Barwon Water

DRAFT 2008 WATER PLAN

AUGUST 2007

1 EXECUTIVE SUMMARY 7
1.1 Introduction 7
1.2 Background 7
1.3 Revenue requirement and proposed annual price change 7
1.4 Key outcomes for the *2008 Water Plan* 7
1.5 Forecast capital expenditure requirements 8
1.6 Forecast operating expenditure 9
1.7 Service standards 10
1.8 Revenue requirement 10
1.9 Demand forecasts 11
1.10 Proposed price increase 12
1.11 Proposed form of price control 14
1.12 New customer contributions 14
1.13 Customer and regulator consultation 14
PART A: BACKGROUND 15
2 ABOUT BARWON WATER 15
2.1 Corporate vision, mission and key actions 15
2.2 Key business activities 15
2.3 Corporate governance 16
2.4 Key actions 16
2.5 Service responsibilities and regional statistics 17
2.6 Water supply systems 19
2.7 Sewerage systems 21
PART B: PROGRESS 2005 WATER PLAN PERIOD 24
3 2005 WATER PLAN PERIOD ACTIVITIES 24
3.1 Service standards performance 24
3.2 Capital expenditure 26
3.3 Operating expenditure 29
3.4 Changes in legislative obligations 30
PART C: SERVICE OUTCOMES 31
4 BARWON WATER'S SERVICE OUTCOMES 31
4.1 Introduction and overview 31
4.2 Consultation with customers about the *2008 Water Plan* 31
4.3 Targeted consultation on specific strategies 32
4.4 Key issues identified by customer surveys 33
4.5 Consultation with regulators 34
4.6 Regulatory framework and obligations 36
4.7 Interpretation of New Obligations and Business As Usual 40
4.8 State water obligations - business as usual 40
4.9 Environmental obligations - business as usual 46

4.10 Environmental obligations – new obligations 50
4.11 Public health obligation - new obligation 50
4.12 Other obligations - business as usual 51
4.13 New obligations 55
4.14 Customer service standards 55
4.15 Guaranteed service levels 62
4.16 Customer hardship policy 64
PART D: REVENUE REQUIREMENT 68
5 OVERVIEW OF REVENUE REQUIREMENT 68
6 CAPITAL EXPENDITURE 68
6.1 Overview of total capital expenditure 68
6.2 Capital planning process 70
6.3 Asset management 71
6.4 Key drivers of capital expenditure 72
6.5 Water capital expenditure 73
6.6 Sewerage capital expenditure 74
6.7 Recycled water capital expenditure 74
6.8 Corporate capital expenditure 74
7 OPERATING EXPENDITURE 74
7.1 Base operating year 75
7.2 Overview of total operating expenditure 75
7.3 Allocation methodology 75
7.4 Water system 77
7.5 Sewer system 79
7.6 Licence fees 81
7.7 Productivity initiatives 81
8 NON-PRESCRIBED SERVICES 82
8.1 Nature of services 82
9 INCENTIVE MECHANISMS 82
9.1 Introduction 82
9.2 Efficiency carryover mechanism 82
9.3 Service incentive mechanisms (S-factor) 85
10 FINANCING CAPITAL INVESTMENTS 86
10.1 Introduction 86
10.2 Regulated asset value 86
10.3 Regulatory asset value 2008-2013 89
10.4 Return on capital 90
10.5 Income tax 97
PART E: DEMAND 98
11 DEMAND FORECASTING 98

11.1 Introduction 98
11.2 Demand forecasts for the 2008-2013 regulatory period 98
11.3 Key characteristics of Barwon Water's Ccustomer base 98
11.4 Forecasting overview 99
11.5 Water supply planning framework 103
11.6 Indoor residential retrofit 105
11.7 Outdoor residential program 106
11.8 Business water efficiency program 107
11.9 Water volume forecasts 108
11.10 Sewer volume forecasts 110
11.11 Trade waste forecast 111
11.12 Recycled water forecast 112
11.13 Lot growth forecasts 113
11.14 Developer lot assumptions 114
PART F: PRICING 115
12 TARIFF PRICING & CUSTOMER IMPACT ANALYSIS 115
12.1 Key considerations when developing tariff strategy 115
12.2 Water Industry Regulatory Order 115
12.3 Central Region Sustainable Water Strategy 115
12.4 Council of Australian Governments objectives 116
12.5 Water tariffs 116
12.6 Sewerage and trade waste tariffs 122
12.7 Customer impacts – total water and sewerage prices 125
12.8 Consultation 126
12.9 Trade waste pricing 126
12.10 Pricing for water recycling 128
12.11 Miscellaneous charges 128
12.12 New customer contributions 128
13 FORM OF PRICE CONTROL 129
13.1 Alternative price control mechanisms 129
13.2 Current price control mechanism 130
13.3 Barwon Water's proposed price control mechanism 130
14 ADJUSTING PRICES 133
14.1 Current regulatory period 133
14.2 2008 regulatory period 134
14.3 Risk management policy 135

Figure 1-1 Components of price increase 11
Figure 3-1 Annual rainfall at West Barwon reservoir 26
Figure 4-1 Key stakeholders 34
Figure 4-2 Policies and obligations 36
Figure 4-3 Overall satisfaction index 56
Figure 4-4 Hardship programs 65
Figure 4-5 Customer assistance programs 66
Figure 5-1 Building blocks framework 68
Figure 5-2 Components of price increase 68
Figure 6-1 Capital expenditure by cost driver 70
Figure 10-1 Capital expenditure comparison and forecast 88
Figure 10-2 Composition of regulatory asset value 90
Figure 11-1 External and internal strategies 98
Figure 11-2 Forecast bulk water volume demand for the greater Geelong region 100
Figure 11-3 Projected Geelong storage levels to June 2009 101

Table 1-1 2008/09 – 2012/13 capital expenditure requirements 8
Table 1-2 Ten major projects for the period 2008/09 – 2012/13 8
Table 1-3 2008/09 – 2012/13 operating expenditure requirement 9
Table 1-4 Targets for guaranteed service level scheme 10
Table 1-5 2008/09 – 2012/13 forecast revenue requirement 10
Table 1-6 Forecast increase in population rate 11
Table 1-7 Forecast increase in connection rate 11
Table 1-8 Forecast metered water volume demand 12
Table 1-9 Forecast water and sewer prices 2007/08 – 2012/13 12
Table 1-10 Quarterly water bill for residential customers 13
Table 1-11 Total quarterly bill for non-residential customers 13
Table 2-1 Barwon Water's water service statistics 17
Table 2-2 Barwon Water's water services estimated population 17
Table 2-3 Key water system figures at June 2006 20
Table 2-4 Metered water consumption by township 21
Table 2-5 Sewerage services figures 23
Table 2-6 Sewerage services figures by plant 23
Table 3-1 Service standards performance 24
Table 3-2 Capital expenditure to date 26
Table 3-3 Delivery of key projects 27
Table 3-4 Operating expenditure to date 29
Table 3-5 Productivity savings 29
Table 4-1 Community consultation on key projects 32

Table 4-2 Water legislation 39
Table 4-3 Minimum flow rates 58
Table 4-4 Response times 59
Table 4-5 Containment of sewer spills 61
Table 4-6 Guaranteed service level payments 63
Table 4-7 Proposed service standard targets 63
Table 4-8 Elements of hardship policy 65
Table 6-1 Capital expenditure summary 69
Table 6-2 Top 10 projects 69
Table 7-1 2008/09 – 2012/13 operating expenditure requirements 75
Table 7-2 Forecast increase in operating expenditure 78
Table 7-3 Increase in operating expenditure for sewer system 79
Table 8-1 Non prescribed service summary 82
Table 10-1 Opening regulatory asset value 86
Table 10-2 Regulatory depreciation lives 89
Table 10-3 Regulatory asset value 2008-2013 89
Table 10-4 Weighted Average Cost of Capital Calculation 91
Table 10-5 Water services regulation authority bands for small company premiums 96
Table 11-1 Comparative per capita consumption and non-revenue water per capita for 2005/06 99
Table 11-2 Required savings in total water usage per capita to achieve water conservation targets for each of Barwon Water's supply systems 100
Table 11-3 Water conservation progress and targets 104
Table 11-4 Conservations and efficiency targets 104
Table 11-5 Conservation programs 105
Table 11-6 Customer sectors 107
Table 11-7 Bulk water and loss factor 108
Table 11-8 Forecast loss factor 109
Table 11-9 Estimated residential savings from specific measures 109
Table 11-10 Estimated non-residential savings from specific measures 109
Table 11-11 Forecast bulk water volume demand for the total region 110
Table 11-12 Forecast metered volume demand for the total region 110
Table 11-13 Inflow and Infiltration 110
Table 11-14 Trade waste volume forecast 111
Table 11-15 Trade waste quality parameters 111
Table 11-16 Volume of recycled water in current water systems 112
Table 11-17 Population growth forecast 113
Table 11-18 Connection growth forecast 113
Table 11-19 Water customer number growth forecast 113
Table 11-20 Sewerage customer growth forecast 114

Table 11-21 Forecast developer lot numbers 114
Table 12-1 Current water prices - residential and non-residential customers 117
Table 12-2 Proposed water prices - residential and non-residential customers 118
Table 12-3 Long run marginal cost price for discreet systems 120
Table 12-4 Quarterly water bill for residential customers 121
Table 12-5 Quarterly water bill for non-residential customers 121
Table 12-6 Proposed prices compliance with Water Industry Regulatory Order 122
Table 12-7 Proposed sewerage prices 123
Table 12-8 Residential customer impact table – sewerage 125
Table 12-9 Non Residential customer impact table – sewerage 125
Table 12-10 Residential customer impact table 125
Table 12-11 Non-residential customer impact table 125
Table 13-1 Forms of price controls 129
Table 14-1 Total licence fees 133
Table 14-2 Major risks and mitigating actions 136

1 Executive Summary

1.1 Introduction

This proposal discusses the outcome of the current regulatory period 2005/06 – 2007/08, including relevant factors that have impacted on Barwon Water during the regulatory period. It also sets out Barwon Water's short to medium-term business plan in response to the Essential Services Commission 2008 Water Price Review for the regulatory period 2008-2013.

Like most other areas of Australia, Barwon Water's region has experienced drought conditions over the past 10 years, the impact of which has been exacerbated by the 2006/07 record dry conditions resulting in stream flows reducing to 50 per cent of the past 10-year average. With storage levels already low, the 2006 low inflows necessitated Stage 1 water restrictions being introduced for the Greater Geelong supply area in July 2006, increasing to Stage 4 water restrictions by December 2006. In addition, Stage 2 water restrictions were introduced in Colac in November 2006, with similar restrictions implemented in Apollo Bay due to insufficient water storage.

As identified throughout the *Draft 2008 Water Plan* drought conditions have caused Barwon Water to re-evaluate the timing and design of a number of projects.

1.2 Background

Barwon Region Water Corporation (trading as Barwon Water) is the largest water corporation outside metropolitan Victoria. It provides world standard water and sewerage services to more than 270,000 permanent residents over 8,100 square kilometres. The population increases by more than 198,000 to 469,000 during holiday periods.

Barwon Water's asset base of approximately $1 billion includes more than 5,000 kilometres of pipes, 10 major reservoirs, 10 water treatment plants and nine water reclamation facilities.

Barwon Water is a major employer in the region employing operational, engineering, strategic planning, financial and administrative specialists.

1.3 Revenue requirement and proposed annual price change

The *2008 Water Plan* for Barwon Water will deliver a real price increase, improved performance and long-term sustainable water and sewerage services for customers.

- Total revenue required $703M
- With a real price increase of 12 per cent per annum.

1.4 Key outcomes for the *2008 Water Plan*

In the *Draft 2008 Water Plan*, Barwon Water is committed to delivering the following outcomes to customers.

- Continuation of current service standards, particularly security of supply through substantial new investment:
    - constructing a Melbourne to Geelong interconnection project at a cost of $100M, to be completed by June 2012. Up to 16,000 megalitres a year will be supplied to Geelong
    - delivery of the Anglesea borefield project for $70M, making available up to 7,000 megalitres per annum
    - investigations into other water supply options including system interconnection and aquifer recharge.
- Sustainable future:
    - through a uniform water conservation message and innovative tariff design
    - investment in alternative water sources

- sustainable biosolids management delivering 100 per cent beneficial use
- water recycling initiatives, including delivery of the Northern Water Plant, which will increase sewerage system capacity in northern Geelong, reduce potable water use by 2,000 megalitres per year, and reduce ocean discharge
- greenhouse gas abatement and energy efficiency through a reduction in emissions of 13 per cent by 2013
- providing sewerage to small towns
- managing and monitoring river health
- effective and innovative trade waste management.

- Research and development initiatives through:
  - aquifer storage and recovery trials and investigations
  - groundwater investigations in south-west Victoria
  - smart metering and billing options
  - alternative water use
  - innovative solutions to small town sewerage.

1.5 Forecast capital expenditure requirements

Barwon Water's capital expenditure requirements have been established through a robust asset management planning process. This planning process ensures the forecast capital expenditure required for the upcoming regulatory period reflects the underlying characteristics and performance of Barwon Water's assets and is consistent with Barwon Water's demand forecasts, customer service standards and other obligations.

Table 1-1 shows Barwon Water's forecast capital expenditure requirement for the upcoming regulatory period.

Table 1-1 2008/09 – 2012/13 capital expenditure requirements ($M, real)

	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Headworks	43.49	12.96	52.61	51.76	1.64	162.46
Pipelines/network	32.13	37.44	41.69	65.4	56.51	233.17
Treatment	3.42	2.10	4.51	1.62	2.34	13.99
Corporate	4.72	6.12	8.62	8.12	5.22	32.80
Recycled water	9.49	40.27	15.36	2.88	1.05	69.06
Total	93.25	98.89	122.79	129.78	66.76	511.48*

* This figure does not include government and customer contributions, gifted assets or proceeds from disposals

Barwon Water has significantly reprioritised the capital program to manage impacts of the drought. This has involved bringing forward to 2006/07–2008/09 a number of projects originally forecast for later in the upcoming regulatory period.

The benchmark capital expenditure forecast for the upcoming regulatory period of $511.5M is offset by government contributions of $46M. Significant planning and resource allocation will ensure Barwon Water will continue to deliver the programs set.

Table 1-2 identifies the top 10 capital projects forecast during the upcoming regulatory period.

Table 1-2 Ten major projects for the period 2008/09 – 2012/13 ($M, real)

Project	Drivers	Outcomes	Expected delivery date	Cost
Melbourne Interconnection (water)	Growth/ augmentation	Additional water supply for greater Geelong system	2012	100.0
Geelong Trunk	Growth/augmentation,	Freed up potable water and	2011	66.5

Project	Drivers	Outcomes	Expected delivery date	Cost
Sewerage Strategy	compliance	increase in sewerage system capacity		
Anglesea borefield project (water)	Growth/ augmentation	Additional water supply for greater Geelong system	2010	35.3
Water main replacements	Renewals, improved service	Reduced risk of failures – improved service levels	Ongoing	20.0
Shared water and sewer reticulation assets	Growth/ augmentation	Water assets greater than 150mm and sewer greater than 225mm are required to be funded by Barwon Water	Water - 2013 Sewer - 2015	19.6
Armstrong Creek Sewerage Scheme	Growth/ augmentation	Providing sewerage services for new suburb development	2014	11.7
Bellarine transfer main stage 5 (water)	Growth/augmentation	Increased supply capacity to Armstrong Creek development	2014	11.0
BASIS replacement	Replacement	Replacement of billing system	2012	11.0
Leopold rising main No.1 replacement (sewer)	Growth/augmentation	Ability to accept future sewerage flows from Clifton Springs and Leopold	2013	10.4
Apollo Bay / Skenes Creek bulk water supply	Growth/Improvement	Additional water supply for Apollo Bay/Skenes Creek	2011	9.1
Percentage of overall Capital Works Plan				57.6%

1.6 Forecast operating expenditure

The drivers of the forecast operating expenditure are to maintain current service levels and customer expectations and ensure the operation of capital investment is achieved.

Table 1-3 shows Barwon Water is forecasting operating expenditure of $400.5M over the next regulatory period. This reflects prudent and efficient forecasts for the upcoming regulatory period linking Barwon Water's strategic objectives, customer expectations, regulatory obligations and management of prolonged drought, including operation of the Northern Water Plant and sustainable biosolids management.

The proposed operating expenditure does not include any operating costs, or take or pay estimates for the Melbourne interconnection.

Table 1-3 2008/09 – 2012/13 operating expenditure requirement ($M, real)

	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Operations and maintenance	24.49	23.35	20.36	19.87	20.19	108.26
Treatment	19.73	24.51	23.37	23.13	23.57	114.30
Customer service and billing	8.03	8.08	8.13	8.17	8.22	40.63
Corporate	26.52	24.16	24.55	25.01	24.95	125.20
Recycled water	1.19	0.82	0.70	3.69	3.85	10.25
Licence fees	0.36	0.36	0.36	0.36	0.40	1.83
Total	80.31	81.29	77.48	80.22	81.18	400.48

The proposed operating expenditure includes productivity savings through re-assigning work programs to allow new obligations to be absorbed within existing business as usual expenditure. These are outlined in Part C of the *2008 Water Plan*. It also reflects expenditure for training and professional development to ensure Barwon Water undertakes work in the most productive and efficient manner.

1.7 Service standards

Barwon Water's focus during the next regulatory period is to maintain the existing high levels of service.

The current drought has led to significant increases in service calls and expenditure to maintain service levels. In light of the current drought conditions, Barwon Water has set proposed service targets for the upcoming regulatory period based on continued drought conditions and related impacts on service delivery. The latter years of regulation are anticipated to see a return to "normal" three-year average results.

This proposal continues to provide an incentive to pursue efficiency improvements through the existing Guaranteed Service Levels payment scheme. The scheme involves making payments to customers who receive a level of service that is less than the average level of performance expected by most customers, and where these services do not meet defined levels of performance.

Table 1-4 identifies Barwon Water's proposed Guaranteed Service Levels for the upcoming regulatory period. This is an increase from the current payment of $50.

Table 1-4 Targets for guaranteed service level scheme

Service attribute	Guaranteed level of service	Payment
Water supply reliability	No more than five unplanned water supply interruptions in any 12-month period.	$65
Sewerage service reliability	No more than three unplanned sewerage service interruptions or more than three sewer spills on to the customer's property within a 12-month period.	$65

1.8 Revenue requirement

Barwon Water is forecasting a total revenue requirement of $703M for the upcoming regulatory period. This is broken down to an annual basis in Table 1-5.

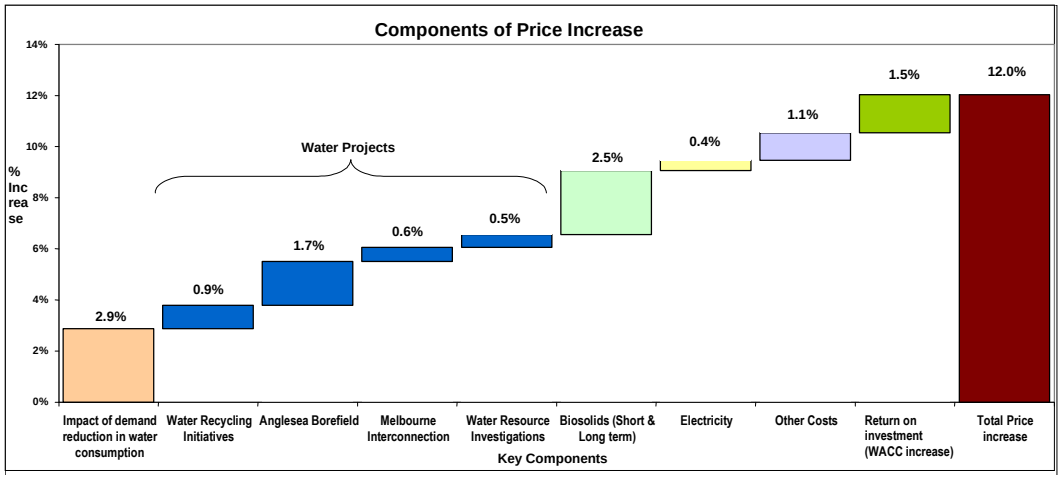
Table 1-5 2008/09 – 2012/13 forecast revenue requirement ($M, real)

Description	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Operating expenditure	80.31	81.29	77.48	80.22	81.18	400.48
Return on assets to 30/06/08	30.21	29.27	28.33	27.45	26.64	141.90
Regulatory depreciation of assets to 30/06/08	14.57	14.57	14.43	12.48	12.36	68.41
Return on new assets	2.42	6.61	11.11	16.90	21.51	58.55
Regulatory depreciation of new assets	1.11	3.38	6.29	9.88	12.38	33.05
Adjustments from last period	0.23	0.00	0.00	0.00	0.00	0.23
Tax (if payable)	0.00	0.00	0.00	0.00	0.00	0.00
Total revenue requirement	128.86	135.12	137.63	146.93	154.07	702.61

Table 1-5 shows the increase required to ensure Barwon Water is able to meet obligations to customers. This is based on the forward operating and capital programs Barwon Water has forecast is necessary to meet customer demand and continue to provide world standard water and sewerage services.

Figure 1-1 shows how the components of Barwon Water's revenue requirements result in the 12 per cent increase in prices. It shows the forecast capital program contributes largely to the price increase. This capital works program is required to sustain the region's water supply and meet customers' needs.

Figure 1-1 Components of price increase



1.9 Demand forecasts

Demand forecasts are integral to Barwon Water's business planning process. They not only represent the units on which Barwon Water bases revenue, but are essential for forecasting capital expenditure and operating expenditure, including the projects required and the appropriate timing of expenditure.

1.9.1 Customer growth rates

Generally, the connection growth rates are higher than population growth rates. This is due to various trends, including a decline in the average household size and an increase in one-person households.

Both the population growth forecasts and connection growth projections used to calculate volume projections are based on the Department of Sustainability and Environment's *'Victoria in Future'* population projections and local council planning frameworks, in particular structure growth plans.

Table 1-6 outlines the percentage actual and forecast population rate increases from 2005/06 – 2012/13. It shows the actual population rate increase in 2005/06 was 2.2 per cent, which is forecast to decline to a 1.1 per cent increase by 2012/13.

Table 1-6 Forecast increase in population rate (%)

Population rate	2005/06 Actual	2006/07 Actual	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Total region	2.2	1.6	1.2	1.2	1.2	1.2	1.2	1.1

Barwon Water's non-residential customer connections grow at a similar rate to residential customer connections. Given this, Barwon Water has applied the same growth rate to non-residential customers going forward as has been applied to residential customers.

Table 1-7 provides the connection growth rate for the region from 2005/06 to 20012/13. It shows the forecast connection growth rate will increase at a reasonably steady rate on a year-by-year basis.

Table 1-7 Forecast increase in connection rate (%)

Connections	2005/06 Actual	2006/07 Actual	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Water	2.0	1.7	2.0	1.9	1.9	1.8	1.8	1.8
Sewer	1.9	1.7	2.0	1.9	1.9	1.8	1.8	1.8

1.9.2 Water volume demand

A number of significant variables impact water volume demand. These are:

- the influence of existing water restrictions on customer consumption, brought about by low stream flows due to changing weather patterns and climate change
- population growth rates and economic growth
- impact of price on demand;
- water conservation, which can be influenced by government policies
- implementation of recycled water initiatives of potable water substitution which reduce demand for potable water, for example the operation of the Northern Water Plant.

Table 1-8 represents Barwon Water's forecast water demand for the total region, taking into account these four variables over the next seven years. It shows a decline in demand from 2005/06 to 2007/08, due to water restrictions to counter the drought. An additional drop in demand is forecast in 2011/12 taking account of the Northern Water Plant. However, demand is projected to increase to 2012/13 as the region recovers from the drought and water restrictions are lifted.

Table 1-8 Forecast metered water volume demand (megalitres)

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Residential	24,835	19,779	17,636	19,208	21,055	21,839	22,666	22,863
Non-residential	13,625	12,774	11,229	12,230	13,405	13,904	11,408	11,507
Total	38,460	32,553	28,865	31,438	34,461	35,743	34,074	34,369

1.10 Proposed price increase

Barwon Water is forecasting a 12 per cent per annum price increase for the upcoming regulatory period. This increase is based on:

- the recovery of costs associated with providing services through sufficient revenue;
- maintaining Barwon Water's two-part tariff structure (volume charge and service charge) throughout the upcoming regulatory period;
- expenditure forecasts equitably and efficiently recovered from residential and non-residential customers, providing for rebalancing revenue collected between residential and non-residential customers in line with demand.

1.10.1 Proposed water and sewer tariff prices

Table 1-9 reflects Barwon Water's proposed water and sewer prices for the upcoming regulatory period.

Table 1-9 Forecast water and sewer prices 2007/08 – 2012/13 ($M, real)

	2007/08 (actual)	2008/09	2009/10	2010/11	2011/12	2012/13
WATER PRICES						
Residential and non-residential						
Water volume charge	0.95	1.35	1.51	1.69	1.90	2.13
Water service charge	148.29	102.66	115.00	128.84	144.33	161.69
SEWER PRICES						
Residential						
Sewer volume charge	1.14	-	-	-	-	-
Sewer service charge	184.00	326.08	365.30	409.24	458.46	513.61
Non-residential						
Sewer volume charge	1.14	1.17	1.31	1.46	1.64	1.84
Sewer service charge	184.09	206.23	231.04	258.83	289.96	324.84

The impact of the proposed tariff structure includes:

- a strong water conservation signal to assist in reducing demand by increasing the variable charge by 42 per cent to $1.35 per kilolitre
- a decrease in the fixed charge to provide customers more control over the size of their bill. The consequent reduction is from $148.29 to $102.66 in 2008/09
- an increase in the proportion of total water revenue generated from volumetric revenue (61 per cent to 76 per cent)
- rebalancing the water and sewer charges by reducing revenue collected through sewer charges and increasing revenue collected through water charges, reflecting the respective expenditure forecasts proposed during the regulatory period
- a slight increase in the proportion of revenue generated from the non-residential customers, relative to the residential customers.

Table 1-10 identifies the average quarterly water bill for residential customers from the current regulatory period against the first year of the upcoming regulatory period.

