werribee), we acknowledge that recycled water infrastructure was required under the (then) Statement of Obligations. In addition, the expenditure could be the least cost (given the sunk investment to date) and would avoid reputational damage that would arise from halting the project. As such we accept this as justification for continued investment.

However, given an alternative interpretation that obligations in place in Water Plan 2 remain binding for projects started in Water Plan 2, we considered City West Water’s other justifications for the investment. As with South East Water, City West Water may have

mischaracterised its commitments to customers, in that it may be able to meet its commitments at lower cost through the supply of discounted potable water. Again, as with South East Water, it would have been preferable that City West Water had produced economic cost benefit analysis which justified the investment with regard to only the obligations currently in place in the Statement of Obligations.

### *Footscray Activity Area Redevelopment, integrated water supply and ASR projects in new growth areas, and sewer mining in Docklands*

These projects have variously been justified on the basis that alternative water projects (with little regard to the economic merits of the expenditure) remain government policy and that they provide improved security of supply.

As discussed above, City West Water does not have an obligation to undertake recycled water projects (with no regard to the efficiency of the projects) and we received no evidence that any of these projects represent the least cost solution to meeting City West Water's obligations as per the current Statement of Obligations. As such, we recommend these projects' removal from the capital works program. As with other alternative water projects, to be justified we would expect that these projects be demonstrated to be lower cost than conventional supply to meet City West Water's obligations.

For each of City West Water's projects under the heading above that we have recommended be removed, we also recommend that the ESC define a trigger that would allow the projects to be undertaken (and prices adjusted accordingly) if City West Water provides an analysis that demonstrates that these projects are efficient. This would need to show that the relevant projects meet City West Water's obligations at least cost, or that any cost disadvantage is more than offset by other benefits that are appropriate to count (for example, the avoided cost to developers/households in meeting 6 star ratings).

Adjustments may need to be made to City West Water's forecast government contributions if ASR projects are removed from the expenditure allowance.

### *Capitalised labour*

Given the above recommendations to remove alternative water capital projects, the capitalised labour costs associated with these projects also should be removed.

## *Western Water*

### *Melton Class A recycled water investments – new areas*

As with a number of other companies, Western Water's Class A recycled water investments are proposed on the basis of multiple justifications.

As with the other companies, we do not consider the current Statement of Obligations provides justification for the investment, the requirement for 6 star building standards may be more cheaply met through solar water heaters (as inconclusively concluded by Marsden Jacobs (2013)<sup>207</sup>), and PSPs do not appear to be a firm source of obligations acting upon the companies.

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<sup>207</sup> Economic assessment of Class A and dual pipe supply to selected Melton growth areas, Marsden Jacob Associates, February 2013, pp16 and 17, provided by Western Water

With regard to Western Water's surveys of community willingness to pay, we are concerned with the information contained in the questionnaire, and that answers were likely to be influenced in favour of recycled water because:

- the preamble to the questionnaire noted that recycled water is less expensive than buying bulk water from the Melbourne supply system, but this is yet to be demonstrated through a cost benefit analysis assessment (and if it was demonstrated, then there would be no need for estimates of willingness to pay).
- under the "new" new customer contribution policies, the developers/households where dual supply schemes are laid will in effect bear the additional cost, and yet the willingness to pay of all customers (not just those bearing the cost) were asked of their opinion of recycled water schemes. Asking one customer's willingness for recycled water where another is bearing the cost is likely to bias the answers in favour of recycled water.

Consistent with our recommendations for other companies, we do not consider that Western Water has adequately justified the need for alternative water supply to Melton and therefore recommend that all the expenditure be removed. We also recommend that the ESC define a trigger that would allow the projects to be undertaken (and prices adjusted accordingly) if Western Water provides an analysis that demonstrates that these projects are efficient. This would need to show that the relevant projects meet Western Water's obligations at least cost, or that any cost disadvantage is more than offset by other benefits that are appropriate to count (for example, the avoided cost to developers/households in meeting 6 star ratings).

### *Toolern stormwater project*

Western Water has stated that it will proceed with the Toolern stormwater project only if it receives Commonwealth Government funding support (expected to be 50%) for the project, which in turn is contingent upon a positive business case for the project. At our last discussion with Western Water, we were informed that this business case was under development, but that it would most likely be completed in May 2013 and a decision on Commonwealth Government funding made before the start of the 2013-14 financial year.

Consistent with this, we recommend that the Toolern stormwater project not be allowed in the regulatory allowance for capital expenditure, but that a trigger should be in place for prices to be adjusted if:

- The business case demonstrates that the project ensures best value for money for the community (in addition to a number of other criteria set by the Federal Government, such as improving water security); and
- Funding is secured from the Federal Government.

We observe that it is a theoretical possibility that Commonwealth Government funding could be secured on the basis of other criteria without being lowest community cost, in which case the expenditure related to this project should not be allowed. However, we observe that if half of the cost is met by the Commonwealth Government, then there is a very high probability that the residual cost to Western Water's consumers will be sufficiently low for this to be an efficient option (Yarra Valley Water analysed a similar case for a stormwater harvesting third pipe scheme in Coburg and reached this conclusion).

### *Melton Class A recycled water investments – the contractually obliged area of Eynesbury*

As with South East Water and City West Water, we agree that this expenditure be allowed on the basis of pre-existing obligations made in Water Plan 2.