Table 1-10 Quarterly water bill for residential customers ($, real)

Use per annum	2007/08	2008/09
75 kilolitre	54.89	50.98
150 kilolitre	72.70	76.29
200 kilolitre	84.57	93.16
300 kilolitre	108.32	126.92

Note – 1kl = one kilolitre = 1,000 litres

Table 1-11 identifies the average quarterly bill for non-residential customers from the current regulatory period against the first year of the upcoming regulatory period.

Table 1-11 Total quarterly bill for non-residential customers ($, real)

Use per annum	2007/08	2008/09
500 kilolitre	337.35	384.39
1,000 kilolitre	591.61	691.56
3,000 kilolitre	1,608.64	1,920.22
5,000 kilolitre	2,625.68	3,148.89
10,000 kilolitre	5,168.26	6,220.56

1.10.2 Pricing for water recycling

Barwon Water has implemented a recycled water strategy that establishes recycled water as a key element in the successful management of water as a scarce resource.

Recycled water prices for non-residential customers are calculated on an individual basis applying the pricing principles. These are consistent with the principles outlined in the Essential Services Commission's Guidance Paper[1].

The pricing principles are:

- maximise revenue earned from recycled water services, having regard to the price of any alternative substitutes and customers' willingness to pay
- cover the full cost of providing the service
- include a variable component.

1.10.3 Miscellaneous charges

Barwon Water is developing a core set of miscellaneous services to provide a simpler and more concise list of services clearly linked to the service activity. A review of miscellaneous

[1] Essential Services Commission: 2008 Water Price Review – Guidance Paper, March 2007

charges has been undertaken to ensure prices are transparent, efficient and based on recovering the full cost of providing the service.

It should also be noted that all prices will vary depending on the service provided.

The completion of the review will be finalised for inclusion in Barwon Water's final *2008 Water Plan* on 8 October 2007.

1.11 Proposed form of price control

Barwon Water is proposing a tariff basket methodology as the form of price control for the upcoming regulatory period. This methodology allows updates of annual prices by increasing certain prices more than others, provided the average weighted price increase is maintained. In addition, to ensure substantial customer impacts do not occur, one particular price cannot be increased more than the overall price increase plus 3 per cent.

Application of this approach achieves the following:

- greater flexibility to adjust prices year on year. This would allow a re-allocation of revenue collection in-line with changing and unforeseen costs in relation to particular services
- an opportunity to modify current pricing structures during the regulatory period. This may include reducing the sewer volume charge for non-residential customers to reflect more businesses recycling water.

1.12 New customer contributions

Barwon Water proposes a minor increase to account for Consumer Price Index movement to the charge per lot for new customer contributions. The charge is based on the water efficiency of developments, with the standard charge varying according to the water sensitivity of developments and the demand for future infrastructure.

The three different charges proposed are:

- $550 per water and sewer lot where there is minimal impact on future water resources and can be provided for in current capacity
- $1,100 per water and sewer lot where developments will require further investment within six years to cater for development. Where shared assets must be constructed ahead of schedule and the 'bring-forward' costs are greater than $1,100 the resulting calculated charge should apply
- $2,200 per water and sewer lot for developments that will create demand for water resources over and above high-density, water-efficient homes.

1.13 Customer and regulator consultation

The *Draft 2008 Water Plan* incorporates community feedback from project-focused consultation undertaken in accordance with Barwon Water's community engagement strategy. In addition, in the last quarter of 2006 a survey was undertaken into alternative pricing structures and our customers' willingness to pay for non-obligatory aspects of our operations, including the purchase of renewable energy and costs associated with investigating recycled water options.

In developing the *2008 Water Plan,* Barwon Water has consulted with regulators, including the Department of Sustainability and Environment, the Environmental Protection Authority and the Essential Services Commission.

Barwon Water also has a number of consultative groups, which continues to provide feedback on a regular basis. This feedback has been considered in developing the *2008 Water Plan.*

On 14 August 2007, Barwon Water will begin further community consultation on the *Draft 2008 Water Plan*. Barwon Water will engage in targeted community consultation to inform stakeholders about the *2008 Water Plan* and give opportunities for customers and stakeholders to provide written submissions before 8 September 2007. The *Draft 2008 Water Plan* will also be submitted to the Minister for Water, the Treasurer and each Regulatory Agency for comment.

These submissions and feedback will be considered in developing the final *2008 Water Plan.*

PART A: BACKGROUND

2 About Barwon Water

2.1 Corporate vision, mission and key actions

Vision

Barwon Water will be the leading environmental business, providing sustainable water and sewerage services.

Mission

Barwon Water enhances the community's quality of life providing sustainable water, sewerage and environmental services, through innovation, technical expertise, business efficiency, excellence in customer service and commitment to the environment.

Values

The Vision and Mission will be delivered through the organisational values:

- Our people
- Environment
- Customer service
- Business efficiency
- Integrity
- Quality and safety
- Public Health
- Innovation

2.2 Key business activities

Barwon Water is the largest water authority outside metropolitan Victoria. It provides world standard water and sewerage services to more than 270,000 permanent residents, increasing by more than 198,000 to 469,000 during holiday periods.

Barwon Water's region of responsibility stretches over 8,100 square kilometres from Little River and the Bellarine Peninsula in the east to Colac in the west, and from Meredith and Cressy in the north to Apollo Bay on the southwest coast.

The service area incorporates local government areas of:

- City of Greater Geelong
- Borough of Queenscliffe
- Surf Coast Shire
- Colac Otway Shire
- part of Golden Plains Shire

The Barwon Water's asset base of approximately $1 billion includes more than 5,000 kilometres of pipes, ten major reservoirs, 10 water treatment plants and nine water reclamation treatment facilities.

Barwon Water is a major employer in the region employing operational, engineering, strategic planning, financial and administrative specialists.

2.3 Corporate governance

An independent skills-based seven-member Board responsible to the Minister for Water administers the governance of Barwon Water. The Board sets policy and direction and is supported by the Managing Director, an executive management team and branch management. The Board operates under the provisions of the *Water Act 1989.*

The Board has established the following committees to assist in the governance role:

- Audit Committee
- Executive Remuneration Committee
- Risk Management Committee

2.4 Key actions

Key actions to be undertaken during the upcoming regulatory period are directly aligned with Barwon Water's Corporate Strategy and include:

- Implement a strategy for sustainable biosolids management delivering 100 per cent beneficial use
- Identify and develop renewable energy opportunities, reduce energy consumption at all major facilities and mitigate greenhouse gas emissions
- Implement the *Water Supply-Demand Strategy* and undertake the first stage of works to implement strategy and planning for the medium term water projects
- Continue to develop customer and stakeholder partnerships to increase water conservation and manage future water demand
- Engage the community and key stakeholders during the planning, development and construction stages of major projects
- Develop symmetrical community education programs to raise awareness of water as a valuable resource
- Move to closed distribution systems to decrease water loss and ensure improved water quality and security
- Implementation of the Asset Management Plan to cater for growth in the region and timely replacement of ageing assets through a risk based maintenance program
- Continue to research and develop innovative uses of recycled water in accord with the Regional Water Recycling Plans to maximise environmental outcomes and recognise the value of this resource
- Meet Government expectations in a vigorous and transparent manner by meeting the customer services criteria of the *2007 Statement of Obligation* and benchmark Customer Charter
- Implement a Sustainability Strategy, a commitment to corporate responsibility and stewardship, making a difference to the social, environmental and economic welfare of our region
- Further develop the Learning and Development Strategy, including a work-life framework to address changing employee and organisational needs
- Ensure the health, safety and welfare of our employees; and develop strategies to enhance employee satisfaction and to retain our employees.

2.5 Service responsibilities and regional statistics

Table 2.1 illustrates the magnitude of services provided by Barwon Water in comparison to the total Victorian regional urban water sector for 2006/07.

Table 2-1 Barwon Water's water service statistics

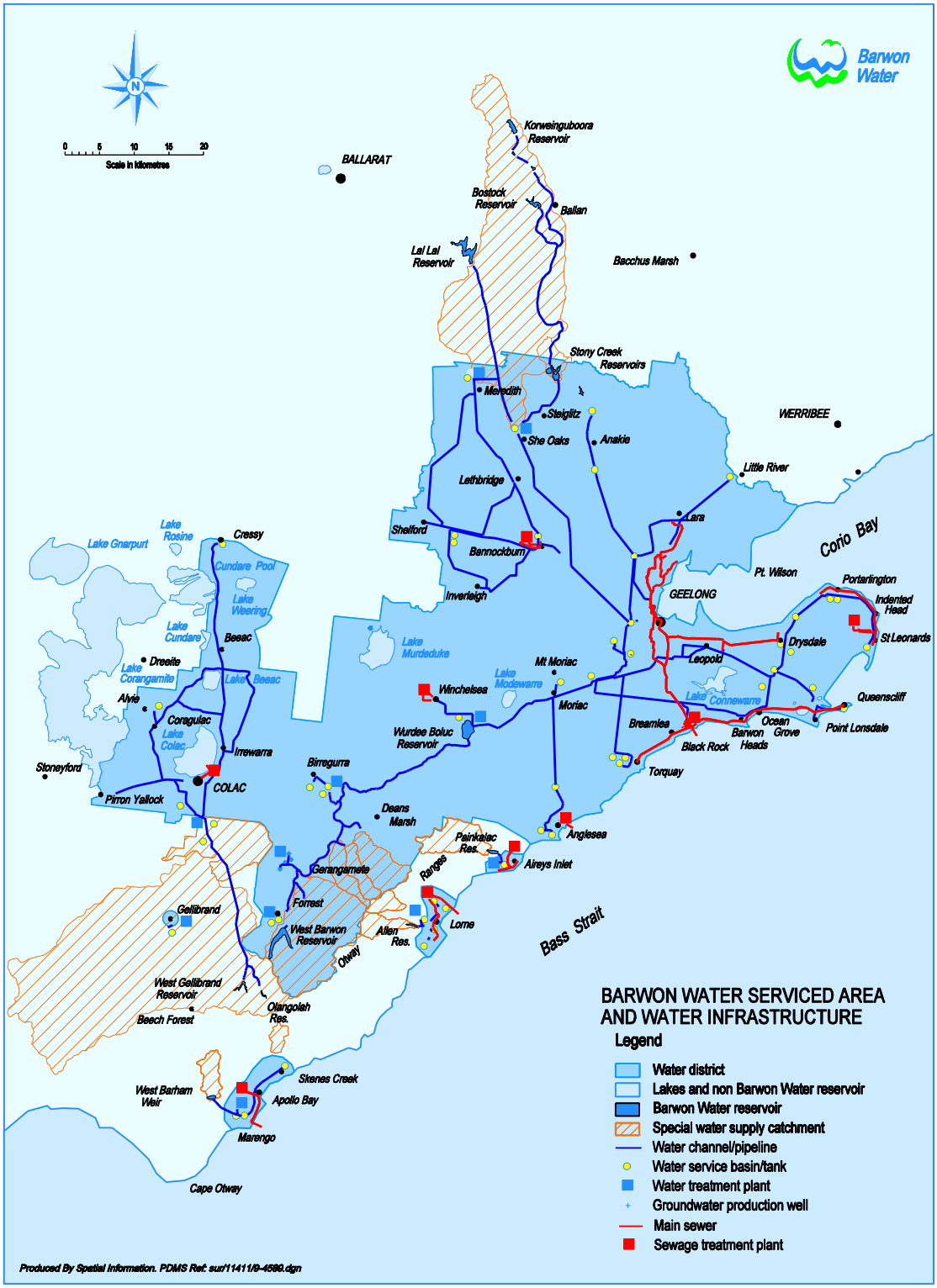
	Barwon Water	Combined Victorian Regional Urban Sector
Permanent Population	275,433	1,244,014
Properties Connected	127,168	592,318
Water Supplied (megalitres)	33,381	269,010
Sewer Treated (megalitres)	20,596	134,809

Due to the nature of Barwon Water's service area having a significant annual influx of tourists over the summer period, our planning needs to accommodate this.

Table 2-2 details the increase in population by township over the summer months.

Table 2-2 Barwon Water's water services estimated population

	Permanent population		Peak population	
Township	2005/06	2006/07	2005/06	2006/07
Geelong & district	250,394	254,476	402,497	409,632
Meredith/Lethbridge/Shelford	1,346	1,378	1,690	1,730
Colac & district	13,824	14,005	25,440	25,770
Gellibrand township	71	71	71	71
Apollo Bay/Skenes Creek	2,214	2,258	12,440	12,690
Lorne	1,846	1,925	17,940	18,710
Aireys Inlet/Fairhaven	1,302	1,319	9,320	9,440
TOTAL	271,000	275,433	469,398	478,043


Barwon Water
N
0 5 10 15 20
Scale in kilometres
BALLARAT
Konweinguboora Reservoir
Bostock Reservoir
Ballan
Lal Lal Reservoir
Bacchus Marsh
Stony Creek Reservoirs
Meredith
Steiglitz
She Oaks
Anakie
WERRIBEE
Little River
Lethbridge
Lara
Shelford
Bannockburn
Corio Bay
Pt. Wilson
Portarlington
Indented Head
St Leonards
GEELONG
Drysdale
Leopold
Inverleigh
Lake Murdeduke
Mt Moriac
Lake Modewarre
Lake Connewarre
Queenscliff
Point Lonsdale
Ocean Grove
Barwon Heads
Black Rock
Breamlea
Torquay
Winchelsea
Moriac
Wurdee Boluc Reservoir
Lake Rosine
Lake Gnarpurt
Cressy
Cundare Pool
Lake Weering
Lake Cundare
Beeac
Lake Beeac
Dreeite
Lake Corangamite
Alvie
Coragulac
Lake Colac
Irrewarra
Stoneyford
COLAC
Pirron Yallock
Birregurra
Deans Marsh
Anglesea
Painkalac Res.
Aireys Inlet
Ranges
Gerangamete
Forrest
Gellibrand
West Barwon Reservoir
Allen Res.
Lorne
Otway
Bass Strait
West Gellibrand Reservoir
Beech Forest
Olangolah Res.
Skenes Creek
West Barham Weir
Apollo Bay
Marengo
Cape Otway
BARWON WATER SERVICED AREA AND WATER INFRASTRUCTURE
Legend
Water district
Lakes and non Barwon Water reservoir
Barwon Water reservoir
Special water supply catchment
Water channel/pipeline
Water service basin/tank
Water treatment plant
Groundwater production well
Main sewer
Sewage treatment plant
Produced By Spatial Information. PDMS Ref: sur/11411/9-4590.dgn

2.6 Water supply systems

Barwon Water supplies water to customers over a large geographic region south-west of Melbourne. Water is sourced from the Great Dividing Range in the north and the Otway Ranges in the south-west. There are five independent water systems and normally there is sufficient surface water to meet demand but the last 10 years of drought have required the use of water restrictions and groundwater to provide an adequate supply to our customers.

Greater Geelong water supply system

This is the largest system and it accounts for over 85 per cent of total water use within Barwon Water. Average daily demand is less than 100 megalitres but on peak days demand is in excess of 200 megalitres.

This system is a conjunctive use system, which means that the system is normally supplied by surface water runoff but in times of drought the groundwater system at Barwon Downs is operated to help meet demand. Over the last 10 years of drought there has been an increasing reliance on the groundwater system and as climate change impacts continue to affect surface water resources, new groundwater systems will be required to supplement the reduction in surface water runoff to meet base demand.

The Greater Geelong Water Supply System water catchments are located in the Great Dividing Ranges and the Otway Ranges. The East and West Moorabool River systems in the North usually supply around 25 per cent of the total water and the remainder comes from the surface and groundwater resources of the Barwon catchment located in the Otways. During the current drought up to 60 per cent of the supply will come from groundwater. Surface water is harvested in accordance with the Barwon Bulk Water Entitlement and is less expensive to harvest than groundwater.

Within the Barwon system water is collected at West Barwon Reservoir and from other tributaries and diverted into 57km of open channel to Barwon Water's largest storage, the Wurdee Boluc Reservoir.

Water is treated at the outlet of the reservoir and then transferred to Pettavel on the outskirts of Geelong and other large regional towns enroute. Water is transferred directly to the Bellarine Peninsula to meet the increasing demand in the area. At Montpellier Basins water from the Barwon System is blended with water from the Moorabool system to supply Geelong and surrounding suburbs.

Barwon Water shares the water from the West Moorabool with Central Highlands Water Authority. Barwon Water contributed towards the capital cost of the dam and continues to share operational expenditure. The supply from this system is vital to Geelong but the performance has been unreliable in recent times due to the drought and demand from other water users. Barwon Water utilisies the Moorabool River to transfer water from Lal Lal to the river pump station at the Moorabool Water Treatment Plant at She Oaks. Water from this source is relatively salty and some form of blending with other water sources is desirable.

Water is also harvested from the East Moorabool River at Korweinguboora and Bostock Reservoirs and transfered via the Ballan Channel to the Upper Stony Creek reservoirs. It is then piped through the Brisbane Ranges National Park to the Moorabool water treatment plant. Water from the plant supplies the growing regional towns in the Golden Plains Shire and some primary producers in the area.

Over the period of the 2008 Water Plan, Barwon Water will be developing the groundwater system at Anglesea. This aquifer will assist in meeting demand into the future and is designed to meet short term shortfalls if the drought continues. This project together with others listed in the Central Regional Sustainable Water Strategy will be key drivers into Barwon Water's future water resource planning.

Colac system

The Colac system represents around 10 per cent of the total water supply of Barwon Water. Water for Colac is harvested in the headworks of the Gellibrand River. Olangolah and West Gellibrand Reservoirs are relatively small due to the reliable river flows and the size of the catchment. Barwon Water completed construction of Basin 5 in 2006. Together with Basin 4

this basin provides a buffer to assist in meeting summer demand that is in excess of the capacity of the main supply pipeline from the reservoirs. This pipeline is located in rugged terrain through state and national park and can be subject to failures that are difficult to repair due to their location. The pipeline is progressively being upgraded.

Water treated at Colac is transferred to the urban region for residential and industrial use. It also supplies surrounding small towns and farms. Demand from the farming sector is seasonal with peak periods over summer placing considerable pressure on the dispersed pipe network.

Otway systems

These include Apollo Bay, Lorne, Gellibrand and Aireys Inlet and water catchments are in the Otway Ranges.

Recent growth in demand has demonstrated the need to augment the supply at Apollo Bay and a site for a new storage has proven difficult to locate due to the area's geology and residential development. A new storage is necessary to meet the Colac Otway Shire's growth strategy for Apollo Bay.

Both Lorne and Aireys Inlet have relatively secure supplies in periods of normal rainfall but the latter has been subject to restrictions in 2007.

A high level of water treatment is provided on all these supplies and then reticulated via tanks and pipelines to customers.

Water quality to our customers.

A community of over 260,000 people rely on Barwon Water to provide a reliable, safe and aesthetically pleasing water supply. Statutory requirements also apply to Barwon Water regarding the extraction of water from the environment, the safety of storage assets and the quality of drinking water to our customers. The approach adopted to meet these expectations includes:

- a risk-based approach in which potential threats associated with water supply are identified and minimised through the use of risk mitigation measures;
- regular monitoring of the water supply systems and effective reporting mechanisms to provide timely and relevant information; and
- appropriate emergency response planning and capability to ensure emergencies are managed effectively.

Barwon Water operates 10 water treatment plants providing quality of water to customers the meet the Safe Drinking Water Regulations. Barwon Water's priority is to supply safe, high quality water. Table 2-3 and Table 2-4 provide an overview of the key water supply systems figures for Barwon Water as at June 2006.

Table 2-3 Key water system figures at June 2006

Key Water System Figures at June 2006	
Total connected properties	125,041
Total water treatment plant volumes (megalitres)	41,013
Treatment plants	10
Pumping stations	40
Length of water mains (km)	3,399

Table 2-4 Metered water consumption by township (megalitres)

Township	2004/05	2005/06
Apollo Bay	284	286
Aireys Inlet	160	172
Anglesea	408	427
Bellarine Peninsula	4,705	5,041
Colac	3,478	3,674
Geelong Urban	25,383	26,879
Lorne	308	336
Skenes Creek	32	31
Torquay	1,542	1,614
TOTAL	**36,298**	**38,460**

2.7 Sewerage systems

Barwon Water's sewerage system is a complex network of more than 2,200 kilometres of sewerage pipelines, 153 sewage pumping stations and nine water reclamation plants at key locations. Approximately 60 million litres of domestic sewage, trade waste and infiltration water are treated daily.

Black Rock water reclamation plant

The sewerage system in the Geelong area has been developed around infrastructure built in the 1910s with a single point of discharge at Black Rock. Approximately 85 per cent of the total volume of sewage handled by Barwon Water is through this system. The reticulation system is a complex network of pump stations and pipes, of varying dimensions and materials, that discharge into two large diameter gravity mains that run through Geelong. These two large gravity mains have some sections more than 30 meters below ground to maintain gravity flow conditions. Sewage from Lara, Leopold and Clifton Springs is also pumped into the Geelong reticulation system. The two large gravity mains combine to the south of Geelong, forming the main outfall sewer, which delivers the sewage a further 10 kilometers to Black Rock. Two smaller pumped systems, from Torquay and the southern Bellarine Peninsula towns, also discharge directly to Black Rock.

The Black Rock water reclamation plant features a natural biological process and produces high quality recycled water suitable for a range of beneficial uses.

A large component of the discharge into the system is generated from industrial and commercial sources and the plant has been designed to accommodate the higher loads resulting from the industrial inputs.

The age and the physical area that the reticulation system covers results in long detention times in sewers, greater than eight hours in some cases. This issue has been exacerbated with the lower inflows due to the drought conditions. Additionally, the low-lying coastal areas serviced by the reticulation system, result in high levels of infiltration and inflow into the system. The infiltration and long detention times contribute to increased odour and corrosion issues that are managed, in accordance with an Odour and Corrosion Strategy, through a number of chemical and physical treatment stations in the sewerage system.

Colac water reclamation plant

The Colac District Water Board constructed the Colac sewerage system in 1928 to transport sewage and trade waste to the first inland treatment plant in Victoria, at the site of the current Colac water reclamation plant. Barwon Water amalgamated with the Colac District Water Board in 1997 and commenced planning to upgrade the treatment plant to meet the strict environmental requirements for discharge into Lake Colac.

The reticulation system comprises of eight pump stations and 120 kilometers of pipeline, ranging from non-standard 100mm diameter up to 450mm diameter in size. Maintenance and repair of the non-standard sized pipes is difficult due to a lack of appropriately sized equipment and replacement fittings. When a 100mm diameter pipeline requires repair, it is

usually replaced with a larger diameter pipe, increasing the cost of the repair compared to a normal sewer repair.

The age and design characteristics of the reticulation system also result in large amounts of stormwater infiltration into the sewer during storm events increasing the likelihood of blockages and overflows.

Regional coastal water reclamation plants

The Regional Coastal water reclamation plants are four small, stand-alone systems at Anglesea, Aireys Inlet, Lorne and Apollo Bay. The reticulation systems are all designed around handling the large seasonal holiday population and can therefore result in long detention times and associated blockage, odour and corrosion concerns in the non-peak times. These towns have a greater density of vegetation within the town area, resulting in increased root intrusion into the sewer that needs to be managed to prevent blockages and overflows. The small size of the catchment restricts the use of chemical root foaming techniques, due to the impact on the biological treatment processes, and therefore requires greater use of labour-intensive mechanical root control in the sewerage system.

The treatment plants consist of three mechanical activated sludge plants and a lagoon system at Airey's Inlet. All of the plants produce high-quality recycled water, with Anglesea providing a large percentage of the available recycled water to the golf club and local sports ground.

Regional inland water reclamation plants

The Regional Inland water reclamation plants are three lagoon-based plants located at Portarlington, Bannockburn and Winchelsea. Portarlington is a popular tourist destination, subject to seasonal tourist influx and the associated problems. With the reticulation system located close to the Bay, groundwater infiltration is an issue in the Portarlington system.

Both Winchelsea and Bannockburn water reclamation plants are smaller systems that are not subject to the same scale of variations in flow during holiday periods. All of these systems have been experiencing increased root ingress into the sewers as a result of the drought conditions and, being small systems with biological treatment, labour-intensive mechanical root control techniques, instead of chemical treatments, are applied in these systems as well.

Recycled water

As global water shortages threaten, fresh water conservation is becoming increasingly important. Recycled water has proven to be a more reliable source than conventional supplies, particularly during drought.

Recycled water projects in Victoria are implemented in accordance with strict guidelines set by the Environmental Protection Authority. Each project requires an Environment Customer Supply Improvement Plan, which is prepared before Agreements are approved. An Environment Improvement Plan is a tool for the management techniques that will minimise or eliminate environmental damage, specifically to crops or soils, and protect public health.

Barwon Water believes recycled water is a key element in the successful management of water as a finite resource. Strong community support for the use of recycled water for non-potable applications was identified during the community consultation stage of the *Water Resources Development Plan*. Barwon Water promotes commercial use of recycled water and biosolids, while ensuring the highest environmental standards in land use and recycled water management.

Barwon Water's *Recycled Water Policy* characterises the approach to projects in terms of environmental, economical and technical sustainability. It also assesses the commercial and economical viability of all opportunities.

In accordance with Barwon Water's commitment to sustainable operations, Barwon Water provides fit-for-purpose recycled water at a number of Water Reclamation Plants for use by external customers operating under approved Environment Improvement Plan's. A progression of upgrades at Water Reclamation Plants has increased the amount of recycled water that is available for reuse and the provision of additional pipelines and standpipes has also increased the accessibility of recycled water for customers. Recycled water plays a key

role in a number of future water resource options currently under investigation by Barwon Water.

Biosolids

The development of a sustainable biosolids management plan has been a key focus of Barwon Water over the last few years. Currently, biosolids are stabilized, air-dried at an external facility and applied to land as a soil conditioner. A long-term management plan is currently under development that will see the construction of a thermal drying facility on Barwon Water land. The facility will produce dried, pelletised biosolids suitable for a range of beneficial uses, including soil conditioning and as an alternative fuel source.

Barwon Water also undertakes research and development trials using recycled water in the areas of agriculture, aquaculture and alternative fuels at the Black Rock water reclamation plant.

Barwon Water's innovative approach to recycled water use has resulted in successful commercial agreements with several customers, including golf clubs, wine-grape growers, a turf producer, a flower grower, potato farmers and a hydroponic tomato grower, who all use recycled water for irrigation purposes. The supply of Class C recycled water to potato and tomato growers followed successful research trials involving the Department of Primary Industry.

Table 2-5 & Table 2-6 provide an overview of the key sewerage system figures for Barwon Water as at June 2007.

Table 2-5 Sewerage services figures

Key sewage system figures at June 2007	
Total connected properties	113,935
Volume of sewage treated (megalitres)	20,596
Water reclamation plants	9
Pumping stations	153
Length of sewer mains (km)	2,212

Table 2-6 Sewerage services figures by plant (megalitres)

	2004/05	2005/06	2006/07
Aireys Inlet	110	144	122
Anglesea	277	259	217
Apollo Bay	386	366	344
Bannockburn	77	79	68
Black Rock	21,209	20,407	17,531
Colac	1,845	1,729	1,508.3
Lorne	307	300	293
Portarlington	589	551	449
Winchelsea	78	75	63
TOTAL	**24,878**	**23,910**	**20,596**

PART B: PROGRESS 2005 WATER PLAN PERIOD

3 2005 Water Plan Period Activities

The section sets out Barwon Water's progress against the outcomes set out in the current regulatory determination. At the time of preparing this submission, Barwon Water has achieved many and exceeded some of the outcomes set in the first water plan.

3.1 Service standards performance

In the current determination, the Essential Services Commission introduced a service standards scheme and adopted targets that Barwon Water is required to measure itself against and report to the Essential Services Commission on an annual basis.

To date Barwon Water has met the majority of service standards set for the current regulatory period. Continuing to achieve targets during extreme drought conditions and water restrictions has required active reallocation of resources and reprioritisation of activities. Table 3-1 highlights performance to date against service standard set for the first regulatory period.

Table 3-1 Service standards performance

Service standards	2005/06	2006/07	Annual Target
WATER			
Unplanned water supply interruptions (per 100km main)	27	30.9	**30**
Average minutes to respond to bursts and leaks – (priority 1)	35.4	27.7	**30**
Average time taken to attend bursts and leaks (priority 2)	61	46.92	**60**
Average time taken to attend bursts and leaks (priority 3)	311	222.2	**360**
Unplanned water supply interruptions restored within 5 hours (per cent)	97	95.6	**97**
Planned water supply interruptions restored within 5 hours (per cent)	81	89.7	**60**
Average unplanned customer minutes off water supply (minutes per customer).	17	27.15	**19**
Average planned customer minutes off water supply (minutes per customer).	36	35.4	**69**
Average duration of unplanned water supply interruptions (minutes)	99	126.7	**100**
Average duration of planned water supply interruptions (minutes)	186	169.8	**253**
Average planned frequency of water supply interruptions (Interruptions per Customer)	0.2	0.2	**0.3**
Average unplanned frequency of water supply interruptions (Interruptions per Customer)	0.2	0.2	**0.2**
Number of customers experiencing 5 unplanned water supply interruptions in the year	39	201	**5**
Water Volume Unaccounted %	6	6.2	**8**
CUSTOMER SERVICE			
Telephone calls answered within 30 seconds (Accounts Line) (% of Calls)	97	96.2	**94**
Telephone calls answered within 30 seconds (Service Faults Line) (% of Calls)	97	96.5	**95**
Complaints to EWOV (per 1000 customers)	0.27	0.0	**0.18**
SEWERAGE			
Sewer Blockages per 100km of Sewer Main (per 100km main)	41.1	50.9	**44.0**
Average time to attend sewer spills and blockages (minutes from notification)	71	59.8	**75**
Average time to rectify a sewer blockage (minutes from notification)	213	194.5	**255**

Service standards	2005/06	2006/07	Annual Target
Spills contained within 5 hours (per cent of Spills) (Priority 1)	100	100	**100**
Spills contained within 5 hours (per cent of Spills) (Priority 2)	100	99.5	**97**
Customers receiving more than 3 sewer blockages in the year	2	3	**3**

3.1.1 Management of 2005-2008 service levels

Barwon Water has actively sought to manage service levels to combat the impact of the drought and water restrictions on customers, details of which are outlined.

3.1.1.1 Number of unplanned interruptions

Barwon Water is experiencing an increase of 139 per cent in the number of unplanned water interruptions per month (41 per cent higher than the previous five-year historical average). Dry conditions and water restrictions have contributed to significant reduction in domestic sewer flows, which has led to an increased number of sewer blockages. Activities being undertaken to manage the significant increase in the number of incidents into the future include:

- utilising the Pipeline Asset & Risk Management System model to establish the forecast capital expenditure on the mains replacement program. Increasing investment in mains replacement on a priority basis.
- increased preventative sewer programs with forecast expenditure of $0.2M per annum for additional root foaming works and increased scheduled drain cleaning in high-risk locations.
- capital expenditure for sewer mains replacement and rehabilitation has been doubled to manage the increasing number of blockages.
- a new asset management system has been developed for sewer to further improve identification and prioritisation of preventative maintenance and capital programs.

3.1.1.2 Duration of unplanned interruptions

During such harsh drought conditions Barwon Water has chosen to prioritise water conservation as opposed to minimising interruption timeframes for unplanned interruptions, i.e. shutting down supply to reduce water losses, and collecting, transporting and storing water captured from maintenance repairs. This decision has resulted in decreased performance for the duration of unplanned interruptions. Service standards affected include:

- unplanned water supply interruptions restored within five hours.
- average duration of unplanned water supply interruptions.
- average unplanned customer minutes off water supply.

To counter the decision to prioritise water losses against the duration of unplanned interruption Barwon Water has continued to actively seek to manage performance against the targets through the following activities:

- re-engineering the process focusing on early problem diagnosis, early flow isolation procedures and assess resource requirements to improve overall response and the efficient allocation of resources. The use of senior ‘resource planners’ in performing initial response and problem diagnosis delivering effective assessment and timeliness of the repair.
- wherever practicable repairs are performed under pressure to reduce the incidence of service interruptions.
- in the case of critical accounts or ‘special needs’ customers wherever practicable, endeavours are made to operate valves to restrict flow at the site of leaks and bursts to reduce wastage whilst maintaining supply.

3.1.1.3 Frequency and duration of planned interruptions

Reallocation of resources for planned activities has resulted in:

- scaling back of certain maintenance programs in favour of a targeted preventative maintenance program to focus on maintaining efficiency and reliability of networks.
- planned works being packaged up and outsourced through contractual arrangements with strategic external service providers. This has facilitated a reallocation of resources to preventative maintenance.
- centralisation of planning and administrative processes associated with the planned service interruptions allowing field operatives to focus on unplanned interruptions.
- engagement of external resources to assist with backlog preventative work programs including pump station inspection/cleaning and CCTV inspection of sewers.

3.2 Capital expenditure

Table 3-2 provides actual and projected capital expenditure during the current regulatory period compared to the allowance that was provided in the determination. The 2006/07 forecast expenditure will be updated to actual numbers for the final *2008 Water Plan* released in October 2007.

Table 3-2 Capital expenditure to date ($M, real)

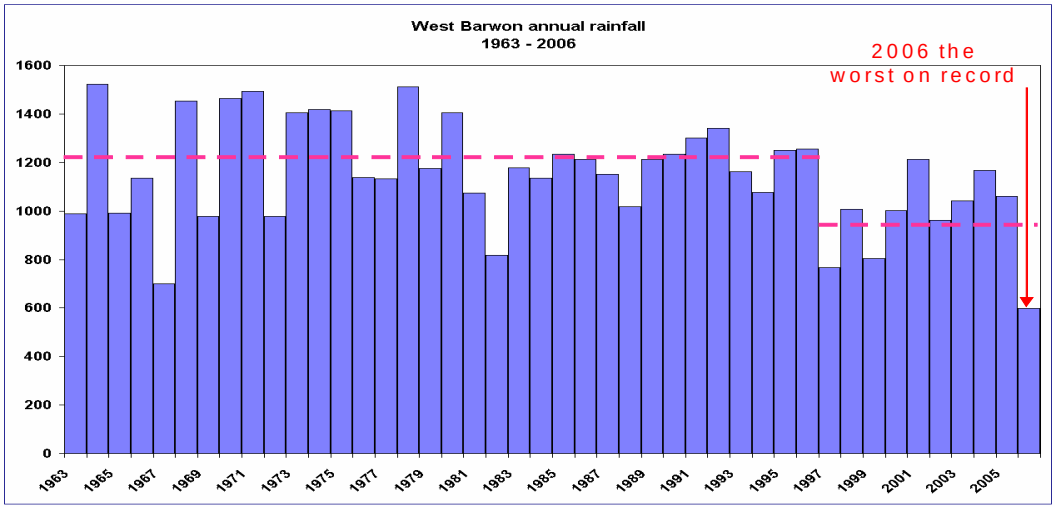
	2005/06 (actual)	2006/07 (forecast)	2007/08 (forecast)	TOTAL
Expenditure	34.36	44.34	88.95	167.65
Target	37.79	39.73	33.58	111.10
Movement	3.43	(4.61)	(55.38)	(58.66)

3.2.1 Key drivers of capital expenditure

Capital expenditure levels reflected in Table 3-2 above forecasts a 66 per cent increase relative to the current determination. The increase in expenditure is particularly evident in 2007/08. Capital expenditure forecasts for 2007/08 result from the unprecedented severity of the drought, which has necessitated reprioritising the capital program in order to augment supply.

Figure 3-1 reflects the severe impact of the drought through the decreased rainfall and inflows into Barwon Water's key reservoirs.

Figure 3-1 Annual rainfall at West Barwon reservoir



In response to the severe drought, Barwon Water has taken responsible action and brought forward a number of water supply projects to maintain supply/demand balance; many of which have already commenced and are on track to be delivered in 2007/08. These projects were not included in the current determination, but have been included in revised 2007/08 capital expenditure forecasts and are reflected in the adjusted regulatory asset value.

The following are some of the major projects:

- Barwon Water has recently completed work on the transfer pumps and pipe work to enable the Barwon Downs Borefield to increase production from 33 megalitres per day to 55 megalitres per day at an increase of $1.2M in 2006/07. During the Geelong stage 4 restrictions the augmented groundwater from Barwon Downs is a major source of water.
- further upgrades of Barwon Downs Borefield pre-treatment plant and lagoons with forecast capital expenditure of $3.0M are required to accommodate the increased volumes. The construction of two additional bores has also been brought-forward to provide essential back up to the existing bores with forecast capital expenditure of $3.1M.
- the release of the *Central Region Sustainable Water Strategy* included the scheduled delivery of the Anglesea Borefield (formerly known as Jan Juc aquifers) by 2011. This project is now being fast-tracked, with a brought-forward delivery date of Spring 2008. A total forecast capital expenditure for this project is $70.0M, with $35.25M of this being spent in the current regulatory period.
- the Meredith and Lethbridge townships are supplied from the Moorabool River. Currently Barwon Water is releasing water into the West Moorabool River from Lal Lal Reservoir to maintain flows and supply to these townships. To reduce demand on this diminishing resource and secure supply to the two townships, a new pipeline is to be constructed in 2007/08. This will connect the Moorabool water treatment plant to the supply main for Lethbridge, supplying about 60 per cent of the overall demand of Meredith and Lethbridge. The estimated capital cost of this project is $1.1M.

3.2.2 Delivery of key capital projects

Barwon Water has delivered on the majority of the key projects listed to be undertaken in the current regulatory period. It has also reprioritised resources to meet changing requirements as a result of the current drought. Table 3-3 sets out the status of the key projects that were forecast to be delivered in the current regulatory period.

Table 3-3 Delivery of key projects

Project	Description	Outputs to be achieved within regulatory period	Progress to Date	2005/06 – 2007/08 expenditure ($M)
Wurdee Boluc water quality improvement	Installation of new facility to separate backwash water. Improved direct filtration facilities. Additional ultra-violet disinfection, which is independent of coagulation.	Staged delivery of the project. Majority completed by 2007/08. Residual by 2008/09.	Project on schedule. Water quality risk has been improved by process changes and new infrastructure allowing UV disinfection to be deferred.	11.4
Enclose water supply distribution system	Covering open storages downstream of water treatment plants.	Covering multiple service basins. Staged delivery of projects.	Project on schedule.	14.9

Project	Description	Outputs to be achieved within regulatory period	Progress to Date	2005/06 – 2007/08 expenditure ($M)
Geelong northern flow retarding facility	Increase capacity of the northern flow retarding facility from 6ML to 15ML to meet EPA sewage flow containment standards. The scale of this project was reduced due to the Northern Water Plant.	Project to be delivered on schedule.	Project on schedule.	2.3
Torquay sewerage strategy	Pump station upgrades, replacement trunk sewer, odour and corrosion management facilities and flow retardation facility.	Project to be delivered by 2007-08.	Project on schedule.	11.1
Ocean Grove to Black Rock transfer sewer	Replace 8km of sewer transfer main, including a river crossing.	Project to be delivered by 2007-08.	Project delayed. Now scheduled for completion in 2010/11.	1.7
Leopold / Geelong transfer sewer	Replacement of the main sewage transfer main from Leopold to Geelong to cater for population growth and associated increase in flows.	Project to be delivered by 2007-08.	Project scope changed. Focus is now on pump station upgrades incorporating emergency storage works.	0.02
Apollo Bay /Skenes Creek bulk water supply	Construction of pump station, transfer pipeline and off-stream storage to ensure adequate security of supply to cater for growth.	Project to be delivered by 2007/08.	Investigations continuing. Project will not be delivered within original timeframe.	1.3
Colac Basin No.5	200 ML storage basin to meet security of supply criterion of 95% reliability.	Project to be delivered by 2007/08.	Project completed.	6.5
Birregurra sewerage scheme	Construction of a sewerage scheme to serve the town of Birregurra. Household connections are to be staged over the life of the project.	Project timing dependant on customers agreeing to fund $800 of capped contribution.	Investigations continuing.	0.2
Water renewals / replacement	Ongoing renewal of assets.	Reticulation mains: 25 to 30km.	Project on schedule.	17.6
Sewer renewals / replacement	Ongoing renewal of assets.	2km	Project on schedule.	17.2
Sewer augmentation	Creating and upgrading assets.	49km	Project on schedule.	10.1
Water augmentation	Creating and upgrading assets.	15km	Project on schedule.	2.0

3.3 Operating expenditure

Table 3-4 details the operating expenditure during the first regulatory period, including forecast for 2007/08. It shows forecast expenditure above target of approximately $6.85M. The 2006/07 forecast operating expenditure will be updated to the actual expenditure for the final *2008 Water Plan* released in October 2007.

Table 3-4 Operating expenditure to date ($M, real)

	2005/06 (actual)	2006/07 (forecast)	2007/08 (forecast)	TOTAL
Expenditure	61.22	63.45	70.55	195.22
Target	63.78	61.74	62.85	188.38
Movement	2.55	(1.71)	(7.69)	(6.85)

With storage levels already low, the 2006 low inflows necessitated Stage one water restrictions being introduced for the Greater Geelong supply area in July 2006, increasing to Stage four water restrictions by December 2006. In addition, Stage two water restrictions were introduced in Colac in November 2006, with similar restrictions being implemented in Apollo Bay due to insufficient water storage. Whilst Geelong remains on Stage four water restrictions, restrictions were lifted in Colac and Apollo Bay in July 2007.

Operating expenditure is expected to be higher than the Essential Services Commission's *2005 final determination* benchmark due to a reprioritisation of tasks required to ensure security of supply for Geelong which has come about because of the current conditions. In order to maintain security of supply during the current severe drought, this expenditure includes:

- supplementing surface water for the Geelong system by pumping water from the Barwon Downs Borefield. A full year impact has been incorporated into the 2007/08 year
- water restriction advertising and printing
- water cartage tankers
- significant investigations have been brought forward into the 2007/08 financial year
- increased materials, labour and contractor expenditure due to increased activity levels to maintain service standards during this period.

3.3.1 Productivity savings

A key means of ensuring Barwon Water maintains operations in a manner that is not detrimental to service levels and is perpetually managed in a cost efficient manner is by way of the Enterprise Bargaining Agreement Efficiency Group. The charge of this group is to identify projects and processes that can employ alternate methods to achieve the desired outcomes, but at a lower cost to the organisation. To date, this group has identified savings of $890k since 2005/06. Table 3-5 provides a brief outline of the efficiencies identified.

Table 3-5 Productivity savings

	Project Name	Total Savings
Information Technology savings	• Telephone connection labelling • Online surveys provides savings in manual searches • Financial software reduces manual entry times • Digital upgrade for automated data recording saves manual entry • Workshop redesign provides noted efficiency in storage area • Image scanning reduces the need for manual searches • Batch processing allows on large weekly batch to be completed • Digital information gathering program has been created which greatly reduces manual data entry times. • Tender lodging and information is now available online reducing	$316.3k

	Project Name	Total Savings
	the need for printing and posting multiple bulky documents. • Developer works database is now centralised achieving significant efficiencies across a multitude of areas (data entry, printing, etc).	
Contract savings	• Painting maintenance contracts are now all under one contract • Biosolids transport contract has mitigated the increasing cost of diesel by setting a cut off point where the costs are passed to BW • Lift maintenance contracts are now all under one contract • Moorabool access road was included in one project with roads nearby.	$223.6k
Water Project Savings	• Water supply reporting efficiencies has reduced the need to manually create reports on a weekly and monthly basis. • Torquay water tank design alteration reduced the number of water mixers and maintaining the desired level of water quality • Lime transfer automation has improved efficiency and reduced the instances of lime spillage and over dosage. • Primary disinfection process improvements in water have resulted in ammonia being no longer required to supplement chlorine as the main disinfection agent.	$83.1k
Sewer Project Savings	• Polymer dosing at Apollo Bay WRP has been streamlined to save maintenance and transportation costs • Sewer pump station electricity demand was considerably lower than the threshold point where a “demand fee” is applicable. The threshold has been reduced resulting in considerable savings. • Torquay sewer chemical trial has led to one of the chemical dosing stations not being used over winter. This achieving savings in chemical costs while sewage odours were still kept at acceptably low levels. • Air scouring mains that are most at risk rather than on mains that do not yet require it.	$362.9k
Other	• Occupational health and safety savings • Printing and paper savings.	$55.6k

3.4 Changes in legislative obligations

There has been two key changes in legislative obligations that were not included in Barwon Water’s *2005 final determination*, these include:

1. The new consolidated occupational health and safety regulation that came into effect on 1 July 2007. The new obligation for licensing and regulation for high risk work has increased the emphasis on competency based refresher training and has resulted in an increase in operating expenses which were not budgeted for during the *2005 Water Plan*.

2. Additional legislative obligations occurred in the form of an Environmental Protection Authority requirement for an Environmental Protection Authority works approval and an Environmental Protection Authority licence for the biosolids operations at the Western Treatment Plant. This took effect on 18 October 2005 and 23 March 2006 respectively.

   The outcomes delivered from this new obligation enabled continued beneficial reuse of biosolids in accordance with sludge management plan. The net increases in cost of approximately $0.2M were not included in Barwon Water’s *2005 Final Determination*.

PART C: SERVICE OUTCOMES

4 Barwon Water's Service Outcomes

4.1 Introduction and overview

Barwon Water values community consultation and undertakes consultation as part of normal business operations. Barwon Water currently has mechanisms in place for gathering information and responding to customer requirements. These activities continued to occur in addition to undertaking more targeted consultation, specifically in relation to the *2008 Water Plan*.

The objectives that underpin the framework include:

- actively encourage community participation in managing the water cycle
- promote community awareness of water issues and develop a shared understanding of the true value of water
- maintain legitimate community service obligations.

The framework was further strengthened in 2004/05 with the implementation of a Board approved community consultation and engagement strategy. The five consultative groups: the Customer Consultative and Environmental Consultative Committees, Trade Waste and Developers' Forums and the Biosolids Investigations Group continue to play a pivotal role in keeping Barwon Water informed of the ideas, concerns and expectations of the community and a broad range of stakeholders.

In preparation of the *Draft 2008 Water Plan*, Barwon Water prepared and followed the *2008 Water Plan Community Consultation Strategy*. The purpose of this document was to detail the strategy, consultation methods and timelines to deliver the consultation activities for the *2008 Water Plan*. The information gathered from the various types of stakeholder consultation has been used in the development of this Plan.

The major objectives of the consultation strategy were to:

1. Ensure the *2008 Water Plan* reflects conservation and other values of our customers.
2. Measure customer willingness to pay for services that are greater than the "least cost" alternative, or have discretionary environmental and sustainability drivers.
3. Meet the Essential Services Commission and the Department of Sustainability and Environment's consultation requirements.

The timing for consultation was aligned with Essential Services Commission timelines and is broken into two distinct phases:

Phase 1: "Understanding community Values and Views"
July 2006 – February 2007

Phase 2: "Consultation on Proposed Price Path and Service Levels"
August 2007 – September 2007

4.2 Consultation with customers about the *2008 Water Plan*

In developing the *2008 Water Plan*, Barwon Water will consult with customers after it submits the *Draft 2008 Water Plan* to the Essential Services Commission on 14 August 2007. Submissions received from customers and stakeholders will be considered in the development of the final *2008 Water Plan* released in October 2007.

4.3 Targeted consultation on specific strategies

Table 4-1 details the community consultation that has taken place to date on key projects, methods of consultation and the outcomes from the consultation.

Table 4-1 Community consultation on key projects

Project	Timeframe	Methods of consultation	Outcome
Central Region Sustainable Water Strategy	October 2005 to June 2006	Department of Sustainability and Environment – Public information sessions, stakeholder meetings and presentations, written submissions advertising, Internet and media releases.	Development of a strategy to secure our water supply for the next 50 years, *Sustainable Water Strategy Central Region, Action to 2005*.
Geelong Trunk Sewerage Strategy	2003 to 2006	Stakeholder briefings and presentations, community information meetings and open houses, advertising and infotorials in local print media, media releases and briefings, review of written submissions, information bulletins and discussion paper.	Broad support for the increased use of recycled water to industry. Bipartisan Federal and State Government support.
Anglesea Borefield (Jan Juc Deep Aquifer) Project	March 2007 to present	Media releases and briefing, agency reference group, stakeholder presentations and meetings, open houses and information sessions, advertising and internet.	Identify possible bore sites. Gained support for fast-tracking borefield project.
Water Supply Demand Strategy	September 2006 to December 2006	Workshops with CCC, ECC and a wider stakeholder group.	A draft Water Supply Demand Strategy was submitted to the Dept of Sustainability and Environment in December 2006.
Apollo Bay water storage basin	In 2001 to 2003 as part of the Water Resources Development Plan consultation and in 2005 when applying for the Environmental Significance Overlay (ESO) for the Barham River.	Community meetings, information bulletins, media release and briefings, advertising and internet, review of written submissions.	It was identified a new storage basin was required in Apollo Bay to meet existing and future demand. Barwon Water obtained an ESO for the Barham River.
Long-term biosolids management project	May 2004 to present	Community reference group established, community information meetings, field trip, public open day, media releases and briefings, advertising and advertorials in local print media, stakeholder briefings and presentations, manned displays and community bulletins.	A preferred site, process and tenderer have been identified.
Birregurra sewerage scheme	October 2006 to present	Regulatory and community reference groups established, stakeholder briefings and presentations, community bulletins and media releases.	Consultation continuing.
Torquay sewerage strategy	2003 to 2006	Community information meetings, stakeholder briefings and presentations, media releases and briefings, advertising in local print media and community bulletins.	Design of pumping station was adjusted to meet community expectations. Project almost complete.
Inclining Block	August to December	Presentation to CCC, ECC and	8.4 per cent response rate.

Project	Timeframe	Methods of consultation	Outcome
Tariff (IBT)	2006	Dept of Sustainability and Environment, written survey sent to all customers, review feedback.	56 per cent of respondents preferred the Inclining Block Tariff structure, however, preference for this system was higher among smaller households. Will not proceed with IBT.
Purchase of green energy	August to December 2006	Presentation to CCC, ECC and Department of Sustainability and Environment, written survey sent to all customers, review feedback.	8.4 per cent response rate. 74 per cent of people indicated they were willing to pay an extra dollar on their bill to purchase green energy. Will proceed with purchase of green energy.
Recycled water research and development	August to December 2006	Presentation to CCC and ECC, written survey sent to all customers, review feedback.	8.4 per cent response rate. 48 per cent of respondents were willing to pay extra for recycled water research and development. Will continue investigations as part of the smart billing consultation.

4.4 Key issues identified by customer surveys

Customer satisfaction survey

Overall, customer satisfaction with the service standards is monitored by way of an annual customer satisfaction survey of more than 1,000 customers. The 2004 Customer Satisfaction Survey indicated 94.5 per cent of customers reported they were satisfied or very satisfied with the overall performance of Barwon Water in supplying quality products and services. In 2005, the survey results indicated that this had increased to 95.2 per cent and to 97 per cent in 2006 (Refer to figure 4-2 for historical survey results). Given this high level of customer satisfaction, Barwon Water will aim to maintain the existing high levels of service over the regulatory period.

Customer inclining block tariff survey

At the 2006 Board Strategic Planning workshop, it was resolved to consult with all residential customers on their preference between the current two-part tariff structure or the implementation of an increasing block tariff structure, similar to that introduced for Melbourne retail water authorities in October 2004.

An inclining block tariff customer survey was distributed to every customer in the Barwon Region from November 2006 to early January 2007.

A total of 9,691 Barwon Water customers responded to the survey, which represents a response rate of 8.4 per cent of Barwon Water's overall residential customer base of 115,094.

The key outcomes from the survey were:

- 56 per cent of residential customers supported an inclining block tariff structure;
- 65 per cent of respondents were from either a one or two-person household structure, most of which would receive savings in their bill from the implementation of inclining block tariff;
- six person or more households preferring current structure by more than 70 per cent; and
- the customer preference varied by postcode, for instance:
    - coastal areas preferred an inclining block tariff structure - this preference is likely to be a function of the fact that these customers use less water than inner suburban areas on average;

- a slight majority of respondents from the Geelong region preferred the inclining block tariff; and
- a number of lower socio-economic areas with a disproportionately higher number of larger families, such as Colac, Bannockburn and Leopold, strongly supported the current structure.

Barwon Water has chosen to maintain the two-part tariff structure as:

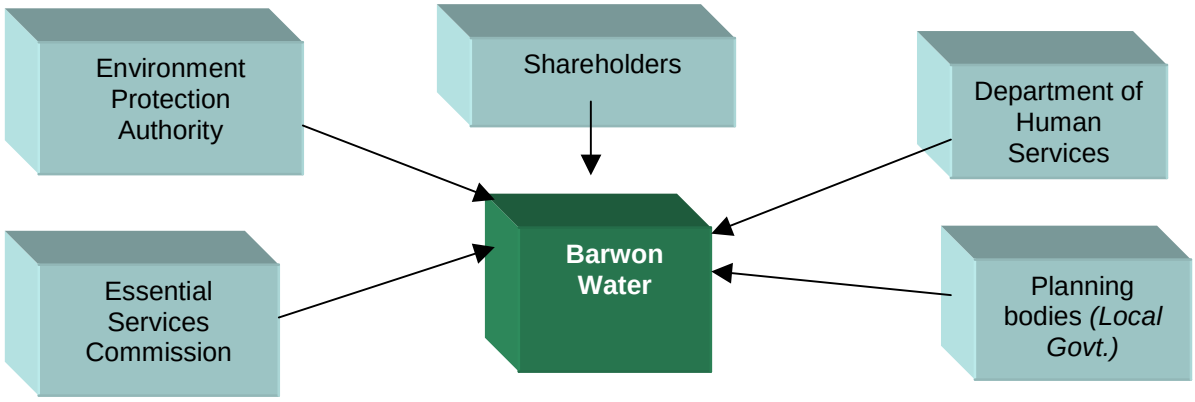
- a significant proportion of the respondents were from one and two person households, the majority of which favoured the inclining block tariff. Whilst this in itself is not cause for concern, Barwon Water estimates that this response rate may be inconsistent with overall customer base, which in turn would skew the results in favour of the inclining block tariff;
- there are likely to be significant costs associated with introducing the inclining block tariff, including changing billing systems, changing the presentation of the bill, communicating the changes to the bill structure with customers and educating front office staff to handle customer enquiries;
- there has been little demonstration of the benefits associated with the introduction of an inclining block tariff in other jurisdictions due to the array of other demand management measures that have been introduced concurrently. As such, it is difficult for Barwon Water to clearly demonstrate that the benefits of introducing an inclining block tariff, in relation to demand management, will outweigh the costs.

Notwithstanding this, the survey did highlight that customers supported a pricing structure that encourages water conservation. Therefore, Barwon Water has focused on modifying the current two-part tariff structure to charge one single price to both residential and non-residential customers, with the volume price being increased in line with estimates of long run marginal cost and to provide an incentive to customers to conserve consumption. This will enable an efficient price signal, such that customers will consider adopting water conservation initiatives or alternative supplies to reduce the amount of consumption and, thus, the size of their bill.

4.5 Consultation with regulators

Various regulatory bodies impact the performance requirements and service levels the authority is required to deliver over the planning period. Figure 4-1 identifies the key stakeholders and regulatory bodies during the consultation process.

Figure 4-1 Key stakeholders



To assist in achieving Barwon Water's objective of a sustainable price path that will support future operations, it is essential Barwon Water undertakes effective communication with the above bodies in a timely manner.

The following sections detail consultation with each stakeholder and regulatory body, including feedback from the consultation on the *Draft 2008 Water Plan*.

4.5.1 Minister for Water

On 29 August 2006, the Minister for Water wrote to the Barwon Water Chairman to inform his intention to vary Barwon Water's *2007 Statement of Obligation* and requested comments on the proposed variations.

The proposed variations were developed to reflect actions outlined in the White Paper *Our Water Our Future,* the recently released *Our Environment Our Future – Sustainability Action Plan* and the proposed outcomes of the *Central Region Sustainable Water Strategy*.

In June 2007 the Minister for Water released the revised *2007 Statement of Obligation*. The *Draft 2008 Water Plan* has been developed based on the finalised revised obligations.

On 15 November 2006, Department of Sustainability and Environment met at Barwon Water with the Chief Executives and Chairpersons from each water authority and presented what the Department of Sustainability and Environment considered to be the key issues and priorities for water businesses during the regulatory period.

The two key priority areas arising from the meeting were:

- actions and implementation of outcomes from the *Central Region Sustainable Water Strategy*; and
- sustainable management

Barwon Water has addressed these key areas of priority, which are clearly linked to the respective ministerial obligation, as identified in the *2007 Statement of Obligations*.

On 15 March 2007, Barwon Water provided a presentation to the Department of Sustainability and Environment on the development of Barwon Water's *Draft 2008 Water Plan*, key obligations being met, tariff structure, demand forecast, water conservation initiatives, expenditure drivers, tariff, debt profile impacts and timeframes. It provided positive comments on the *Draft 2008 Water Plan,* requiring no changes to the current proposal.

4.5.2 Environmental Protection Authority

Barwon Water received a copy of the *Draft Principles to Establish EPA Environmental Obligations for Water Businesses for the 2008-2013 Pricing Determination* from the Environment Protection Authority's Water & Catchment Unit on 30 June 2006.

Barwon Water reviewed the document and provided comments to be considered during the finalisation of the document.

In November 2006, the EPA released *Principles to Establish EPA Environmental Obligations for Water Businesses for the 2008-2013 Pricing Determination*. The document largely followed the draft document, but also included a significant expansion of requirements for development of a *Sewerage System Management Plan* prior to the finalisation of the *2008 Water Plan*.

On 16 May 2007, the Environmental Protection Authority endorsed Barwon Water's draft Water Plan and the key actions to be addressed regarding environmental obligations.

4.5.3 Department of Human Services

Barwon Water received information from the Department of Human Services on 17 November 2006 to assist in preparing the *Draft 2008 Water Plan* with respect to the regulatory obligations that the Department of Human Services will have in place for the regulatory period commencing 1 July 2008.

New obligations arising from the guidance paper have been addressed as required within the *Draft 2008 Water Plan*.

4.5.4 Department of Treasury and Finance

On 23 March 2007, Barwon Water consulted with the Department of Treasury and Finance. Barwon Water presented on the development of the *Draft 2008 Water Plan*, key obligations being met, tariff structure, demand forecast, water conservation initiatives, expenditure drivers, tariff, and in particular, the debt profile impacts and timeframes.

The Department of Treasury and Finance provided positive comments on the *Draft 2008 Water Plan* and specifically noted appreciation to Barwon Water for taking the time to provide a presentation highlighting the key issues that will impact it during the second regulatory period.

4.5.5 Essential Services Commission

There have been a number of key issues related to the application of the process and approach of the regulatory framework. The Essential Services Commission has consulted on the issues during the formulation of the *2008 Water Plan*.

Long run marginal cost

The Essential Services Commission conducted workshops and provided templates during late 2005 and early 2006 to assist water corporations calculate long run marginal cost prices for their larger water systems and one sewerage system. Businesses were required to submit long run marginal cost results by 1 June 2006. The Essential Services Commission provided a response to all businesses in October 2006 informing businesses the long run marginal cost prices seemed reasonable.

Financial templates review

Draft financial templates were released in September 2006 providing water business an opportunity to comment on the format of the templates and any specific formula errors. On 15 March it released the final financial templates to be used to enter operating and capital expenditure, proposed prices and demand forecasts for the *2008 Water Plan*.

2008 Water Plan guidance

The *2008 Water Plan guidance paper* released in September 2006, provided businesses with a proposed format for their water plans and recommended information and tables to be included from the financial templates. In addition, it highlighted key issues that would be specifically consulted on prior to the businesses submitting their draft water plans.

These issues were specifically discussed in the Framework and Approach paper released in December 2006. The Essential Services Commission provided the final guidelines in March 2007 recommending the preferred approach to various issues taking into consideration the comments provided by Victorian Water businesses.

4.6 Regulatory framework and obligations

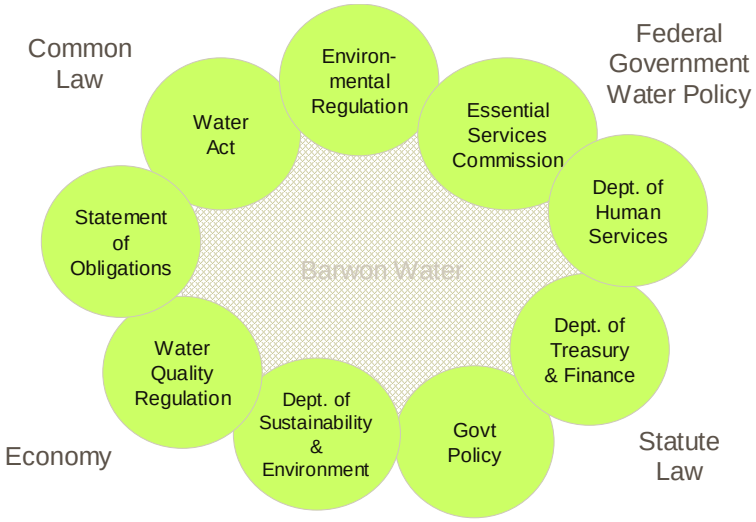
Barwon Water's regulatory framework and obligations[2] are outlined. This is not an exhaustive list, but provides an overview of the range of compliance issues that are driving cost structures as detailed in Part C of the *Draft 2008 Water Plan*.

The *Water Act 1989* and the *Water (Governance) Act 2006* describes the law relating to regional water authorities in Victoria. The key elements of the Act provide for integrated management of all elements of the water cycle, and to promote the orderly, equitable and efficient use of water resources. The Act also seeks to maximise community involvement in the making and implementation of arrangements relating to the use, conservation or management of water resources.

Figure 4-2 shows Barwon Water's obligations. Across the state the Minister for Water, through the Department of Sustainability and Environment, has the primary responsibility for water resource and water policy in Victoria. However other regulators play a key role in setting economic, environmental and social obligations upon the business.

Figure 4-2 Policies and obligations

[2] Contents of this section sourced from Victorian Water Review 2004/05



4.6.1 Public health

The Department of Human Services is responsible for the regulation of drinking water in Victoria; in particular the implementation and oversight of the *Safe Drinking Water Act 2003.*

4.6.2 Environmental

The Environmental Protection Authority monitors and oversees the environmental performance of the State's water sector, which includes licensing for the discharge of treated wastewater into waterways and the management of biosolids generated at treatment plants.

The suite of environmental requirements include the *Environment Protection Act 1970* and associated regulations, State Environment Protection Policies, waste discharge licences, protocols and guidelines for environmental management.

4.6.3 Economic

From 1 January 2004, the Essential Services Commission became responsible for the economic regulation of the water sector, including price regulation. The regulatory framework that guides the Essential Services Commission's role and approach to price regulation is set out in the *Essential Services Commission Act 2001* and the *Water Legislation (Essential Services Commission and other Amendments) Act 2003*. Further detail is set out in the *Water Industry Regulatory Order 2003*, which provides for the Essential Services Commission to issue a price determination, sets out the nature of price arrangements, and allows the Essential Services Commission to set the length of the regulatory period.

4.6.4 State water policy

Currently the policy for water management in Victoria is the Government White Paper *"Securing Our Water Future Together".* The Victorian State Government released this in June 2004 and the policy outlines initiatives for water conservation across the community.

Barwon Water was a key stakeholder and contributor to the development of the *Central Region Sustainable Water Strategy*, a key initiative of the State Government's *Securing Our Water Future Together* document. The aim of the strategy is to ensure safe, reliable water supplies in the central region while protecting rivers and aquifers. (Note: The central region is the area of Victoria that forms an arc around Melbourne, including Geelong, Ballarat, the Macedon district and West Gippsland).

Barwon Water's input into the development of the strategy included:

- revising resource allocation models for the Barwon and Moorabool catchments, taking into account the latest climate change predictions from CSIRO;

- providing details of future water conservation, alternative water sources, system enhancement and new water source options as outlined in Barwon Water's *Water Resources Development Plan;*
- reviewing the triple bottom line assessment of options carried out by the Department of Sustainability and Environment; and
- providing representatives on the consultative and working committees established by Department of Sustainability and Environment for the project.

The final *Central Region Sustainable Water Strategy* was released in October 2006.

Another requirement of Government White Paper *"Securing Our Water Future Together"* is for urban water authorities to prepare a *Water Supply-Demand Strategy*, which identifies the best mix of demand measures and supply options to maintain security of supply within each authority's service region. Barwon Water's draft *Water Supply-Demand Strategy* was submitted to Department of Sustainability and Environment in November 2006. Department of Sustainability and Environment's response on the draft was received and the final strategy was submitted in March 2007. The water resources options identified in the *Central Region Sustainable Water Strategy* were a key input into Barwon Water's *Water Supply-Demand Strategy*.

Another key component of the *Water Supply-Demand Strategy* is the range of water conservation actions required to achieve the water conservation targets set in the *Central Region Sustainable Water Strategy*.

Modelling for the *Water Supply-Demand Strategy* includes the 10-year low flow scenario consistent with Department of Sustainability and Environment guidelines.

4.6.5 Our Water Our Future – The Next Stage of the Government's Water Plan

In June 2007, the Victorian state government released *Our Water Our Future – The Next Stage of the Government's Water Plan.* This plan involves $4.9 billion investment in major infrastructure projects to provide long-term solutions to secure water supplies, taking into account climate change. The plan includes:

- a new seawater desalination plant for Melbourne by late 2011;
- a major irrigation modernisation project in Victoria's Food Bowl region; and
- an expansion of Victoria's water grid, including a link between Melbourne and Geelong to be completed by 2011.

The *Our Water Our Future – The next Stage of the Government's Water Plan* includes $20M government funding for the Melbourne to Geelong pipeline.

4.6.6 State water obligations

The Minister for Water issues the *2007 Statement of Obligations* under section 4I of the *Water Industry Act 1994*. The purpose of the *2007 Statement of Obligations* is to impose obligations on Barwon Water in relation to the performance of functions and exercise of powers. It addresses such matters as:

- conserving and recycling water
- responding to incidents and emergencies
- customer and community engagement
- planning and service delivery
- environmental management
- payment schemes and contributions
- sustainable water strategies.

4.6.7 National water policy

Whilst the provision of water services is the responsibility of the State Government, the Commonwealth Government is having an increasing role in water management through the Council of Australian Governments. The Council of Australian Governments developed of the *National Competition Policy* and the *National Water Initiative* which are policies affecting the water industry at a national level.

4.6.8 Water legislation

Table 4-2 provides a summary of the water legislation in Victoria affecting Barwon Water:

Table 4-2 Water legislation

Legislation	Description
Water Act 1989	Relates to the management of surface and ground water and the governance and operation of the authority. The Crown has the primary right to the use, flow and control of all water in waterways and groundwater.
Water (Governance) Act 2006	The aim of the Act is to improve the current water legislation to provide a more capable, innovative and accountable water sector that is able to deliver the governments sustainability objectives for water.
Catchment and Land Protection Act 1994	Under the Act, Victoria is divided into ten catchment regions and a Catchment Management Authority) is established for each region. For the Barwon region it is the Corangamite Catchment Management Authority.
Environment Protection Act 1970	The Act prevents pollution and environmental damage by setting environment quality objectives and establishing programs to meet them.
Health Act 1958	Assists in protecting public health in Victoria in partnership with the community.
Constitution (Water Authorities) Act 2003	This legislation ensures the delivery of water services remains in public hands.
Residential Tenancies Act 1987	Provides the rights of tenants and obligations of statutory authorities.
Safe Drinking Water Act 2003	Protects and improves the quality of drinking water supplies in Victoria.
Water Legislation (Essential Services Commission and Other Amendments) Act 2003	Establishes the Essential Services Commission as the economic regulator of the water industry and enables the Essential Services Commission to make pricing determinations for the water industry.
Financial Management Act 1994	Required to complete the annual report under the provisions of this Act.
Audit Act 1994	Provides the legal basis for the Auditor General's access to all government information and the freedom to report findings from audits to Parliament.
Water Industry Act 1994	Provides for the Water Industry Regulatory Order under section 4D. Provides for the Essential Services Commission to regulate service standards under section 4E. Provides for the Essential Services Commission's development of codes regarding function and powers under section 4F. Provides for the Essential Services Commission to request information from businesses under section 4G.

4.7 Interpretation of New Obligations and Business As Usual

The Essential Services Commission has requested water businesses provide detail with regards to the obligations imposed by regulatory and government agencies. In this section of the plan, Barwon Water has separately identified:

1. *Business as usual obligations* - obligations in place prior to 1 July 2008, regardless of whether monies have been expended prior to the 2008 regulatory period to achieve compliance with the obligation
2. *New obligations* - those obligations that take effect (or are reasonably anticipated) to take effect on or after 1 July 2008.

Section 4 detailed the range of legislative and regulatory requirements that provide the framework for changes in future cost structures. In summary, the major drivers for change to cost structures that arise in the upcoming regulatory period that impact Barwon Water, detailed in this section are:

- principles which establish Environmental Protection Authority's environmental obligations for water businesses for the 2008-2013 pricing determination
- Environment Protection Authority requirements for biosolids management
- introduction of Country Towns Water and Sewerage Program
- revised *2007 Statement of Obligations* released in June 2007, particularly:
  - Identification and undertaking of research activities;
  - Obligations related to the Central Region Sustainable Water Strategy, Water Supply-Demand Strategy and conservation targets.
- introduction of "shared assets" by the Essential Services Commission during the 2005 price review
- legislative changes:
  - Bulk Water Entitlement Metering Program – Water Act 1989'
  - Road Management Act 2004.

The following details each identified issue, the regulatory driver, consultation undertaken (if required) and the budgeted financial impacts on Barwon Water for the upcoming regulatory period.

4.8 State water obligations - business as usual

4.8.1 Bushfire mitigation program

Barwon Water must manage risks to provide safe and reliable supply of drinking water. Bushfires in the water supply catchment provide short-term risks to assets and ongoing risks to water quality and long-term run-off.

Recent experience elsewhere in the state has demonstrated the immediate adverse impact on raw water quality caused by erosion and ash transportation following rainfall and this can affect the capacity of water treatment plants to meet water quality standards. In the long-term the bushfire can adversely affect water yield from the catchment.

Barwon Water owns very little land within the major water supply catchments and is focused on working with Parks Victoria to develop fire management plans for the national park areas. The major water treatment plants for Geelong source water from off stream reservoirs that provide an opportunity to selectively harvest water of better quality during periods of rainfall depending upon the status of storages. This gives an increased resilience of the system to bushfire.

Barwon Water will continue to manage risks associated with bushfires as per the bushfire mitigation program during the upcoming regulatory period. This will be achieved through existing business as usual expenditure levels.

4.8.2 River health

Our Environment, Our Future contains stronger directions for the protection of Victoria's rivers and estuaries. 10-year river health targets will be set for all major catchments to guide future government investment in river health.

In accordance with the *2007 Statement of Obligations*, Barwon Water must manage the impact of activities on any waterway, aquifer or wetland to minimise environmental impacts on and risks to the aquatic ecosystem. An important environmental obligation for Barwon Water is to establish systems that ensure compliance with bulk entitlements for the harvesting of water from the environment. Barwon Water must also liaise with the Catchment Management Authority to ensure that environmental flow regimes are managed to maximise ecological benefits.

Catchment protection and improvement programs are also undertaken with the Catchment Management Authority and landholders in water supply catchments to reduce the risks of contaminants entering the water supply. These works are cost effective when compared with the increased risks and treatment required to remove contaminants for public health protection. The Moorabool Gorge Recovery Program and the Barham River Landcare Action Program are examples of these works.

Erosion control works are also required, in partnership with the Catchment Management Authority and landholders to protect the structural integrity of water and sewerage infrastructure. A recent example of this type of work is the stabilisation of Matthews Creek that assists in protecting valuable water supply pipelines that cross the Creek.

An agreement has been signed with Corangamite Catchment Management Authority to continue sharing resources for catchment protection and improvement projects within water catchments. The estimated annual costs of continuing this partnership with the Corangamite Catchment Management Authority (excluding Bulk Water Entitlement compliance costs) is $0.08M.

4.8.3 Country towns water supply and sewerage program

Action 5.4 of the Victorian Government, White Paper-*Securing Our Water Future Together,* has indicated commitment to the provision of safe and reliable water and sewerage services to small country towns. This objective will be met through the implementation of the *Country Towns Water Supply and Sewerage Program*.

The *2007 Statement of Obligations* states that Barwon Water "must participate with municipal councils in the development of *Domestic wastewater management plans*."

4.8.3.1 Kennett River/Wye River/Separation Creek

The coastal town of Kennett River has been identified as priority 1 for improvements to water supply. The coastal towns of Wye River and Separation Creek have been identified as priority 1 for improvements to both sewerage and water supply.

The major influences on these towns are small blocks, dense development, steep topography, no sewerage or reticulated water supply, landslip potential and seasonal fluctuations. Property usage varies substantially from intermittent usage by property owners to constant usage for rental properties.

The Colac Otway Shire, in consultation with Barwon Water and other stakeholders, has undertaken an investigation of options and development of a concept design of a preferred option for water and sewerage improvements at Wye River and Separation Creek and water supply improvements for Kennett River.

Barwon Water will undertake further community and other stakeholder consultation during the design and implementation of the project.

The preferred option involves provision of a centralised septic tank effluent collection, treatment and disposal system for those properties not able to sustainably manage effluent on-site for sewerage services and the continuation of the existing rainwater tank supplies for residential properties and river extractions for commercial properties for water services.

The total capital expenditure during the regulatory period is estimated at $4.8M. This will be funded through property owner contributions under the scheme capped at $800 per connected property, government funding of $1.4M provided under the Country Towns Water Supply and Sewerage Program and the balance being funded by Barwon Water.

4.8.3.2 Country towns sewerage - Birregurra

Birregurra was selected by the Department of Sustainability and Environment as one of the "showcase" towns for investigation into innovative solutions.

The town of Birregurra, 20 kilometres east of Colac, has a population of approximately 400, with potential for growth. There are about 360 allotments within the town zone, but only 250 dwellings, plus 25 commercial and public premises. Allotment sizes range from 500 to 2,000 square metres, and therefore there is scope for further residential development on vacant lots and for subdivision of larger lots.

Based on previous studies, Department of Sustainability and Environment's working group for the innovations project recommended two innovative options for which Barwon Water could undertake further planning, design and implementation. Both innovative options comprised septic tank effluent collection systems.

In late 2006, Barwon Water initiated the functional design and development of a business case for the short listed options, in order to identify a preferred sewerage scheme. These works are scheduled to be completed by mid 2007.

Consultation with the community and stakeholders (including regulators) has been initiated. Barwon Water has established a Regulatory Reference Group for the purpose of maintaining consultation between the various authorities. The meetings are scheduled to occur at the end of each of the major project tasks. The first and second meetings were held in November 2006 and January 2007, respectively.

Barwon Water has established a Community Reference Group. Comprising of eight members of the Birregurra Community, the aim of the Community Reference Group is to discuss issues arising from draft reports, and to also provide a direct link to the wider community. Like the Regulatory Reference Group, the Community Reference Group is scheduled to meet with Barwon Water approximately four times over the course of the project. The first and second meetings were held in December 2006 and January 2007, respectively.

At important milestones within the project, information bulletins will be sent to the wider Birregurra community. Bulletins outlining the scope of Barwon Water's investigation and design project were sent to the Community in October 2006 and December 2006. It is envisioned that at least another two bulletins will be issued, with the next bulletin to advertise the community 'open house' day. The open house day will be held in Birregurra and will provide an opportunity for the Birregurra Community to meet with Barwon Water's technical staff 'one-on-one' to review, discuss and provide feedback on the options under consideration.

Detailed design and construction of the preferred option is scheduled for 2008 to 2011 at a total capital expenditure during the regulatory period of $6.8M.

4.8.4 Terrorism insurance

In 2003 the Federal Government enacted the *Terrorism Insurance Act 2003* and gazetted the *Terrorism Insurance Regulations 2003*. The *Terrorism Insurance Act 2003* operates on the assumption that eligible insurance contracts have terrorism exclusions. The *Terrorism Insurance Act 2003* then nullifies any terrorism exclusions so that eligible terrorism losses can be recovered.

To be eligible for *Terrorism Insurance Act 2003* coverage, Barwon Water was required to demonstrate it was classed as either a "Government Enterprise" or "an entity through which the Government carries on a business".

Barwon Water was not initially covered by the *Terrorism Insurance Act 2003*, however it has been recommended as part of a Federal Treasury Department review of the Act that water utilities such as Barwon Water be included.

Once the proposed recommendations are adopted, Barwon Water will be eligible to contribute to the *Terrorism Insurance Act 2003* scheme by way of two premium increases of between 2 and 4 per cent for construction works and industrial special risk (property) policies. This will provide Barwon Water with public liability; construction works and property cover for any insurable losses incurred as a consequence of declared terrorism events.

The *2007 Statement of Obligations* that Barwon Water must comply with provides:

- within Part 11 Managing Risks, Barwon Water must develop and implement plans, systems and processes having regard to risk management, to ensure that risks to Barwon Water's assets or services are identified, assessed, prioritised and managed.
- Barwon Water "must develop and implement plans, systems and process to manage assets in ways which allow the licensee to supply service sustainably".

Minor premium increases for Terrorism Insurance of $0.07M for the regulatory period have been incorporated in the forecast expenditure.

4.8.5 Central Region Sustainable Water Strategy

The Department of Sustainability and Environment released the *Central Region Sustainable Water Strategy* on the 13 October 2006 providing an obligation for Barwon Water to undertake a series of actions during the upcoming regulatory period.

4.8.5.1 Water conservation initiatives

The *Central Region Sustainable Water Strategy* includes a reduction in per capita water consumption of 25 per cent by 2015 and 30 per cent by 2020. The reduction is measured from the 1994/95 per capita consumption levels. The 25 per cent water conservation target has been included in Barwon Water's *Water Supply-Demand Strategy* and approved by the Department of Sustainability and Environment.

Forecast expenditure of $7M ensures these targets are achieved via a number of identified actions. These actions include:

- indoor residential retrofit
- pressure and leakage management
- modification to the current two-part pricing structure to send a stronger water conservation message.

In addition, non-residential customers will be required to assist in achieving water conservation targets, which will be achieved though the following actions:

- implementing Water Management Action Plans
- fit for purpose use (an example of this is the Northern water reclamation plant)
- water audit and action plans
- support for funding applications
- increase price of water

Barwon Water is expecting some permanent water savings through public actions carried out in response to the current drought. However, the above actions are still considered necessary to ensure that the State Government's water conservation target of 25 per cent by 2015 is achieved and as assistance to customers to manage their water consumption and costs with the increasing water tariffs.

Consultation workshops have been held with the Environmental Consultative Committee, Customer Consultative Committee and a key stakeholder group on proposed water conservation initiatives as part of consultation on the *Water Supply-Demand Strategy*. Refer Section 5.3 for further information regarding consultation undertaken for this new obligation.

4.8.5.2 Investigations into new water resource options

Under the State's *Central Region Sustainable Water Strategy* Barwon Water is responsible for investigating and implementing a range of water supply options to ensure the development of an optimum plan to achieve a water supply and demand balance for Geelong into the future.

Anglesea Borefield

Preliminary investigations have been carried out by the Department of Sustainability and Environment in the 1990s in conjunction with Barwon Water. However, significantly more investigation is required to confirm the volumes available and enable design of the borefield.

The Anglesea Borefield project is being fast-tracked, with the completion date being brought forward from 2011 as listed in the Central Region Sustainable Water Strategy to 2008. The fast-tracking of the project is as a contingency in the event that record dry weather pattern of 2006 continues throughout 2007 and 2008. The forecast expenditure includes total project capital cost of $70M, of which $35.3M will be spent this regulatory period.

Regulatory and community reference groups have been established for the Anglesea Borefield to facilitate consultation and the obtaining of approvals.

Melbourne-Geelong interconnection

In June 2007, the Victorian State Government announced commitment to the Melbourne-Geelong interconnection project, as part of a suite of water supply projects to be implemented around Victoria. The project had previously been identified as a potential water resource option for Geelong in the *Central Region Sustainable Water Strategy*.

The project involves connection of the Melbourne and Geelong water supply systems by constructing a pipeline of approximately 50 kilometres from Cowies Hill in Werribee to Lovely Banks Basins in northern Geelong, making available up to 16,000 megalitres per annum to Geelong.

Barwon Water is currently undertaking an investigation and functional design of the pipeline alignment, due for completion in September 2007. It is anticipated that detailed design and land acquisition will be carried out over 2008-2009 followed by a two-year construction period with a completion date in 2011. The Victorian State Government has committed $20 million to the project. Capital investment of $100M has been provided within the 2008 Water Plan Period. Significant work has commenced to establish the validity of this early estimate.

Newlingrook

The Department of Sustainability and Environment has also committed to work with Barwon Water on the Newlingrook aquifer to determine whether it is a viable new water source. This will include scientific tests on the availability of water for extraction, the effect of extraction on surface water and other ecosystems and the completion of a feasibility study.

Aquifer storage and recovery – indirect potable reuse

Recycling of water indirectly for potable use was identified as a long-term water source option for the Geelong region. To achieve this outcome innovatively, Barwon Water in partnership with the State Government through the Victorian Water Trust is researching and developing the concept of aquifer storage and recovery. This technology involves three distinct processes:

- treating water from Black Rock Water Reclamation Plant to a very high standard;
- injecting the water into an aquifer for storage and additional treatment;
- extraction of water from the aquifer form potable replacement; and
- desktop studies have identified a potentially suitable aquifer (Eastern View Formation) north of Anglesea at a location called Gum Flat. More research and investigation is required to confirm the suitability of this aquifer and the cost of this potential water source option. The following actions will be undertaken during the regulatory period:
    - preliminary aquifer characterisation (construction of five observation bores);

- detailed hydraulic assessment of the aquifer (10-12 additional observation bores and two production bores);
- concept design of full scale project; and
- injection trial (using groundwater).

The investigation and research works will provide sufficient information of this option to determine if it can be considered along with other water source augmentation options when Barwon Water next reviews the *Water Supply-Demand Strategy* in 2011.

4.8.6 Greenhouse gas abatement and energy efficiency

Key drivers for greenhouse gas abatement and energy efficiency include; an Environmental Protection Authority licence requirement for greenhouse gas abatement programs, the Victorian Government's *Our Environment, Our Future Strategy* document and the 2007 *Statement of Obligations*.

Funding required to meet Environmental Protection Authority licence obligations is included in the budget for managing water reclamation plant licences.

According to the *Statement of Obligations*, Barwon Water must include in its *2008 Water Plan* the development and implementation programs for assessing, monitoring and continuously improving the Corporation's sustainability performance, including:

- responding to climate change
- maintaining and restoring natural assets
- using resources more efficiently
- managing everyday environmental impacts.

The Victorian Water Industry has been identified as vulnerable to climate change. Climate change is expected to significantly reduce water yields from Barwon Water's catchments in the future. Barwon Water's *Water Supply Demand Strategy* has been prepared considering the climate change scenarios provided by the Victorian Government.

Barwon Water also needs to ensure that it does not contribute unnecessarily to the ongoing accumulation of greenhouse gases in the atmosphere that are causing climate change. The challenge is to provide the affordable, responsible and high quality water and sewerage services that the community expects, while meeting fair and reasonable greenhouse gas reduction targets.

The Victorian Government is expected to set a target of 60 per cent reduction in emissions by 2050 compared to current emissions for the State of Victoria. The Commonwealth Government is expected to set a similar target.

Barwon Water signed a *Memorandum of Understanding* with VicWater to develop a *Greenhouse & Energy Action Plan* building on existing energy efficiency and greenhouse gas programs in cooperation with other Victorian water corporations. The funding required to develop and implement the *Greenhouse & Energy Action Plan* has been costed and community support has been obtained.

Barwon Water conducted an inclining block tariff survey, which was distributed to every customer in the Barwon Region. The survey specifically posed a question to our customers in relation to their willingness to pay an additional $1.00 per annum on their water bills for Barwon Water to purchase renewable energy. 74 per cent of respondents indicated they would be willing to pay the additional amount. This will provide around $0.13M per annum to invest in green energy programs. It is estimated that this payment will enable a 7 per cent reduction in greenhouse gas emissions by June 2013 compared to current emissions. This is equivalent to 13 per cent reduction, taking into consideration the additional emissions that would be needed under a 'business as usual' model involving forecast increased population and industrial activity.

This *Greenhouse & Energy Action Plan* will involve:

- Avoiding greenhouse emissions by adopting energy efficient technologies - All major new works will continue to require a greenhouse and energy assessment as part of project option evaluations. New energy efficient technologies that could apply to existing operations will be investigated.
- Reducing greenhouse emissions by improving existing efficiencies - This will build on existing energy efficiency work undertaken at all Barwon Water's major facilities and pump stations. The fuel efficiency of all office buildings and the car fleet will be evaluated.
- Recovering waste energy - Barwon Water is installing a mini hydro system to recover waste energy from a high-pressure pipeline. Further energy recovery programs will be investigated.
- Using renewable energy in preference to non-renewable energy - Barwon Water operates a wind generator at Black Rock. A number of renewable energy options, including growing biodiesel, are also being investigated. A component of Barwon Water's *Draft 2008 Water Plan* includes the purchase of renewable energy from the grid.
- Participating in sequestration and abatement schemes - Barwon Water will investigate the potential for using recycled water to assist with the sequestration of carbon. Biosolids can also be applied to agricultural soils for carbon storage. The establishment of a regional *Greenhouse Alliance Program* is being supported and this will assist with the development of greenhouse abatement schemes. Barwon Water will investigate the potential to purchase greenhouse abatements through the grid system as an option to meet a component of the greenhouse emission targets.

The delivery of these commitments will require significant new learning for Barwon Water officers and development of new greenhouse gas and energy accounting and tracking systems.

4.9 Environmental obligations - business as usual

4.9.1 Biosolids

Since March 2001, Barwon Water has operated a short-term biosolids management project by storing sludge from the Black Rock water reclamation plant and other regional plants, in storage lagoons at the Western Treatment Plant. In March 2004 Barwon Water engaged Ripley Bioproducts Pty Ltd to process the stored sludge, together with the sludge being produced from Black Rock water reclamation plant and Barwon Water's regional water reclamation plants into biosolids for beneficial reuse as a soil improver.

The initial work was carried out under *Research Development and Demonstration Approval RD54435* issued by the Environment Protection Authority on 30 December 2003, which expired at the end of June 2005. Environment Protection Authority works approval for a sludge storage and drying facility was granted in November 2005. Environment Protection Authority licence No.59770 was granted for the storage and drying facility in March 2006. The licence allows for sludge to be transported to the Western Treatment Plant until February 2008.

The site at the Western Treatment Plant is operated by Barwon Water under a Memorandum of Understanding with Melbourne Water, which expires in February 2009.

Whilst this has been an effective short-term solution, it is not considered viable in the long-term and it is essential an environmentally and socially acceptable strategy is developed. In order to provide for biosolids management beyond February 2008 Barwon Water has developed a long term biosolids management project.

Expressions of Interest were called in mid-2005 for the design, construction, operation and financing of a new biosolids treatment facility in accordance with the Partnerships Victoria Policy. Submissions were received in July 2005 and from this three proponents were short-listed to complete a full tender.

Tenders closed in mid-April 2006 with two proponents submitting a bid. Subsequently a preferred proponent was selected. The preferred proponent has completed pilot testing to demonstrate the effectiveness of the proposed treatment process. It is expected that a contract will be awarded in August 2007.

An extensive community consultation process on this stage of the project commenced in May 2004 and will continue until the new facility is commissioned; currently scheduled for late 2008. The new facility will provide for the beneficial reuse of biosolids from each of Barwon Water's water reclamation plants until 2029.

Storage and drying operations at the Western Treatment Plant will be required to continue for a period of approximately 18 months after the commencement of operations at the long term facility in order to process the remaining stored material and rehabilitate the site.

The key drivers for this expenditure include:

- no further sludge storage capacity at Black Rock or any other of Barwon Water's water reclamation plants.
- the expiry in 2009 of the Memorandum Of Understanding with Melbourne Water for the use of the site for the sludge storage and drying facility at Western Treatment Plant.
- the expiry in February 2008 of Environment Protection Authority Licence No.59770 condition 2.6 for the transportation of sewage sludge to the storage and drying facility at Western Treatment Plant.

A condition of Barwon Water's Environmental Protection Authority Waste Discharge Licences for each of the nine water reclamation plants required Barwon Water to submit a sustainable sludge management plan for Environmental Protection Authority approval. The Biosolids Management Plan was submitted in July 2003 and received Enviornmental Protection Authority approval.

Environmental Protection Authority Licence No.59770 condition 2.6 prohibits the transportation of sewage sludge to the storage and drying facility at the Western Treatment Plant after February 2008. It will be necessary for Barwon Water to seek an extension to this date in order to provide for the continued beneficial reuse of biosolids until the completion of the long-term facility, timed for late 2008.

- total short term biosolids management project expenditure during the regulatory period is estimated at $6.9M.
- total long term biosolids management project expenditure during the regulatory period is estimated at $35.0M.

4.9.2 Geelong trunk sewerage strategy

A major investigation of options to address Geelong's current and future major sewerage infrastructure needs was undertaken by Barwon Water between 2004 and 2006. This investigation identified the development of a northern water plant as a key component of the preferred sewerage strategy. This project:

- increases sewerage system capacity in northern Geelong and therefore contributes to meeting *State Environment Protection Policy Water's of Victoria* sewerage flow containment objectives in the northern Geelong area.
- reduces potable water demand, freeing up potable water for growth and contributing to Barwon Water meeting per capita water consumption targets as required in the *Central Region Sustainable Water Strategy* and detailed in Barwon Water's *Water Supply-Demand Strategy.*
- reduces treated wastewater discharge to the ocean, contributing to meeting *State Environment Protection Policy Waters of Victoria* requirement to reduce mixing zones around ocean outfalls.
- contributes to meeting *State Environment Protection Policy Waters of Victoria* (cl. 35) sewage flow containment objectives in the northern Geelong area (existing trunk sewerage system in the northern Geelong area does not currently meet the requirements of State Environment Protection Policy).

- contributes to meeting *State Environment Protection Policy Waters of Victoria* (cl. 29, 30) by reducing the volume of sewage discharged to surface waters through sustainable recycling schemes.
- potable substitution achieved by this project contributes to achieving per capita water use targets set in the *Central Region Sustainable Water Strategy*.
- Action 4.12 of the *Central Region Sustainable Water Strategy* requires Barwon Water to work with Shell Australia to substitute potable water with recycled water at the Geelong refinery.
- Action 5.18 of *Securing Our Water Future Together* requires all urban water authorities to work with industry towards improved water management outcomes, including opportunities for water conservation, recycling and waste minimisation.
- Action 5.5 of *Securing Our Water Future Together* requires urban water authorities to consider opportunities for high technology local treatment plants that enable local recycling.
- this project forms part of Barwon Water's *Water Supply-Demand Strategy*, which aims to achieve an appropriate potable water supply and demand balance into the future and meet a target of 25 per cent reduction in per capita water consumption compared to pre-drought consumption by 2015.

Expected timeframes include functional design and government investment approvals by 2007/08 with detailed design development, and statutory approvals completed by 2008/09. Construction and Commissioning are to commence in 2009 and be completed by mid 2011.

Barwon Water has forecast capital expenditure of $66.5M and operating expenditure during the regulatory period of $5M for the upcoming regulatory period.

The State Government has announced a $9.2M funding contribution to the project. In addition an application for funding from the Commonwealth Government under the *Water Smart Australia Program* has been submitted. The Commonwealth Government has committed to providing funds to Barwon Water to contribute to the project, however the amount is still to be confirmed. Significant capital funding will also be contributed by Shell Australia.

A comprehensive community and other stakeholder consultation program was undertaken in August –September 2005 on the preferred Geelong Sewerage Strategy, which included the development of a northern water plant. This consultation included:

- production and distribution of a discussion paper and information bulletin
- media launch
- meetings with key individuals, community leaders, government agencies and known interest groups
- infotorials in Geelong newspapers
- two open house events with poster displays
- receipt of written submissions
- community update bulletin summarising outcomes of the consultation.

Further engagement with stakeholders will occur as the project proceeds.

4.9.3 Anglesea water reclamation plant ocean outfall – long term renewal program

In May 2006 the Anglesea outfall pipeline was damaged by the collapse of the cliff face at the shoreline. The outfall pipe at the base of the cliff was crushed by material falling from the cliff face. The obstruction in the pipe resulted in recycled water discharging at the cliff face and running on to the sand beach at low tide.

The outfall and treatment plant was originally constructed by the Anglesea Sewerage Authority in 1973. The Anglesea water reclamation plant was upgraded in 1995. During the upgrade the outfall was extended to a point 180 metres offshore.

The cliff face consists of brown coal with limestone above and has retreated more than two metres through erosion since the extension of the Outfall in 1995. Following further investigations into the pipework and geotechnical conditions at the site, the damaged pipework was repaired in July 2006.

The investigations revealed the remaining pipework and drop structure constructed in 1973 to be in a severely corroded condition.

The expected continued erosion of the cliff, together with the poor condition of this section of the facility, combine to place the facility at a high risk of failure in coming years.

To ensure continued compliance with Barwon Water's Environmental Protection Authority licence EW318 (which requires the licensee may only discharge treated effluent from the premises to water and the discharge is to Bass Strait from the point nominated) it is necessary to replace the drop structure and pipeline to the cliff face during the upcoming regulatory period at a forecast capital expenditure of $0.4M.

4.9.4 Moolap backlog sewerage scheme

The Moolap area is 210 hectares in area, comprising 62 hectares of land zoned industrial 1, 6 hectares zoned business, 86 hectares zoned low density residential and 56 hectares of land zoned rural living. Sewage disposal for this area was first raised in 1974.

The area could be sewered, although it would be a relatively expensive scheme due to the flat, low-lying land. The conclusion of the most recent investigation in 1996, which related only to the Moolap industrial area, was that some 60 per cent of the 313 property owners were opposed to the scheme if it had to be fully funded by them. Therefore, in February 1997, the Barwon Water Board resolved not to proceed with a sewerage scheme for Moolap at that time.

As part of a statewide assessment of needs for the provision of sewerage services completed by rural councils in 2006, a number of critical areas were identified which were assessed as high priority areas by both Environmental Protection Authority and Department of Human Services. Moolap was the only unserviced infill location within Barwon Water's region that was identified as critical.

Although no State Government funding is available for infill areas, Department of Sustainability and Environment considered that Barwon Water should identify a solution for Moolap (high priority area), through the development of a concept design.

Barwon Water was informed by the Department of Sustainability and Environment that the provision of services to towns identified by the Government should be reflected in the *2007 Statement of Obligation* and would need to be included in Barwon Water's Water Plan. It was also Barwon Water's decision if it wanted to reclaim part of the cost of the scheme through general tariff increases for sewerage schemes identified under the Program.

It was also stated that sewerage services under the Program would be subject to the new customer connection fee of approximately $515 paid by the property owners for contribution to the capital cost of the project, unless the community agreed to a greater 'up-front' contribution.

- correspondence was received from the Department of Sustainability and Environment on 11 September 2006 stating in accord with the Country Towns Water Supply and Sewerage Program Barwon Water must identify a sewerage solution for Moolap through the development of a concept design.
- the *2007 Statement of Obligation* states that Barwon Water "must participate with municipal councils in the development of *Domestic wastewater management plans:*

  "If reticulated sewerage services:

  1. *have been identified in a Domestic wastewater management plan as the preferred option for improved domestic wastewater management; or*
  2. *have been nominated by the Minister in any Government funded program, Barwon Water must develop a sewerage management plan in conjunction with the Environmental Protection Authority and relevant municipal council, and in*

consultation with the local community that identifies the preferred types and levels of sewerage services to be provided, together with costs and funding options:

- *identifies priorities and possible timelines for the provision of services;*
- *identifies how the wastewater collected, including biosolids, will be sustainably managed; and*
- *provides for a regular review of the plan and priority areas for sewering."*

Barwon Water subsequently engaged engineering consultants GHD to undertake a concept design for a sewerage solution for Moolap. The report was completed in July 2007, with the following outcomes:

- the study identified seven distinct unsewered areas in Moolap and through consultation with the City of Greater Geelong determined each areas requirement for sewerage;
- the preferred method for sewerage for all "required" areas include a conventional reticulation and transfer system which would collect sewage flows at a major pump station in the industrial zone, then transfer them via a new rising main to an existing sewer.

The proposed capital expenditure during the upcoming regulatory period is $8.95M. However, at present Barwon Water has calculated the price on the basis of an upfront property owner contribution of $500 per lot, as advised in correspondence received from the Department of Sustainability and Environment. This will be subject to confirmation prior to the final *2008 Water Plan.*

4.10 Environmental obligations – new obligations

4.10.1 Outfall disinfection – Black Rock water reclamation plant

Section 2.2 of the Environmental Protection Authority's *Principles to Establish EPA Environmental Obligations for Water Businesses for 2008-2013 Pricing Determination* requires "any remaining coastal discharges to have secondary treatment with disinfection as a default standard".

In response to this requirement Barwon Water Commissioned a consultancy to determine the most suitable disinfection option, from a triple bottom line perspective, for the Black Rock water reclamation plant. The recommended disinfection option, notwithstanding the triple bottom line recommendation of applying no disinfection, was the installation of an 'in-pipe' chlorination dosing system i.e. Dosing directly to the marine outfall pipe at a forecast capital expenditure of $1.3M and operating expenditure of $0.2M.

4.10.2 Environmental Protection Authority's regulatory audits and implementation of outcomes

Section 2.5 of the Environmental Protection Authority's *Principles to Establish EPA Environmental Obligations for Water Businesses for 2008-2013 Pricing Determination* requires water businesses to "conduct an audit of the sewerage system, including management, incident response, maintenance and reporting procedures and develop an implementation plan".

Forecast expenditure includes conducting an Environmental Protection Authority statutory audit of the implementation plan in 2008. Outcomes from the audit will be required to be actioned immediately (if environmental hazard) or catered for in future Water Plans. The forecast operating expenditure for this activity is $0.06M

4.11 Public health obligation - new obligation

4.11.1 Fluoridation

The Melbourne-Geelong pipeline is a major infrastructure project, which has highlighted that Geelong does not currently have fluoride in the water supply.

The State Government is committed to extending fluoridation across rural and regional Victoria to improve the dental health of all Victorians.

Barwon Water has written to the Department of Human Services seeking clarification on this issue.

4.12 Other obligations - business as usual

4.12.1 Shared assets – water and sewer systems

An outcome from the Essential Services Commission's current determination for the water and sewer included a change in the funding of developer assets. Some larger infrastructure assets associated with new developments, which were previously funded by developers, are now the funding responsibility of water corporations.

Total capital expenditure for shared water infrastructure during the regulatory period is estimated at $10.48M for;

- Armstrong Creek
- Ocean Grove
- Jetty Road, Clifton Springs
- Torquay
- Bannockburn West

Total capital expenditure for sewerage infrastructure during the regulatory period is estimated at $20.75M for;

- Armstrong Creek sewerage scheme
- Ocean Grove
- Torquay
- Marshall
- Clifton Springs

The major factors impacting this expenditure requirement include:

- *New Customer Contribution Guideline* as released by the Essential Services Commission in December 2005
- *Water Act 1989* which requires Barwon Water to provide water and sewerage services for growth
- Local Government planning documents that include structure plans, municipal strategic statements, etc.

4.12.2 Billing system replacement

Barwon Water has operated a billing system "BASIS" since March 1997. The system accounts for approximately $100M in revenue, which includes tariff, miscellaneous charges and schemes. The system is also maintained to provide data including consumption, property classifications and demographics, which are used by Barwon Water for statistical analysis.

A business analyst and expert information technology resource support BASIS in-house. An external support agreement is in place via Prophecy International to Logica Pty Ltd, which provides the technical support for any changes to system code or other programmatic issues. This formalised agreement is in place to protect Barwon Water's investment and provides security of expert resources and the billing revenue.

The system will require replacement to accommodate the future business requirements including recording, analysis and reporting of data to assist in the provision of customer service and water conservation.

Managing a potential risk by ensuring that third party technical support is robust, risk averse and cost effective in the future. Additionally, system usability for customer service operators will be enhanced to assist in the efficiency during customer interfaces.

In determining the most efficient solution to mitigate risks that the current BASIS system creates, Barwon Water engaged D&B Results to undertake a review of the current system and provide options for going forward.

Key findings from the review showed that while BASIS is very reliable and accurate, there are a number of system limitations, including:

- inability to perform bulk bill reversals
- limitation in meter groups structure
- complexity of current bill print process
- limited ability to influence demand side management
- limited capability for customer care or interaction within BASIS
- speed and quality of report production
- no capability to upgrade the system into the future to meet changing requirements.

D&B Results put forward three possible options that comparable businesses in Australia use. They are:

- Oracle
- Talgentra
- DSTi.

When researching water utilities, Barwon Water noted that a comparable Victorian water utility is incorporating Oracle into the business. As both Barwon Water and the other utility use the BASIS system and function in the same regulatory environment, Barwon Water sees benefits being able to leverage a portion of the work completed already by the other utility, which could significantly reduce implementation costs for Barwon Water.

Barwon Water has chosen to implement the Oracle system because it mitigates risk that is present in the current system and there is the potential for some savings from leveraging off some of the other utility's work. D&B Results provided Barwon Water with two cost estimates for the implementation of the Oracle system. Barwon Water has chosen the least cost option of $11M. This project is expected to take 30 months to complete

4.12.3 Self insurance compensation for rare events

Each year the review of insurances includes a review of the self insured risk profile of Barwon Water. It is common for Barwon Water to limit the level of insurance purchased from private insurer due to:

- proactive risk mitigation activities to significantly reduce residual risk levels
- Barwon Water having sufficient resources to withstand the risk in question
- insurance is not readily available
- the quoted insurance premium is excessive when considering the nature of the risk.

While Barwon Water has insurance cover for many risks (eg. material loss of assets, public liability insurance, professional indemnity insurance, etc), there are a range of risks which have been identified as more efficient to not take out external insurance. Instead all efforts to mitigate the risk internally are taken, but some residual, non-diversifiable, quantifiable risk is present, leading to costs borne by Barwon Water should a negative event occur.

This is particularly true for events that have been identified to have a low probability of occurrence, but represent a very high impact on the business and customers should the event occur.

Key examples of these types of events in the *Draft 2008 Water Plan* include damage to fencing as a consequence of significant bushfires (policy sub limit $0.25M), and lost revenue and increased operational costs that could occur with an avian influenza outbreak (nb.

insurance unavailable). This judgement is based on the specific risks involved and the current insurance environment.

The *Draft 2008 Water Plan* does not include the value for compensation for rare events because Barwon Water is not able to put a monetary amount forward. However, should a rare event occur, Barwon Water will seek the costs of any event to be passed through.

4.12.4 Essential Services Commission licence fees

The Minister for Finance sets the Essential Services Commission annual licence fees payable by each water business for economic regulation each year.

On 4 May 2007 the Essential Services Commission provided an estimate of the expected licence fee.

Section 4H of the *Water Industry Act 2001* outlines the basis for recovering costs incurred by the Essential Services Commission exercising power through contributions from businesses. The Minister for Finance is responsible for administering the *Essential Services Commission Act 2001*, in consultation with the Minister administering the *Water Industry Act 1994*.

Based on the estimate received from the Essential Services Commission, the licence fees for the regulatory period the following total operating expenditure during the regulatory period is estimated at $0.5M.

4.12.5 Impacts of the *Road Management Act 2004*

The *Road Management Act 2004* establishes a co-ordinated management system for public roads, intended to promote safe and efficient state and local public road networks and the responsible use of road reserves for other legitimate purposes, such as the provision of utility services. The majority of the provisions of the *Road Management Act* came into operation on 1 July 2004. Provisions affecting utilities and works on roads came into effect on 1 January 2005.

Barwon Water has a greater exposure to liability for consequential damage to road infrastructure. In addition there is increased potential for compensation claims from persons who suffer damage as a result of a failure by Barwon Water to properly discharge statutory duties under Schedule 7 of the *Road Management Act*.

Relevant legislative drivers for meeting this requirement include:

- *Road Management Act 2004*, schedule 7 duties
- *Road Management (Works and Infrastructure) Regulations 2005*
- *Ministerial Code of Practice, Management of Road and Utility Infrastructure in Road Reserves*
- *Water Act 1989*, section 157

Statutory duties include:

- a duty to maintain works to a satisfactory state of repair
- a duty to avoid causing damage to road or other infrastructure
- a duty to repair any damage caused to road or other infrastructure by a works failure.

To meet the greater exposure to consequential damages, Barwon Water has forecast expenditure of $0.58M for the incidence of claims from co-ordinating road authorities for consequential damages. This was not provided for in the 2005 Water Plan.

4.12.6 Fire plug and fire hydrant maintenance responsibilities

In August 2005, the Municipal Association of Victoria requested the Minister for Water review the *Water Act 1989* in relation to issues surrounding fire plugs/hydrants, specifically:

- consolidate the control and responsibility of fire plugs/hydrants under one

- ensure annual processes are resourced for inspection and maintenance to a satisfactory standard
- ensure fire and emergency management bodies continue to be exempt from water charges incurred as a result of carrying out their statutory responsibilities. Further, the Country Fire Authority have advised water authorities and councils should no longer have an expectation that annual inspection programs will be undertaken and reported on by Country Fire Authority brigades.

Existing provisions within the Water Act adequately address the key issues raised by the Municipal Association of Victoria, however the extent of maintenance and cost recovery practices varies widely across the water businesses.

The Department of Sustainability and Environment has initiated a process involving the Victorian water industry and the Municipal Association of Victoria to facilitate the adoption of standardised inspection and maintenance regimes across the state.

The *Water Act 1989* section 165, states that:

> *"An authority must –*
>
> *(a) Keep all fire plugs in the water district in working order;*
>
> *(b) Provide conspicuous markers for fire plugs supplied by it; and*
>
> *(c) Make sure that at all times water is available without charge for cleaning sewers and drains"*

In terms of who pays for the works, the Water Act provides a cost recovery mechanism as per section 165 (2), which states:

> *"A council must meet the costs of providing, installing, marking and maintaining all fire plugs that the council requires to be installed in its municipal district."*

In aiming to meet the legislative requirements, Barwon Water will be required to spend significant additional capital and operational expenditure on proposed maintenance regimes and cost recovery proposals to establish and implement annual inspection and maintenance programs, including cost recovery processes.

There are no cost estimates available at the time of the *Draft 2008 Water Plan.*

4.12.7 Research and development

Smart metering

The intention of this research program is to be able to better inform and understand the information needs of customers (detail and timing) and their decisions on water use and saving water. It is considered that the intended research program be complimentary to the demand management reduction efforts outlined in this plan. The understanding of what information our customers require to maximise their ability to make decisions about the use of water, aside from physical infrastructure, will become more important and provide data to empower behavioural change. eg customers being advised almost instantaneously about a leak at the time it occurs will enable them to arrange repairs rather than receiving high bills.

This research will form the basis of a business case (or otherwise) to implement a system/s that best integrates meter hardware, billing software information and customer delivery systems to the needs of customers.

The research program is estimated to cost $0.15M and take 18 months to complete.

Alternative water use

There are a number of important risks associated with alternative water sources that require better understanding and development of systems to ensure their mitigation. The aim of this research program is to undertake/participate in existing or new research programs on "fit for purpose" alternative water sources, their technical regulation, understand customer impediments and the possible impacts on existing systems and the environment.

In particular research is to be undertaken on:

- the use of recycled water for bio-fuel production and aquaculture
- the use of stormwater to replace or supplement potable water use from municipal stormwater systems and site specific systems particularly for residential and commercial applications
- the expansion of grey water systems and their site specific impacts
- the expansion of trade waste recycling
- the use of recycled water by existing and future industrial applications.

The research program is estimated to cost $0.5M over 5 years.

4.13 New obligations

4.13.1 Bulk water entitlement metering program (*Water Act 1989*)

As part of Barwon Water's bulk water entitlement obligations, Barwon Water has been required to submit metering plans to the Department of Sustainability and Environment. These plans provide details on the metering of diversion and passing flows, along with calibration and data storage procedures. Due to inconsistencies across the state in preparation of the plans, Department of Sustainability and Environment has commenced a process of engagement with water authorities to develop new guidelines to provide consistency across the industry.

The new guidelines are seeking authorities to demonstrate compliance and in addition include an assessment framework for evaluation of suitability of compliance plans by the Department of Sustainability and Environment.

Barwon Water's right to harvest water from waterways is detailed in the *Bulk Entitlement Conversion Orders*. These orders are made as per the requirements of part 4, Division 1 of the *Water Act 1989* and cover ten waterway systems throughout Barwon Water's district.

Within the orders Barwon Water is required to manage, monitor and report on system storage levels, inflows to the system, diversions from the waterway and maintenance of passing flows. Barwon Water contributes to the south-west monitoring program managed by the Department of Sustainability and Environment that includes bulk entitlement monitoring stations.

To meet the anticipated outcomes of the Department of Sustainability and Environment initiative Barwon Water must now replace and update monitoring sites.

This program will be absorbed through business as usual expenditure levels.

4.14 Customer service standards

Barwon Water's proposed approach to service standards for the upcoming regulatory period is outlined below.

4.14.1 Essential Services Commission guideline for the 2008-2013 regulatory period

The Essential Services Commission considers service standards to underpin expenditure proposals for the regulatory period and thus proposed prices. It states, "performance against defined service standards and targets provides a basis for assessing the extent to which additional expenditure is required to maintain or improve existing services".

In the March 2007 *Guidance Paper*, the Essential Services Commission agrees with businesses in that if some data is unreliable or inappropriate, then businesses will need to use their judgment in setting targets and explain the reasons for any variation in their Water Plan.

4.14.2 Basis for setting service standards

Barwon Water's service standards incorporate the key requirements of customer service obligations, as set out in the following instruments:

- the *2007 Statement of Obligation* issued by the Minister for Water, Environment and Climate Change
- the customer service code circulated by the Essential Services Commission
- the *Safe Drinking Water Act 2003* and Drinking Water Regulations administered by the Department of Human Services
- the *Water Act 1989*.

Furthermore, Barwon Water's customer service standards have been founded upon the need to maintain a standard of service for all customers that is within the bounds of reasonableness.

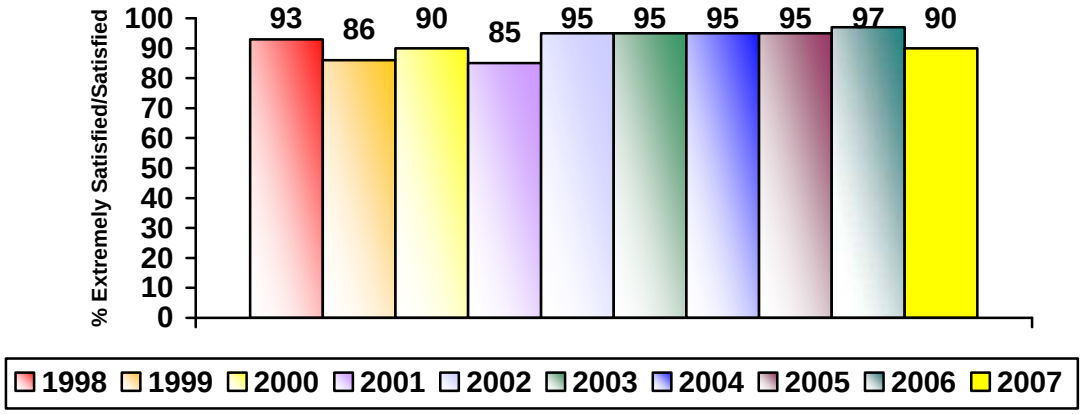
Due to the current drought conditions being the worst recorded, Barwon Water considers the use of the three-year average figures for setting service standards (as initially proposed by the Essential Services Commission) may not be completely appropriate for the upcoming regulatory period. Barwon Water projects the drought to continue, and has therefore set targets that are reflective of a continuation of the current results being achieved, with the latter years of regulation beginning to show a notable improvement, as the drought breaks.

4.14.3 Key outcomes from customer consultation

Generally, the results of Barwon Water's ongoing surveys confirm that customers are satisfied with Barwon Water's performance. This supports that current service standard are at appropriate levels.

Assessment of Barwon Water's overall performance in supplying quality products and services remained very high, with 90 per cent of customers reporting that they are extremely satisfied or satisfied. However, this is a decline from previous years. Figure 4-3 charts the overall satisfaction index arising from the Customer Satisfaction Survey since 1998.

Figure 4-3 Overall satisfaction index



In developing the proposed forward works program, Barwon Water has taken into consideration the decline in satisfaction levels and is implementing measures to improve this, while also taking into consideration that the external factors have also played a part in this decline in the customer's overall satisfaction levels.

Broken down into individual customer service components, Barwon Water notes that:

- satisfaction levels with the way Barwon Water manages the sewerage system have fallen on the previous four-year average, with 77 per cent being extremely satisfied/satisfied.
- the 2007 satisfaction rating for Barwon Water's water conservation and environmental management was 80 per cent, a decline on the 2006 satisfaction rating of 92 per cent;
- satisfaction ratings attained for Barwon Water's billing was almost the same as the previous four-year average.

Other specific findings are as follows:

- satisfaction with Barwon Water's water supply management is at 89 per cent, a decline from the 96 per cent recorded in 2006;
- ratings of drinking water quality have increased significantly over the past five-years, reaching 92 per cent in the 2007 survey;
- ratings for billing have remained consistently high, with 95 per cent of customers responding that they were extremely satisfied/satisfied, a similar level to 2006; and
- satisfaction with the way Barwon Water keeps customers informed about relevant issues remained high, with 92 per cent of customers being extremely satisfied or satisfied.

In addition to ongoing customer satisfaction surveys, Barwon Water has established a comprehensive community engagement framework that helps ensure stakeholders are informed and consulted on a wide range of issues.

4.14.4 Proposed service standards targets for 2008-13 regulatory period

This section outlines the rationale underpinning the targets selected for each of the 21 Service Standards indicators.

The proposed targets for the first year of the regulatory period are generally based on the result achieved in 2006/07, so as to maintain a clear flow of the continuing impacts upon service levels of the unprecedented drought conditions and resultant restrictions, whilst the targets for the latter years of the regulatory period are more aligned with the three-year average of the first regulatory period. More specifically, the prolonged drought has, and will continue to impact upon service levels in two key ways:

Dry ground conditions

The prolonged drought and drier than normal ground conditions has resulted in shrinkage of the material surrounding pipes allowing pipe movement and the consequential increase in the incidence of brittle pipe failures.

Altered community behaviour in response to the drought (grey water reuse) has consequently led to a reduction in domestic flows entering the sewage collection system that has had, and is expected to continue to have, an impact on the incidences of sewer blockages and spills. This has occurred despite an increase in the 2006/07 operating expenditure associated with targeted preventative maintenance programs.

Increased number of interruptions

Due to the dry ground conditions, there has been a substantial increase in the number of interruptions that are occurring. In particular, it is anticipated that the practice of isolating leaks and bursts as early as possible to conserve water, then returning at a later time when resources are available to complete the repair, will continue. The impact this will have on all indicators with a measure of interruption time will be to have these indicator targets higher than the targets set in the first regulatory period.

Additionally, the target for the indicator measuring the number of water customers experiencing more than five unplanned water supply interruptions in a year will be significantly higher in the second regulatory period, than in the first. This significant increase is necessary because of the fact that the target for the first regulatory period was based on anticipated figures because historical data was not available. More specifically, the provision of reliable data on this indicator clearly shows that the initial target set was substantially lower than it should have been with the target providing for five customers to experience five or more unplanned water supply interruptions in each financial year, whereas 39 customers received five or more unplanned water supply interruptions in 2005/06.

Furthermore, since migrating a significant amount of data collection across to Barwon Water's FOCUS system in October 2004, the accuracy, reliability and timeliness of data has improved notably. Due to the confidence in the FOCUS data Barwon Water believes the results likely to be achieved in the first years of the upcoming regulatory period will be similar to those achieved in 2006/07.

4.14.4.1 Water performance indicators

Water quality: drinking water supplied to serviced properties, measured at the outlet of the customer's meter assembly nearest the property boundary, will comply with the drinking water quality requirements as specified by the *Safe Drinking Water Act 2003* and associated regulations.

Where drinking water is supplied to customers by agreement, and the property is not a serviced property as defined by the *Water Act 1989*, the water supplied at the point of connection of the customer's infrastructure to Barwon Water's supply main will comply with the drinking water quality requirements as specified by the *Safe Drinking Water Act 2003* and associated regulations.

Barwon Water aims to provide aesthetically pleasing water whilst maintaining chlorine residuals necessary to maintain the suitability of the water for human consumption and to meet the requirements of the *Safe Drinking Water Act 2003*.

The 2006 Customer Satisfaction Survey indicated 90 per cent of customers surveyed rated the overall quality of drinking water as excellent or good.

A relatively small number of customers are supplied with non-potable water by agreement and Barwon Water does not guarantee the quality of non-potable water.

Recycled water: any recycled water delivered to urban customers for household toilet flushing and garden watering or other outdoor domestic water use will meet the 'A' Class Recycled Water standard set out in the Environment Protection Authority *Guideline for Environmental Management - Use of Water Reclamation*.

Delivery quality (flow rate)

Barwon Water will take reasonable steps to ensure water supplied to serviced properties, including a recycled water supply, is at least able to satisfy the minimum flow rates specified below, except to the extent that:

- a property owner's infrastructure falls short of the required condition
- there is a drought or an emergency
- there is a water shortage due to peak demand
- there is an unplanned or planned interruption
- recycled water is reduced in accordance with Barwon Water's permitted use rules
- supply is restricted or disconnected in accordance with the customer service code.

Barwon Water will provide water supply to meet customers' reasonable needs, with a minimum flow rate as shown in Table 4-3:

Table 4-3 Minimum flow rates

Diameter of water service pipe (mm)	20	25	32	40	50
Minimum flow rate (litres per minute)	20	35	60	90	160

The flow rate is measured at the tap nearest the customer's main meter assembly. The 2006 customer satisfaction survey indicated 95 per cent of customers surveyed rated the water pressure as good or excellent.

1. Unplanned water supply interruptions (per 100km)

Target: 30 per 100km of main for each year.

Rationale: The three-year average figure is appropriate to determine the future target due to the significant planned maintenance program that has been in place for a number of years.

2. Average time taken to attend bursts and leaks (priorities 1 and 2)

Target Priority 1: 35 minutes for each year.

Target Priority 2: 72 minutes in year one, reducing down to 68 minutes in year five.

Rationale: Priority 1 events are always to be responded to as soon as possible. The target time allocated is sufficient for that.

Priority 2 events are anticipated to continue occurring at a higher rate. As the drought eases, the number of bursts and leaks is expected to taper off, thereby leading to an improvement in response times. This is primarily due to wetter soil having less movement, which leads to fewer pipe bursts and leaks.

Time to respond to water main bursts and leaks is affected by:

- congestion on roads particularly in coastal towns during peak holiday periods
- travelling distances from depot to remote towns (eg. Gellibrand, Cressy).

The average time to attend burst and leaking water mains will be no greater than shown in Table 4-4.

Table 4-4 Response times

Priorities	Response time (average minutes)
Priority 1 – A burst or leak which causes, or has the potential to cause, substantial damage or harm to customers, water quality, flow rate, property or the environment.	35
Priority 2 - A burst or leak which causes, or has the potential to cause, moderate damage or harm to customers, water quality, flow rate, property or the environment.	2008/09 - 72 2009/10 - 71 2010/11 - 70 2011/12 - 69 2012/13 - 68

A burst or leak may not necessarily result in loss of supply.

In the event of a prolonged interruption to water services, Barwon Water will provide customers with access to alternative supplies of water, except where water is supplied under a Water Supply by Agreement.

The 2006 Customer Satisfaction Survey results indicate 89 per cent of customers surveyed who had experienced an unplanned interruption to service rated Barwon Water's performance in fixing the problem as good or excellent.

3. Unplanned water supply interruptions restored within 5 hours (per cent)

Target: The per centage of unplanned interruptions to water supply (excluding main to meter service pipes) will be 95% in year one, increasing to 96.5% in year five.

Rationale: The gradual increase over time represents the anticipated improvement due to the easing of the drought. As the soil becomes more stable due to the anticipated increase in moisture, fewer interruptions are anticipated, leading to better rectification times.

4. Planned water supply interruptions restored within 5 hours (per cent)

Target: 70% in year one, increasing to 80% in year five.

Rationale: The gradual increase over time represents the anticipated improvement due to the easing of the drought. In particular, as the soil becomes more stable due to the anticipated increase in moisture, fewer interruptions are anticipated, leading to better rectification times.

5. Average unplanned customer minutes off water supply

Target: The average unplanned customer minutes off water supply (excluding main to meter service pipes) will be 25 minutes in year one, reducing down to 20.5 minutes in year five.

Rationale: The gradual reduction over time represents the anticipated improvement due to the easing of the drought. As the soil becomes more stable due to the anticipated increase in moisture, fewer interruptions are anticipated, leading to an improvement in rectification times.

6. Average planned customer minutes off water supply

Target: 45 minutes in year one, reducing down to 40 minutes in year five.

Rationale: Continuing alterations to the methods used to conduct planned maintenance will see the performance on this indicator improve steadily over time. The installation of additional valves to reduce the number of customers impacted upon by each planned interruption.

7. Average unplanned frequency of water supply interruptions

Target: 0.21 interruptions per customer in year one, tapering off to 0.2 interruptions per customer in year five.

Rationale: The gradual reduction over time represents the anticipated improvement due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer unplanned interruptions.

8. Average planned frequency of water supply interruptions

Target: 0.24 interruptions per customer in year one, tapering off to 0.22 interruptions per customer in year five.

Rationale: The gradual reduction over time represents the anticipated improvement due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to a reduction in the need for preventative maintenance on assets that under normal conditions would not require as much works.

9. Average duration of unplanned water supply interruptions (minutes)

Target: The average duration of unplanned water supply interruptions (excluding main to meter service pipes) will be 127.5 minutes in year one, tapering off to 100 minutes in year five.

Rationale: The notable decrease in duration of each events over the regulatory period is due to improvements anticipated due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer unplanned interruptions and improved response times.

10. Average duration of planned water supply interruptions (minutes)

Target: The average duration of planned water supply interruptions (excluding main to meter service pipes) will be 245 minutes in year one, tapering off to 210 minutes in year five.

Rationale: The notable decrease in duration of each events over the regulatory period is due to improvements anticipated due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer planned interruptions and improved response times.

11. Number of customers experiencing more than 5 unplanned water supply interruptions in the year

Target: The number of customers experiencing five or more unplanned water supply interruptions (excluding main to meter service pipes) in any 12-month period will be no greater than 150 each year

Rationale: The current performance has exceeded the target (refer 3.1). The revised target is indicative of anticipated future performance given current conditions.

12. Unaccounted for water

Target: 8% of water supplied.

Rationale: The three-year average figure is indicative of future performance.

4.14.4.2 Sewer performance indicators

13. Sewerage blockages (per 100km)

Target: 44 per 100 km in year one, tapering off to 43 per 100km in year five.

Rationale: The notable decrease in duration of each events over the regulatory period is due to improvements anticipated due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer unplanned interruptions and improved response times.

14. Average time to attend sewer spills and blockages (minutes)

Target: 83 minutes in year one, tapering off to 80 minutes in year five.

Rationale: The gradual reduction over time represents the anticipated improvement due to the easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer spills and blockages. Response times will improve accordingly as the number of spills and blockages reduce.

15. Average time to rectify a sewer blockage (minutes)

Target: 250 minutes for each year.

Rationale: The three-year average figure is indicative of future performance.

16. Spills contained within 5 hours (per cent)

Target: Priority 1 - 100% for each year. Priority 2 – 97% for each year.

Table 4-5 Containment of sewer spills

Priorities	Contained within five hours
Priority 1 – Failure of the sewerage service causing a spill that results in a public health concern, significant damage to property, discharge to a sensitive receiving environment, discharge from a pipe greater than 300mm diameter, or flow greater than 80 litres per minute.	100%
Priority 2 – Minor failure to contain sewage within the sewerage system that does not fit the definition of a priority 1 spill, or a blockage that results in unavailability of service to one or more customers.	97%

As with attendance at water bursts or leaks above, access to some townships including Aireys Inlet, Fairhaven, Lorne and Apollo Bay can be very difficult, either because of traffic congestion or poor access conditions.

Time to respond to sewer spills and blockages is affected by:

- congestion on roads particularly in coastal towns during peak holiday periods
- travelling distances from depot to remote towns.

Rationale: The improvement over the three-year average is representative of the anticipated easing of the drought. This is primarily due to wetter soil having less movement, which leads to fewer spills. Rectification times will improve accordingly as the number of spills reduces.

17. Customers receiving more than 3 sewer blockages in the year

Target: 8 customers for each year.

Rationale: The target set in the first regulatory period was based on data that has since been superseded by more accurate figures. It is anticipated that there will be

a greater number of incidences recorded under the new data measures, which will necessitate an increase in the target.

Customer Service Performance Indicators

18. Complaints to EWOV

Target: 0.18 complaints per 1,000 customers for each year.

Rationale: The three-year average figure is not indicative of anticipated future performance. It is anticipated that as water restrictions and price rises continue to be enforced, a greater number of customers will express dissatisfaction with Barwon Water.

19. Telephone calls answered within 30 seconds (Accounts Line)

Target: 95 per cent of calls for each year.

Rationale: The three-year average figure is not indicative of anticipated future performance. It is anticipated that as water restrictions and price rises continue to be enforced, a greater number of customers will call the accounts line to seek clarification on their water bill.

Additional Service Standards Performance Indicators

20. Telephone calls answered within 30 seconds (Service Faults Line)

Target: 96 per cent of calls for each year.

Rationale: The three-year average figure is indicative of future performance.

4.14.5 Additional service standards proposed

Barwon Water proposes one additional service standard as a means of providing more clarity to the indicators required as the core ones to be measured. "Telephone calls answered within 30 seconds (service faults line)" has been added to the core set of service standards. This addition has been made to highlight that Barwon Water has two telephone lines – one for account queries and one for service faults.

The definition used for this indicator is the same as the one required in the current regulatory period.

4.15 Guaranteed service levels

Consistent with the principles outlined in the Essential Services Commission's *Service Standards and Incentives* discussion paper, Barwon Water has established systems and processes to ensure that sufficient incentives exist to deliver the desired level of service over the five-year regulatory period.

Barwon Water's Guaranteed Service Level payment scheme involves making payments to customers who receive a level of service that is significantly worse than the average level of performance expected by most customers, and where these services do not meet defined levels of performance. This principle reason for the introduction of a Guaranteed Service Level payment scheme is to provide incentives to businesses to improve key aspects of service rather than to provide compensation to affected customers.

4.15.1 Proposed guaranteed service levels

The Guaranteed Service Level payments introduced at the start of the current regulatory period were based largely on a value judgement rather than historical data. The Guaranteed Service Level scheme for the upcoming regulatory period is similarly based, however supported by some limited data captured this regulatory period.

The Guaranteed Service Levels payments have increased in line with price increases from $50 to $65.

Table 4-6 Guaranteed service level payments

Service attribute	Guaranteed level of service	Payment ($)
Water supply reliability	No more than five unplanned water supply interruptions in any 12-month period.	65
Sewerage service reliability	No more than three unplanned sewerage service interruptions or more than three sewer spills on to the customer's property within a 12-month period.	65

Exclusions:

Where an event is caused by, or is the responsibility, of the customer or a third party Barwon Water is excluded from making guaranteed service level payments. Such exclusions are set out in Barwon Water's *Customer Charter*.

It is forecast $1,000 per annum will be paid out to customers under the scheme. Further the cost of administrating the scheme is estimated to be $3,000 per annum. Both of these costs have been included in Barwon Water's operating cost forecasts.

4.15.2 Consultation process

Barwon Water is proposing to increase the guaranteed service level payment from $50 to $65. Consultation on the existing guaranteed service levels form part of the draft water plan consultation program.

Table 4-7 provides the proposed service standard measures and targets for the upcoming regulatory period compared with the target for the current regulatory period.

Table 4-7 Proposed service standard targets

Measure	Current Target	Proposed service standard targets				
		2008/09	2009/10	2010/11	2011/12	2012/13
Water						
Unplanned water supply interruptions (per 100km)	30	30	30	30	30	30
Average time taken to attend bursts and leaks (priority 1)	30	35	35	35	35	35
Average time taken to attend bursts and leaks (priority 2)	60	72	71	70	69	68
Unplanned water supply interruptions restored within 5 hours (%)	97	95	96	96.5	96.5	96.5
Planned water supply interruptions restored within 5 hours (%)	60	70	72.5	75	77.5	80
Average unplanned customer minutes off water supply	19	25	22.5	20.5	20.5	20.5
Average planned customer minutes off water supply	69	45	43	42	41	40
Average unplanned frequency of water supply interruptions	0.19	0.21	0.21	0.20	0.20	0.20
Average planned frequency of water supply interruptions	0.26	0.24	0.24	0.23	0.22	0.22
Average duration of unplanned water supply interruptions (mins)	100	127.5	115	100	100	100
Average duration of unplanned water supply interruptions (mins)	253	245	230	220	215	210
Number of customers experiencing more than 5 unplanned water supply interruptions per year	5	150	150	150	150	150
Unaccounted for water	8	8	8	8	8	8

Sewerage						
Sewerage blockages (per 100km)	44	44	43.75	43.5	43.25	43
Average time to attend sewer spills and blockages (mins)	75	83	82	81	80	80
Average time to rectify sewage blockage (mins)	255	250	250	250	250	250
Spills contained within 5 hours (%)	100	100	100	100	100	100
Customers receiving more than 3 sewer blockages per year	3	8	8	8	8	8
Customer service						
Complaints to EWOV	0.18	0.18	0.18	0.18	0.18	0.18
Telephone calls answered within 30 secs	94	94	94.25	94.5	94.75	95
Additional service standards						
Telephone calls answered within 30 secs (service faults line)	95	95	95.25	95.5	95.75	96
Guaranteed service levels						
No more than five unplanned water supply interruptions in any 12-month period ($)	50	65	65	65	65	65
No more than three unplanned sewerage service interruptions or more than three sewer spills on to the customer's property within a 12-month period ($)	50	65	65	65	65	65

4.16 Customer hardship policy

Barwon Water has in place a hardship policy, which provides information and assistance to a customer who may be experiencing difficulty in payment of their bill.

The policy prescribes the rights and responsibilities applicable to customers experiencing payment difficulties. It outlines the various forms of assistance and supports that are available.

A customer experiencing financial hardship is someone who desires to pay, but due to financial difficulties is unable to pay within the timeframe of Barwon Water's payment terms.

There are two categories of customers experiencing financial hardship; permanent and temporary. These two categories of customers experiencing financial hardship have different characteristics, and may require different types of assistance.

- customers experiencing permanent financial hardship are generally customers with low or fixed incomes, who may require ongoing assistance.
- customers experiencing temporary financial hardship may be regarded as customers that have experienced a sudden change in living circumstances due to ill health, unemployment, separation, a death in the family, a loss arising from an accident, or some other temporary financial difficulty. These customers generally require flexibility and temporary assistance such as an extension of time to pay, a one off grant, or a flexible payment plan.

4.16.1 Rights of customers experiencing financial hardship

Each customer experiencing financial hardship has the right to:

- be treated sensitively on a case by case basis
- receive information at the first point of call from customer service officers about alternative payment arrangements, Barwon Water's hardship policy and government

concessions, including the *Utility Relief Grant Scheme*, *Sewerage and Water Connection Hardship Relief Grant Scheme* and the *Capital Grants Scheme*

- nominate an amount they can afford to pay on an instalment plan
- re-negotiate the amount of their instalment if there is a demonstrable change in their circumstances. The instalment plan nominated or re-negotiated not exceeding 12 months or another period considered appropriate to ensure that both the arrears and future bills can be paid
- choose from various payment methods and receive written confirmation of the agreed payment plan within 14 days
- receive information about a free and independent financial counselling service from an accredited financial counsellor
- receive a language interpreter service at no cost to the customer
- be exempt from legal action and additional debt recovery costs, whilst negotiating a suitable payment plan or while they continue to make payments according to an agreed schedule
- not have supply restricted if they agree to continue with the payment plan.

Figure 4-4 Hardship programs

4.16.2 Key elements of the hardship policy

Table 4-8 identifies the key elements of the hardship policy to deliver the optimum customer service including.

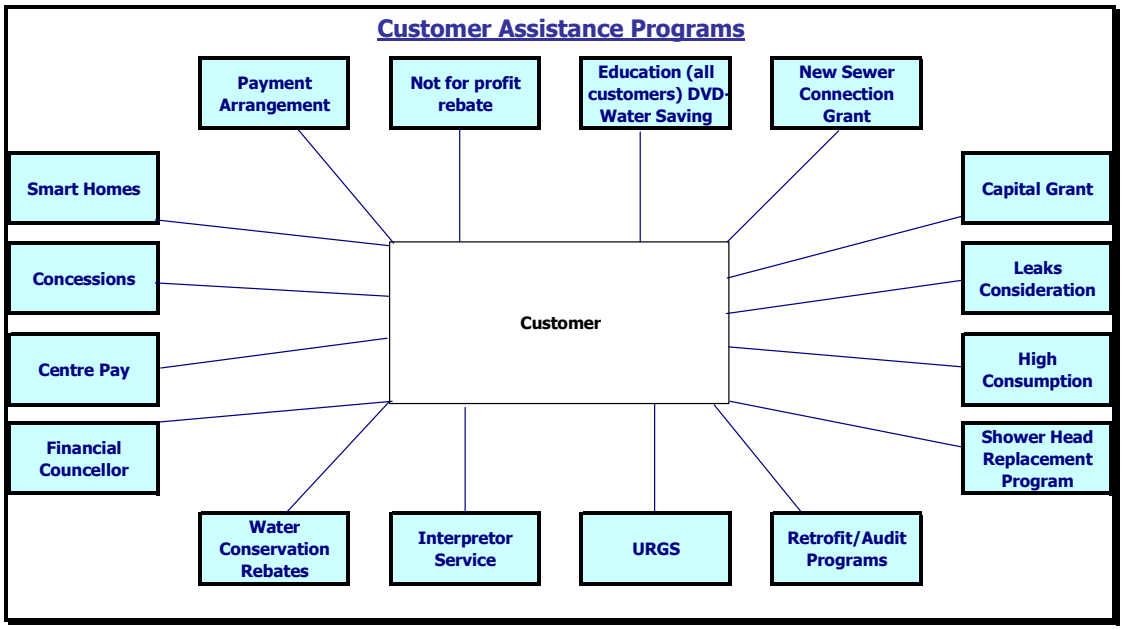
Table 4-8 Elements of hardship policy

Approach	Treat each customer with respect and dignity.
Identification	Follow procedures and listen to the customer to facilitate the earliest detection of affordability and hardship issues.
Rights	Flexible and proactive arrangements are entered into with the customer. Establishment of realistic payment arrangements. The customer is shielded from legal action and recovery whilst the arrangements are in place.
Training	Programs are developed and maintained to ensure that customer service staff maintain currency in understanding of policy, procedures and the provision of caring and professional customer service.
Continuous improvement	Through the continuous improvement programs adapted by Barwon Water, procedure and policy is under continual review. The Customer Consultative Committee provides regular and constructive

	feedback on policy matters.
Customer information and feedback	Is encouraged and welcomed via various medium including independent surveys, the public internet site, consultation and newsletters and education on conservation to assist in the reduction of their water bills. Site visits are utilised as an effective method of engaging the customer, whether it be due to a previous lack of customer response or as assistance to the elderly, disabled, illiterate or infirmed.

Figure 4-5 illustrates the programs that Barwon Water has available to customers. It shows that Barwon Water has catered for many different issues that may be faced by customers and has put programs in place to assist with the issues they face.

Figure 4-5 Customer assistance programs



An outline of what some of the customer assistance programs are:

- Payment arrangement – payment instalment arrangements are made with customers experiencing difficulty in making payments of their water bill. The arrangement is made in consultation with the customer and takes consideration of their capacity to pay.
- Not for profit water & sewer service charge rebate – this rebate is available to not-for-profit organisations, for example church and charity groups, and sporting clubs. This is a rebate of up to $65 per quarter of service charges.
- New sewer connection grant – This rebate is available to customers in receipt of a concession card. This grant is to assist customers in financial hardship who are being requested to connect to a new sewer system.
- Capital grant – this grant is available to customers in receipt of a concession card and is intended to assist with the replacement of a faulty major appliance in the home (for example heaters, or washing machines).
- Leaks consideration – Barwon Water provides assistance to customers who experience an increased water bill due to undetectable leaks (ie underground services).
- High consumption – where a customer experiences unexplained higher than normal water consumption, options are available to assist the customer with investigation and adjustment to the bill.
- Showerhead replacement program – Barwon Water is a supportive participant in the state government's free showerhead exchange initiative, which was announced in 2006.

Barwon Water's residential customers are eligible for the free showerhead exchange by contacting Barwon Water and registering their interest

- Retro-fit/Audit program (indoor) - Barwon Water has recognised the importance of water conservation and has initiated the retrofit and audit program. The program involves a qualified plumber visiting the household to audit/install water efficient devices and to undertake a minor tune-up.
- Utility relief grant – this grant is available to customers who advise Barwon Water they are unable to pay their bill. However, one of three criteria must be met:
    - Loss of income through loss of employment or breakdown of a relationship
    - Higher than expected bill through a faulty appliance or leaky pipe
    - Unexpected expenses on essential items such as purchase of a washing machine, or funeral expenses.
- Interpreting service – customers may call Translating and Interpreting Services at the Department of Immigration and Multicultural Affairs Interpreter Service if they require assistance in communication with Barwon Water to make payment of their water bill or any other enquiry to Barwon Water.
- Water conservation rebates - Barwon Water administers the Water Smart gardens and Homes Rebate Scheme on behalf of the government. The scheme provides rebates for specified water efficient products purchased in an effort to conserve water and energy.
- Financial counsellor – customer experiencing financial hardship who are unable to commit to a payment plan are provided with information regarding the services of a free and independent financial counsellor who may assist in budgeting of household funds.
- Centre pay – centre pay is a payment option whereby a customer can elect to have a fortnightly instalment paid directly from their Centrelink benefit payment to Barwon Water toward payment of their bill.
- Concessions – concessions are a government initiative that each Water Corporation administers to reduce the water bill up to the standard monetary limit.

Smart homes – this assistance scheme is available to homeowners who are in receipt of a concession card. Customers can have leaking taps repaired/replaced, water saving devices installed at no cost to the customer to help reduce the amount of water being consumed.

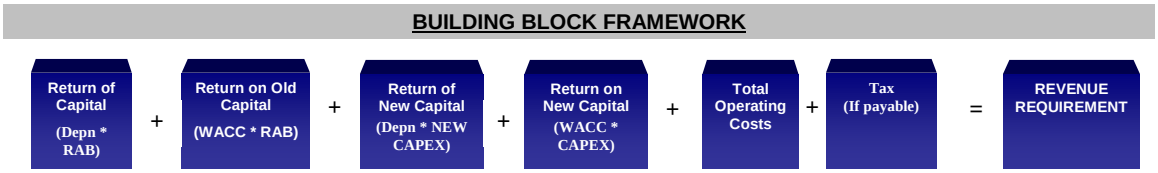
PART D: REVENUE REQUIREMENT

5 Overview of Revenue Requirement

This section details Barwon Water's revenue requirement for the upcoming regulatory period. The Essential Services Commission uses the building blocks approach to determine the revenue required, which ultimately sets the prices that the business charges to it's customer.

Figure 5-1 provides an overview of the components that make up the total revenue required to provide Barwon Water customers with the high levels of service they expect.

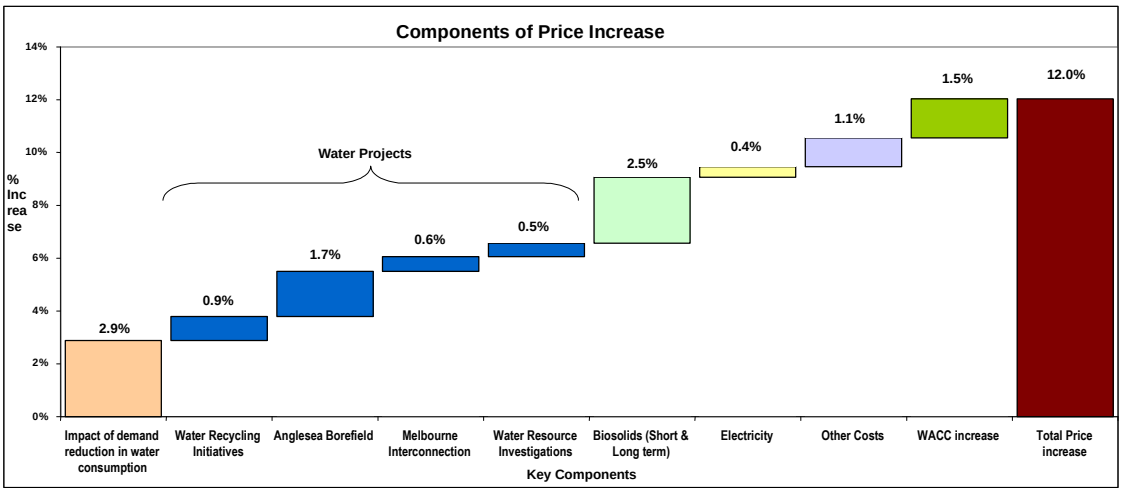
Figure 5-1 Building blocks framework



This proposal results in a revenue requirement of $703M and a real price increase of 12.0 per cent per annum for the upcoming regulatory period. It provides improved performance and a long-term sustainable water and sewerage service for Barwon Water customers.

Figure 5-2 shows how components of Barwon Water's revenue requirements result in the 12 per cent increase in prices. It shows that the forecast capital program contributes largely to the price increase. This capital works program is required to sustain the regions water supply and meet customer's needs.

Figure 5-2 Components of price increase



6 Capital Expenditure

6.1 Overview of total capital expenditure

Barwon Water's capital expenditure requirement is underpinned by a robust capital planning process, and supported by detailed asset management strategies for each asset category.

These processes ensure that Barwon Water's forecast capital expenditure is not only efficient, but also effective in responding to key cost drivers, namely demand forecasts (Part E), customer service standards (section 4), and other external obligations, including requirements stemming from the *Water Supply-Demand Strategy*, *Central Region Sustainable Water Strategy* and the *10 Year Capital Works Investment Plan*.

Barwon Water's capital expenditure requirements for the upcoming regulatory period are summarised in Table 6-1,

Table 6-1 Capital expenditure summary

	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Headworks (water)	43.49	12.96	52.61	51.76	1.64	162.46
Pipelines/network (water & sewerage)	32.13	37.44	41.69	65.4	56.51	233.17
Treatment (water & sewerage)	3.42	2.1	4.51	1.62	2.34	13.99
Corporate	4.72	6.12	8.62	8.12	5.22	32.8
Recycled water	9.49	40.27	15.36	2.88	1.05	69.06
Total	93.25	98.89	122.79	129.78	66.76	511.48*

*this figure does not include government and customer contributions, gifted assets, or proceeds from disposals

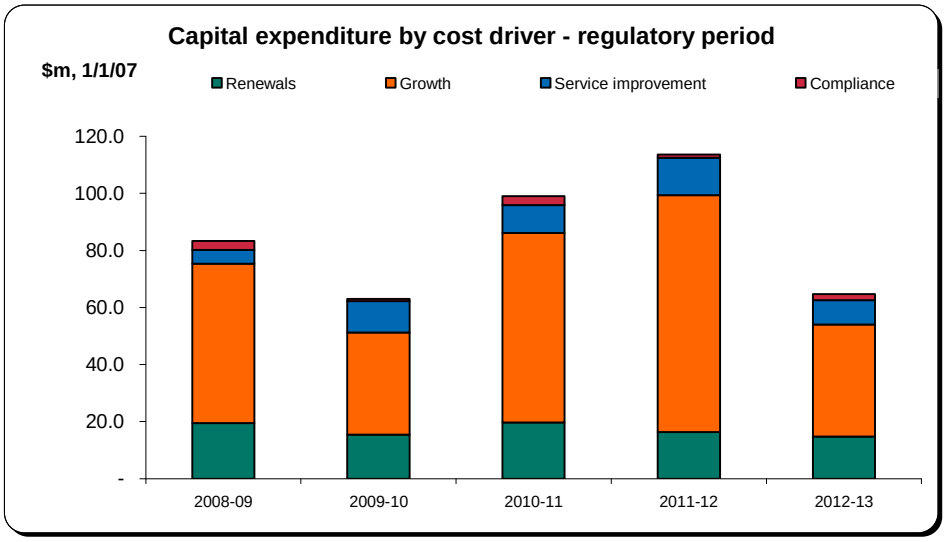
Table 6-2 shows Barwon Water's top 10 projects for the upcoming regulatory period. These projects, as well as the remaining capital works program, form the basis of the capital expenditure requirements that Barwon Water considers essential to enable it to provide a secure water supply and sewerage system over the next regulatory period.

Table 6-2 Top 10 projects

Project	Drivers	Outcomes	Expected delivery date	Cost ($M)
Melbourne Interconnection (water)	Growth/ augmentation	Additional water supply for Geelong system	2012	100.0
Geelong Trunk Sewerage Strategy	Growth/augmentation, compliance	New plant for collection, treatment and reuse to local industry	2011	66.5
Anglesea Borefield Project (water)	Growth/ augmentation	Additional water supply for Geelong system	2010	35.3
Water Main Replacements	Renewals, improved service	Reduced risk of failures – improved service levels	Ongoing	20.0
Shared Water & Sewer Reticulation Assets	Growth/ augmentation	Water assets greater than 150 mm and sewer greater than 225mm are required to be funded by Barwon Water.	Water - 2013 Sewer - 2015	19.6
Armstrong Creek Sewerage Scheme	Growth/ augmentation	Provision of sewerage services for new suburb devlopement.	2014	11.7
Bellarine Transfer Main Stage 5 (water)	Growth/augmentation	Increased supply capacity to Armstrong Creek development	2014	11.0
BASIS Replacement	Replacement	Replacement of billing system.	2012	11.0
Leopold Rising Main No.1 Replacement (sewer)	Growth/augmentation	Ability to accept future sewerage flows from Clifton Springs and Leopold	2013	10.4
Apollo Bay / Skenes Creek Bulk Water Supply	Growth/Improvement	Additional water supply for Apollo Bay/Skenes Creek	2011	9.1
Percentage of Overall Capital Works Plan				**57.6%**

Figure 6-1 illustrates how Barwon Water's capital expenditure requirements are distinguished by cost drivers, and the ratio of expenditure that will be spent on each cost driver category.

Figure 6-1 Capital expenditure by cost driver



Barwon Water has used these forecasts to determine the revenue requirement set out in Part D of the *Draft 2008 Water Plan*.

6.2 Capital planning process

Each year, Barwon Water reviews the rolling 10-year Capital Works Investment Plan. The program is reviewed considering existing and proposed projects, funds available and criticality of projects.

Capital expenditure relates to expenditure on assets that are greater than $500 and of a non-current nature, ie. assets that will be utilised over a period in excess of 12 months. A cost is capitalised if it either establishes or increases the life of a fixed asset.

Expenditure involved in the retirement of an asset, which is deemed to have no future benefit to Barwon Water and therefore is to be disposed of, is of a recurrent nature. This expenditure is not recorded under the Capital Works budget.

Before consideration for inclusion on the Capital Works Investment Plan, each project is required to have a submission that is endorsed by the relevant Branch Manager and Executive Manager. Each submission requires specific information regarding:

- detailed project background and justification
- summary of alternatives considered (including "do nothing" alternative)
- description of preferred option and justification of option selected
- risk assessment of a "do nothing" alternative using a standardised pre-weighted risk matrix
- proposed expenditure for each financial year
- breakdown of capital expenditure (e.g. design, consultation, components (pipe supply, fittings, construction)
- identification of approvals required and estimates of possible timeframes
- description of project milestones
- discussion on project delivery risk assessment
- identification of project drivers or purpose (in line with Essential Services Commission categories and definitions)

In most cases, consultants are used to prepare cost estimates for projects, normally as part of overall strategies such as Geelong and Bellarine Sewerage Management Strategies (resulting in 10 and 27 projects respectively for the regulatory period).

Internal estimates are used for remaining projects based on previous experience and expected market conditions. These projects are typically smaller, more than five years from implementation, and are based on the results from the asset management strategy as described in Section 6.3.

Demand forecasts have been updated in consideration of current drought conditions, climate change and Stage 4 restrictions and are used to identify project requirements and timing.

Requirements for projects as directed by government or regulators have been identified through consultation with all relevant bodies. Consultation with customers has also occurred through customer surveys and feedback forms.

All projects are compiled into a spreadsheet and the Capital Works Investment Plan Committee reviews each project on its merits as an individual project as well as priority in the context of, and ability to be delivered as part of, the overall Capital Plan. Projects are also assessed on the requirement to be delivered as requested in the submission.

Following agreement from the committee, the Capital Works Investment Plan is presented to the Executive and then the Board at their Strategic Planning workshop. Final Board approval of the Capital Works Investment Plan occurs through the presentation of the Corporate Plan at the April Board meeting.

6.3 Asset management

Barwon Water's replacement and rehabilitation approach is based on a comprehensive Asset Management Strategy, which includes a staged improvement program for Barwon Water's asset management systems. These asset management systems currently use a mixture of manual and computerised systems to determine the optimum time to replace or rehabilitate assets.

Consistent asset hierarchies have been developed for Barwon Water's above ground maintainable assets recorded in the Facilities Maintenance Management System and a risk management component has also been developed to use for the prioritisation of maintenance works and the determination of optimum asset replacement timings to minimise total system risk.

Another project that has been implemented is the Pipeline Asset Risk Management System developed by the CSIRO. The Pipeline Asset Risk Management System uses asset failure profiles determined by analysis of the existing failure data held in FOCUS to calculate the estimated future replacement expenditure on water reticulation mains required to maintain desired levels of service. Barwon Water has an internal system for prioritizing which individual water reticulation mains should be replaced.

The CSIRO are yet to develop similar software for sewerage reticulation mains so Barwon Water has developed its own system. Barwon Water's Sewer Infrastructure Management System has been developed to further improved identification and prioritisation of preventative maintenance programs and capital expenditure.

An allocation averaging just under $1M per annum has been included in the Capital Work Investment Plan for the replacement of larger water mains, calculated from historical spend and risk assessment of these assets. In relation to larger sewer mains, Barwon Water has an ongoing program of an average of $2M per annum to line the highest risk mains. Just over $0.15M per annum has been allocated to an ongoing odour and corrosion program, a key driver being to minimize degradation due to hydrogen sulphide gas.

Barwon Water's other key asset management system is the dam safety program. Barwon Water has a portfolio of 28 dam structures that meet the ANCOLD definition of "referable" dams. Barwon Water has developed the "Risk Assessment and Prioritisation Tool" to manage risks across the portfolio. Using the RAPT, dams risk with respect to either Life Safety Risk or Business Risk is identified and quantified relative to other dams within the portfolio. Risk rankings are assigned in accordance with assessed probability and consequence of dam

failure under flood, seismic, and static loading conditions. Current risk is then compared to target or "tolerable" risk to determine the magnitude of upgrade works required. The tool applies an ALARP (as low as reasonably practical) analysis to achieve the best risk reduction with available resources.

In addition to the systematic replacement and rehabilitation strategies managed by the operational branches outlined above, major upgrades of existing assets are also identified through key strategies developed by Barwon Water.

6.4 Key drivers of capital expenditure

The following sections provide further detail regarding some of the key drivers of capital expenditure over the upcoming regulatory period.

6.4.1 Emergency drought response

Due to the ongoing severity of drought conditions, several capital projects have been either created or brought forward to ensure security of supply is maintained.

Work was recently carried out on the transfer pumps and pipe work to enable Barwon Downs borefield to increase production from 33 megalitres per day to 55 megalitres per day in accordance with the existing licence maximum. On completion, Barwon Downs groundwater will be the major source of water to Geelong through the continuing drought, with Stage 4 average demand currently at around 80 megalitres per day to 60 megalitres per day. Further upgrades will be required of the pre-treatment plant and lagoons to accommodate the increased volumes ($1.5M over the regulatory period). In addition, the construction of two additional bores has been brought-forward to provide essential back up to the existing bores (estimated capital cost $5.1M with $3.1M).

6.4.2 Central Region Sustainable Water Strategy

The Anglesea borefield project, which is scheduled for delivery by 2011 in the Central Region Sustainable Water Strategy, has been fast-tracked, and is now scheduled for delivery by Spring 2008. The total estimated capital cost of this project is $70M, with $37M in the upcoming regulatory period.

Another project is the Northern Water Plant, which will result in the replacement of around 2,000 megalitres per year of potable water with recycled water. The current expected delivery date of the project is mid-2011. The estimated total capital cost for the project is $67M. This project will be funded by Barwon Water, Shell Australia, Victorian Government and the Commonwealth Government.

In June 2007, the Victorian State Government announced commitment to the Melbourne-Geelong interconnection project, as part of a suite of water supply projects to be implemented around Victorian. The project had previously been identified as a potential water resource option for Geelong in the *Central Region Sustainable Water Strategy*.

The project involves connection of the Melbourne and Geelong water supply systems by constructing a pipeline of approximately 50 kilometres from Cowies Hill in Werribee to Lovely Banks Basins in northern Geelong. Up to 16,000 megalitres per annum can be supplied to Geelong through the project.

Barwon Water is currently undertaking an investigation and functional design of the pipeline alignment, due for completion in September 2007. It is anticipated that detailed design and land acquisition will be carried out over 2008-2009 followed by a two-year construction period with a completion date in 2011. The Victorian State Government has committed $20 million to the project. Capital investment of $100M has been provided within the 2008 Water Plan Period. Significant work has commenced to establish the validity of this early estimate.

6.4.3 Regulatory obligations

Two townships in Barwon Water's region have been allocated funding for investigation under the State Government's Country Towns Water Supply and Sewerage Program for which allocation has been made in Barwon Water's Capital Works Investment Plan: - Birregurra (estimated capital cost $6.8M) and Wye River/Separation Creek ($4.8M). In addition,

allocation has also been made for infill sewerage at Moolap, which the Department of Sustainability and Environment has instructed Barwon Water to investigate (estimated capital cost $8.95M).

6.4.4 Servicing development

The change in funding of some development assets in accordance with the Essential Services Commission's current regulatory determination has necessitated the allocation of $16M over the next five years in Barwon Water's Capital Works Investment Plan. Armstrong Creek, the identified major growth zone for the City of Greater Geelong, will require around $12M of works to service development in this area.

6.4.5 Geelong and Bellarine sewerage management strategies

Over the last two years, Barwon Water has focused on increasing strategy development in order to forecast a more realistic and consistent expenditure over the longer term planning horizon. Two such strategies are the Geelong and Bellarine Sewerage Management Strategies, which have forecast capital expenditure of around $40M (not including the Northern Water Plant) and $70M respectively over the next 10 years and $5.8M and $44.5M respectively over the upcoming regulatory period.

6.5 Water capital expenditure

Barwon Water's detailed capital expenditure forecasts, by water asset category, are outlined below in further detail.

6.5.1 Water headworks

Barwon Water is proposing capital expenditure of approximation $162M on water headworks. This has increased from the current regulatory period due to the prolonged drought. Further to the large projects listed at table 6-2, are the following significant projects:

- Apollo Bay/Skenes Creek Bulk water supply
- Anglesea borefield
- Melbourne interconnection
- Colac pipeline replacement – Future stages
- Wurdee Buloc inlet channel reconstruction.

6.5.2 Water pipelines and network

Barwon Water is proposing to spend $107.6M on water pipelines and network. Key projects include:

- Lethbridge Water Supply Improvements
- Lovely Banks Basins lining and covering
- Jan Juc high level water supply system
- Bellarine Transfer Main Stage 5.

6.5.3 Water treatment

Barwon Water is proposing to maintain a fairly constant level of expenditure in relation to water treatment asset category, totalling $4M.

This expenditure is required in order to provide for:

- Moorabool water treatment plant asset renewal and system upgrades
- Meredith water treatment plan clarification
- Birregurra water treatment plant upgrade.

6.6 Sewerage capital expenditure

Barwon Water's detailed capital expenditure forecasts, by sewer asset category, are outlined in further detail below.

6.6.1 Sewerage pipelines and network

Barwon Water is proposing to spend $125.3M on sewer pipelines and network over the upcoming regulatory period.

This expenditure is required for a number of projects, including:

- Moolap sewerage scheme
- Servicing Armstrong creek urban growth areal
- Ocean Grove pump station number 4 upgrade
- Birregurra sewerage scheme
- Wye River/Separation Creek sewerage scheme.

6.6.2 Sewage treatment

Barwon Water is proposing to reduce level of capital expenditure on sewerage treatment facilities, relative to the current determination, with a proposed expenditure of $9.7M.

The key projects underpinning this expenditure include:

- Bannockburn water reclamation plant - Treatment system upgrade
- Anglesea water reclamation plant outfall upgrade

6.7 Recycled water capital expenditure

Barwon Water is proposing to increase level of capital expenditure on recycled water facilities over the upcoming regulatory period, with the key project being the development of the Northern Water Plant to free up potable water resources and increase sewerage system capacity. Barwon Water is forecasting $69.1M over the five-year period.

6.8 Corporate capital expenditure

Corporate expenses for the upcoming regulatory period will remain relatively inline with current expenditure for both water and sewerage, as seen in Table 6-3.

Table 6-3 Corporate capital expenditure ($M, real)

	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Water	2.89	3.75	5.28	4.97	3.20	20.09
Sewer	1.83	2.37	3.34	3.15	2.02	12.71
Total	4.60	5.96	8.40	7.91	5.09	32.80

Expenditure during the regulatory period include:

- Billing system replacement
- Meters – New replacement and conversions

7 Operating Expenditure

This Section sets out Barwon Water's forecast operating expenditure for the upcoming regulatory period. These forecasts are derived based on demand forecasts and activity levels to deliver the projected service level standards.

The Essential Services Commission's approach is to assess operating expenditure against a baseline business as usual level of costs based on current expenditure. For the upcoming regulatory period, the Essential Services Commission proposes to analyse operating costs trends against the actual expenditure in 2006/07, with explanation of shifts in expenditure

going forward. The Essential Services Commission also proposes to verify efficiency savings have been built into the forecasts for business as usual operating expenditure.

7.1 Base operating year

Barwon Water has forecast the 2006/07 operating expenditure based on six months of expenditure incurred for the 2006/07 year and six months forecast expenditure, adjusting for forecast changes in expenditure, assumptions with regards to demand and customer numbers, and anticipated productivity improvements. This figure will be updated for the full year actual expenditure for the final *2008 Water Plan* to be submitted in October 2007.

7.2 Overview of total operating expenditure

Barwon Water's forecast operating expenditure can be seen in Table 7-1. Barwon Water is forecasting total operating expenditure of $400.5M. This reflects an average annual allowance of $78.73M.

This reflects prudent and efficient forecasts for the upcoming regulatory period linking the organisations strategic objectives, customer expectations, regulatory obligations and management of prolonged drought including the operation of the northern water plant and a sustainable biosolids management. This level of expenditure is due to increased costs associated with meeting existing obligations, new obligations and increased resources.

The proposed operating expenditure does not include operating costs, or take or pay estimates for the Melbourne interconnection or operating cost for fluoridation.

Table 7-1 2008/09 – 2012/13 operating expenditure requirements

	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Operations & maintenance	24.49	23.35	20.36	19.87	20.19	108.26
Treatment	19.73	24.51	23.37	23.13	23.57	114.30
Customer service and billing	8.03	8.08	8.13	8.17	8.22	40.63
Corporate	26.52	24.16	24.55	25.01	24.95	125.20
Recycled water	1.19	0.82	0.70	3.69	3.85	10.25
Licence fees	0.36	0.36	0.36	0.36	0.40	1.83
Total	80.31	81.29	77.48	80.22	81.18	400.48

The proposed operating expenditure includes productivity savings through reassigning work programs to allow new obligations to be absorbed within existing business as usual expenditure. These are outlined in part C of the *Draft 2008 Water Plan*. It also reflects expenditure for training and professional development to ensure Barwon Water undertakes work in the most productive and efficient manner.

7.3 Allocation methodology

The allocation methodology used by Barwon Water is based on allocating the forecast expenditure that can be directly attributable to a business segment, activity area, or revenue source. The remaining amounts have been allocated in accordance with the Essential Services Commission's Regulatory Accounting Code.

The basis of allocation of costs across each business segments can be broken into three distinct methods:

- Barwon Water has service level agreements with the maintenance section of each major business segment. This forms a major portion of the costs that are allocated, with these based on a set charge per task. The allocation across the upcoming regulatory period is based on the forecast expenditure allocated on the basis of the 2005/06 actual expenditure outcomes. This accounts for 14.1 per cent of the water segment and 4.3 per cent of the sewer segment.
- a number of organisational business centres undertake tasks across the business. To capture the costs against the appropriate business segment, these tasks are charged to the relevant business segment using an agreed full cost recovery principle charged as an

hourly rate. The allocation across the upcoming regulatory period is based on the forecast expenditure, allocated on the basis of the 2005/06 actual expenditure outcomes. This accounts for 10.7 per cent of the water segment and 2.4 per cent of the sewer segment.

- corporate overheads that do not have a direct link to a business segment and are not allocated through the above methods are allocated through a predetermined basis. For example, building services are allocated on the basis of office floor space and human resource costs are allocated on the basis of employee numbers.

7.3.1 Labour

The $19.8M increase in labour expenditure over the upcoming regulatory period reflects two key drivers of costs.

Enterprise Bargaining Agreement

Barwon Water is subject to an *Enterprise Bargaining Agreement* applied to non-union employees (excluding executive and branch managers) and members of the Australian Municipal Administrative, Clerical and Services Union and the Association of Professional Engineers, Scientists and Managers.

The latest *Enterprise Bargaining Agreement* was certified in 2005 and provides for a series of wage and salary increases during the life of the agreement, which will expire on 11 February 2008. As with previous agreements, increases are contingent on meeting agreed financial, environmental and social targets.

As the new *Enterprise Bargaining Agreement* is yet to be agreed tor the purposes of the upcoming regulatory period, an annual 1.5 per cent real increase has been incorporated.

Resource requirements

There is a 6 per cent increase planned during the regulatory period. This will be instrumental in ensuring the organisation continues to meet performance standards and the extensive capital program. This includes the introduction of new treatment plants, management of Biosolids contracts; capacity to manage the requirements under the *Road Management Act 2004* and deliver proposed service standards.

7.3.2 Electricity costs

A significant component of the increase in operating expenditure for the upcoming regulatory period is the forecast cost of energy.

Barwon Water's current electricity contract expires on 30 June 2008. At this time, Barwon Water will need to re-negotiate the contract with the retailer. Recent discussions with the present energy retailer have indicated Barwon Water's current contract price for usage charge for electricity is 90 per cent lower than the current market price.

It is reasonable to assume the low usage charge in Barwon Water's current contract will not continue once it is re-negotiated. Nor will a new retailer be likely to accept a contract with such a low volume price if Barwon Water was to go to the market to seek alternate electricity retailers. Barwon Water considers it to be likely the 2007/08 market price will be even higher than the current market price.

Taking this into consideration, Barwon Water believes the usage charge will increase by more than the 90 per cent difference currently being observed. Therefore, Barwon Water is forecasting an increase in electricity usage charge by the current difference plus a further 10 per cent. With the current climate conditions forecast to continue for at least the first two years of the upcoming regulatory period, Barwon Water considers this increase in electricity costs in the *Draft 2008 Water Plan* is modest and will see it bear a large amount of risk that the new contract will, in fact, see the usage charge increase by greater than the 100 per cent difference.

Barwon Water considers by only increasing usage charge by the 100 per cent difference could see it under-recover on electricity costs by a large amount per annum should the new contract result in a higher usage charge given the proposed capital works program that is

being put forward and the high volume of electricity used by the current assets in place and the proposed assets for the upcoming regulatory period.

7.3.3 Customer service billing

Barwon Water has operated a billing system "BASIS" which requires replacement to accommodate the future business requirements including recording, analysis and reporting of data to assist in the provision of customer service and water conservation.

The total operating expenditure for the new billing system during the regulatory period is estimated at $1.5M. Through the allocation process this has been assigned to each service type.

7.3.4 Corporate costs

There are a number of corporate items that have contributed to the total business as usual operating expenditure increase and are reflected in three key drivers of costs;

- Pandemic preparation/self-insurance
- an increase in the Environmental Contribution
- an upgrade of the Information System.

The balance is made up of minor activities.

7.3.4.1 Pandemic preparation/self insurance

Barwon Water recognises the actions of governments and businesses in preparing for, and during, a pandemic will have a major impact on Australia's society, the economy and our ability to recover quickly. The Pandemic is listed as one of Barwon Waters' major risks during the upcoming regulatory period. Barwon Water has forecast expenditure to provide for:

- implementation of a business continuity plan including Pandemic Response Plan
- incorporating advice from the Department of Human Services including antiviral program (once it has established program)
- conduct organisational scenario activity
- conduct business impact analysis with individual areas.

7.3.4.2 Environmental contribution

The environmental contribution is an initiative of the State Government. Water corporations are required to contribute funding towards water related initiatives seeking to promote the sustainable management of water and to address adverse impacts to the environment associated with use.

Barwon Water has been advised by the Department of Sustainability and Environment an annual environmental contribution amount of $3.9M per annum will be required during the regulatory period. This reflects a 6.25 per cent increase as a result of inflationary increases. This forecast corporate expenditure has been allocated to sewer and water services based on connection data of 47 per cent and 53 per cent respectively.

7.3.4.3 Information systems

Barwon Water is replacing the existing Geospatial Information System (ProFIS) with a new web based system provided by Open Spatial. This new system currently has licence and maintenance agreement costs of $250K. The old system is no longer viable to be maintained due to changes in the Industry.

7.4 Water system

The water supply system forecast operating expenditure over the upcoming regulatory period is $203M. This includes an average annual increase on 2006/07 baseline costs of $5.7M.

The increase in the water system's business as usual operations and maintenance expenditure reflects three key drivers of costs.

- labour costs
- water supply management costs
- increased maintenance costs to maintain the required level of service.

The forecast increase in costs, relative to baseline figures, is outlined in Table 7-2.

Table 7-2 Forecast increase in operating expenditure ($M, real)

	2006/07 baseline	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Borefield management	TBA	0.75	0.69	0.13	-0.36	-0.36	0.85
Water resource planning & water restriction management	TBA	1.96	1.96	1.44	1.66	1.57	8.59
Customer service billing	TBA	0.06	0.19	0.22	0.25	0.28	1.00
Labour	TBA	1.18	1.33	1.49	1.64	1.79	7.43
Corporate costs	TBA	0.91	0.82	0.93	0.92	0.97	4.55
Total	TBA	4.86	4.99	4.21	4.11	4.25	22.42

7.4.1 Borefield management

With storage levels already low, the 2006 low inflows necessitated Stage 1 water restrictions being introduced for the Greater Geelong supply area in July 2006, increasing to Stage 4 water restrictions by December 2006. In addition, Stage 2 water restrictions were introduced in Colac in December 2006, with similar restrictions being implemented in Apollo Bay due to insufficient water storage.

In order to maintain security of supply during the current severe drought, Barwon Water has supplemented surface water for the Geelong system by pumping water from the Barwon Downs Borefield. The 2006/07 water system expenditure level of $35M includes five months of pumping at 35 megalitres per day and forecast expenditure for two months of pumping at 55 megalitres per day.

The upcoming regulatory period forecast expenditure levels are based on projected weather conditions and modelling using the past 10-year low inflow period. To ensure adequate water supply to the Greater Geelong system, water forecast expenditure levels include groundwater pumping at Barwon Downs Borefield of 20,000 megalitres for 2007/08 and 2008/09 until the implementation of the Anglesea borefield project. It is expected the Anglesea borefield will deliver 35 megalitres per day, with this reducing to four months of operation by 2010/11 and to only operational maintenance for both borefields by 2011/12.

7.4.2 Water resource planning and water restrictions

The water resources planning and water restriction management expenditure represents 38 per cent of the total Water system increase in costs. These costs reflect future security of water supply as set out through the *Central Region Sustainable Water Strategy*.

Barwon Water is expecting some permanent water savings through public actions carried out in response to the current drought. The forecast expenditure levels for the water conservation initiatives have been set based on delivering a reduction in per capita water consumption of 25 per cent by 2015 and 30 per cent by 2020. The reduction is measured from the 1994/95 per capita consumption levels.

During the regulatory period these actions will include:

- indoor residential retrofit
- pressure and leakage management
- modification to the current two-part pricing structure to send a stronger water conservation message.

In addition, non-residential customers will be required to assist in achieving water conservation targets, which will be achieved through the following actions:

- implementing Government's Water Management Action Plans
- fit for purpose use (an example of this is the Northern water plant)
- water audit and action plans
- support for funding applications

Water Resource Planning expenditure includes investigation into several significant water resource options, including:

- Aquifer storage and recovery investigation - recycling of water indirectly for potable use has been identified as a potential long-term water source option for the Geelong region. Barwon Water, in partnership with the State Government through the Victorian Water Trust (50 per cent split), will undertake more detailed investigation of this option to confirm feasibility;
- Newlingrook groundwater investigation - The Department of Sustainability and Environment has also committed to work with Barwon Water on the Newlingrook aquifer to determine whether it is a viable new water source. This will include scientific tests on the availability of water for extraction, the effect of extraction on surface water and other ecosystems and the completion of a feasibility study. Investigations shall be undertaken to allow a comparison against other water resource augmentation options by 2009.

7.5 Sewer system

The Sewer system forecast operating expenditure over the upcoming regulatory period is $185M. This includes an average annual operating expenditure increase on 2006/07 baseline costs of $10M.

The increase in the sewer system's business as usual operating expenditure reflects five key drivers of costs:

- labour costs
- biosolids management costs
- northern water plant
- provision to purchase energy
- increased maintenance costs to maintain the required level of service.

The forecast increase in costs, relative to baseline figures, is outlined in Table 7-3.

Table 7-3 Increase in operating expenditure for sewer system ($M, real)

	2006/07 baseline	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Northern Water Plant	TBA	0	1.57	3.07	2.88	2.89	10.41
Biosolids	TBA	4.17	7.02	4.52	4.68	4.94	25.33
Labour	TBA	0.66	0.78	0.89	1.01	1.13	4.47
Operating & maintenance	TBA	1.86	1.86	-0.01	0.05	-0.01	3.75
Corporate costs	TBA	0.75	0.84	0.84	0.84	0.84	4.11
Total	TBA	7.44	12.07	9.31	9.46	9.79	48.07

7.5.1 Northern Water Plant

The development of the Northern Water Plant is a key component of the preferred sewerage strategy.

Construction will be completed and the plant commissioned by 2011/12 with operating costs over the upcoming regulatory period of $10.4M. This will provide increased sewerage system capacity in northern Geelong and therefore contributes to meeting sewerage flow containment objectives in the northern Geelong area. The plant will provide a reduction in treated

wastewater discharge to the ocean, contributing to meeting *State Environment Protection Policy Waters of Victoria* requirement to reduce mixing zones around ocean outfalls.

The plant will also reduce potable water demand by 2,000 megalitres, contributing to Barwon Water meeting per capita water consumption targets as required in the *Central Region Sustainable Water Strategy* and detailed in Barwon Water's *Water Supply-Demand Strategy.*

7.5.2 Biosolids management

Barwon Water is developing an environmentally sustainable, long-term management scheme for the beneficial use of biosolids produced at the Black Rock water reclamation plant and other regional water reclamation plants.

After a full Partnerships Victoria procurement process the preferred proponent is currently completing pilot testing to demonstrate the effectiveness of the proposed treatment process. It is expected a contract will be awarded in July 2007. The design, construction, operation and financing of a biosolids treatment facility is forecast to be completed in 2008/09. Forecast operating expenditure of $35M for the long term solution are based on expected quantities of biosolids processed. The impact on pricing is reduced with the phasing out of the interim solution.

7.5.3 Operations and maintenance

Delivering proposed service levels

The high number of sewer blockages during 2006/07 is attributed to continued dry conditions and the significant reductions in domestic flows entering the collection system. This has directly led to increased expenditure levels to maintain the same level of service including additional forecast expenditure allocated to specific preventative programs of work to address the increasing incidence of sewer blockages. Forecast expenditure of $1M per annum to undertake additional root foaming works and scheduled drain cleaning in high-risk locations.

Green energy purchasing

From a long-term sustainability perspective, Barwon Water needs to ensure it does not contribute to the ongoing accumulation of greenhouse gases in the atmosphere, while at the same time we need to continue providing an efficient service to our customers.

As mentioned in more detail in section 4, 74 per cent of respondents said they would be willing to pay an additional $1.00 per annum.

A forecast expenditure of $0.1M per annum will be invested in green energy programs. It is estimated this payment will enable a 7 per cent reduction in greenhouse gas emissions by June 2013 compared to current emissions. This is equivalent to 13 per cent reduction, taking into consideration the additional emissions needed under a 'business as usual' model involving forecast increased population and industrial activity.

Outfall disinfection – Black Rock water reclamation plant

Barwon Waters forecast operating expenditure includes the operation of an 'in-pipe' chlorination dosing system i.e. Dosing directly to the marine outfall pipe at a forecast operating expenditure of $0.4M.

7.5.4 Recycled water

The recycled system forecast operating expenditure for the upcoming regulatory period is $10.25M.

Barwon Water's recycling policy is aimed at establishing the use of recycled water as a key element in sustainable management of a limited resource. Barwon Water will encourage the commercial use of this valuable water resource while ensuring the highest environmental standards in land-use and recycled water management

Barwon Water is continuously working with private industry to develop future recycled water schemes to ensure an alternative water source is a consideration, however estimates for what this demand is likely to be is currently unavailable.

7.6 Licence fees

Water businesses are required to pay licence fees as a contribution to the costs incurred by agencies that regulate aspects of their activities.

In particular, licence fees are payable as set by:

- the Minister for Health under s.51 of the *Safe Drinking Water Act 2003*, for costs incurred by the Department of Human Services in administering the Safe Drinking Water Regulations;
- the Minister for the Environment under s.24 of the Environment Protection Act 1970, for the costs incurred by the Environmental Protection Authority in administering discharge fees and work approvals; and
- the Minister for Finance in consultation with the Minister for Water under s.4H(2) of the Water Industry Act 1994, for costs incurred by the Essential Services Commission in administering the economic regulatory framework.
- the Licence forecast operating expenditure over the upcoming regulatory period is $1.8M.

7.7 Productivity initiatives

Barwon Water believes water businesses should be expected to enhance their productivity over time, in line with the natural uptake of more efficient functions and processes, along with the adoption of better technology. All of which will allow them to reduce the cost of providing certain services, everything else being equal.

Notwithstanding this, Barwon Water emphasises the Essential Services Commission needs to be cognisant of the fact Barwon Water faces a number of other underlying cost drivers outside the control of management (eg: volumes, customer numbers, exogenous risks, Enterprise Bargaining Agreements for labour costs, water conservation initiatives, tender/contract prices), that may in fact lead to increases in the efficient cost of running Barwon Water's business. Productivity improvements need to be assessed in the context of these other drivers of cost.

As such, Barwon Water has not arbitrarily applied a straight one per cent productivity target to the overall baseline operating expenditure, or to total operating expenditure. Barwon Water has utilised a more disaggregated basis for developing operating expenditure forecasts, which has not only taken into account the Essential Services Commissions one per cent productivity improvements, but also changes in cost drivers, whether positive or negative, over time.

Therefore, embedded within Barwon Water's operating expenditure forecasts are, amongst other things, productivity improvements of one per cent, reduced costs due to the removal of certain programs over time, and a reduction in costs in the future due to expected changes (improved) in water supply conditions (see the sections on 'Borefield Management' and 'Water Resources Planning and Water Restrictions' for examples of this). Furthermore, in some cases, Barwon Water has offset some of these productivity improvements through the maintenance of current service standards, despite the expected continuation of drought conditions, which would have otherwise reduced service levels in the future.

A key means of ensuring Barwon Water maintains operations in a manner not detrimental to service levels and is perpetually managed in a cost efficient manner is by way of the Enterprise Bargaining Agreement Efficiency Group. The charge of this group is to identify projects and processes that can employ alternate methods to achieve the desired outcomes, but at a lower cost to the organisation.

8 Non-Prescribed Services

8.1 Nature of services

Barwon Water's non-prescribed services are often provided in direct competition with the private sector and as a result details relating to some of these services are commercially sensitive.

This section of the *Draft 2008 Water Plan* provides a high level overview of the type of service provided, aggregate forecasts of revenues and expenditure.

8.1.1 List of Services

The non-prescribed services provided by Barwon Water include:

- Laboratory building lease
- Marketing services
- Sale of recycled water farm produce
- Meter testing
- Other rental
- Sale of electricity

Table 8-1 provides summary information relating to non-prescribed services.

Table 8-1 Non prescribed service summary

	2008/09	2009/10	2010/11	2011/12	2012/13
Revenue	1.55	1.55	1.41	1.27	1.14
Operating expenditure	1.23	1.23	1.09	0.96	0.82
Gross capital expenditure	0.01	0.01	0.01	0.01	0.01
Government contributions	-	-	-	-	-
Customer contributions	-	-	-	-	-
Net capital expenditure	0.01	0.01	0.01	0.01	0.01

9 Incentive Mechanisms

9.1 Introduction

Barwon Water has been continually introducing innovative work practices and driving business efficiencies. This has included an extensive process of reform and review of operating structures to achieve operating and capital cost reductions. Changes have focused on operating on a more commercial basis, with progressively greater emphasis on the financial performance of the business while ensuring the focus on environment and social issues are not compromised.

Real operating cost reductions are primarily the result of improved asset management, improved operational process, rationalisation of non-core functions, sales and development of surplus property, efficiencies gained in contract renegotiation and the introduction of new technology.

9.2 Efficiency carryover mechanism

The Essential Services Commission is considering applying an efficiency carryover mechanism to the Victorian water industry. This concept was first identified during the 2005 Urban Water Price Review, at which time the decision as to whether it would be applied to the first regulatory period was left open, subject to the actual performance of businesses over the current regulatory period.

The Essential Services Commission has recently confirmed that due to a number of factors since the commencement of the first regulatory period, it sees little merit in applying an efficiency carryover mechanism across the water sector for the first regulatory period. Barwon Water supports this decision.

However, the Essential Services Commission is still considering whether an efficiency carryover mechanism should be applied for the upcoming regulatory period and if it is applied, how it should be designed to be consistent with the requirement in the *Water Industry Regulation Order* to pursue efficiency improvements.

It is important to note, while Barwon Water is not a privately owned Corporation seeking to maximise profits, it still considers the introduction of an efficiency carryover mechanism in light of providing certainty to the Water industry and customers alike on the treatment of efficiency gains. Barwon Water requests the Essential Services Commission provide the Water Corporations and the customers with this certainty by outlining future intentions with regards to the efficiency carryover mechanism before the start of the upcoming regulatory period.

In this regard, the Essential Services Commission's *2008 Water Price Review Guidance Paper* raised two specific issues for consideration:

(a) Whether the efficiency carryover mechanism used by the Essential Services Commission in other infrastructure industries is likely to be appropriate; and

(b) What practical difficulties and limitations arise in implementing these financial incentive mechanisms in the water sector.

As Barwon Water indicated to the Essential Services Commission on previous occasions, it does not support an efficiency carryover mechanism for the water sector's upcoming regulatory period. In particular, Barwon Water questions whether the circumstances and issues, other than the length of the regulatory period, which prevented the application of an efficiency carryover mechanism for the current regulatory period, have changed significantly to warrant development for the upcoming regulatory period. Furthermore, Barwon Water believes any mechanism is likely to be extremely complex, with significant reconciliations and adjustments required to account for volumetric variations and exogenous events, which would impact on the overall benefits and costs of introducing such a mechanism for such a large number of businesses.

Barwon Water has taken the opportunity to put forward preliminary views on a number of the key issues it believes the Essential Services Commission must consider in depth as part of the 2008 Water Price Review.

9.2.1 Rationale for an efficiency carryover mechanism

Barwon Water acknowledges the Essential Services Commission's responsibilities with regard to incentive regulation and the implicit objective that gains are possible for both the business and customers if the business is incentivised to increase the ongoing efficiency and effectiveness of operations.

Typically, regulated businesses have been encouraged to out-perform a pre-determined benchmark level of efficiency with the incentive that any financial gains from doing so are retained by the business, at least until the end of the regulatory period. Underlying this approach is the assumption these benefits are passed onto consumers in the form of lower prices at the start of the next regulatory period.

The efficiency carryover mechanism is designed to provide regulated businesses with the ongoing (and equal) incentive to seek efficiency improvements throughout the entire regulatory period. This incentive is provided by ensuring any efficiency gains are retained entirely by the business for a predetermined length of time, even extending over more than one regulatory period, before they are then shared with customers.

9.2.2 Efficiency carryover mechanism in other industries and jurisdictions

Barwon Water believes prior to the Essential Services Commission considering any form of efficiency carryover mechanism to be applied to the Victorian water sector, it must critically

review experience of implementing such a mechanism for the Victorian electricity distribution industry as well as the mechanisms used to encourage efficiency improvements in regulated industries in other jurisdictions.

Other jurisdictions in Australia have not implemented any structured efficiency carryover mechanism for regulated water businesses, although there is some support for development in the energy sector. More specifically, the key findings stemming from Barwon Water's review of efficiency carryover mechanisms operating in the energy industry are:

- a growth adjustment factor (eg: customer numbers, volumes) has been applied in order to isolate the efficiency gains associated with management initiatives, relative to those driven by events such as changes in customer numbers and / or volumes (Essential Services Commission – Electricity);
- there has been a move away from applying an efficiency carryover mechanism on capital expenditure (Essential Services Commission – Electricity);
- those regulators that have adopted an efficiency carryover mechanism have generally allowed businesses to retain the benefits for five years (Essential Services Commission / Essential Services Commission of South Australia);
- regulators have not allowed negative carryover amounts to be carried forward to future regulatory periods (Essential Services Commission of South Australia – 2005-10 electricity review); and
- some regulators have not applied an efficiency carryover mechanism, as they have concluded the benefits of adopting some form of efficiency carryover mechanism had not yet been demonstrated, and if such a scheme were to be introduced, the costs would outweigh the benefits (ICRC / IPART).

9.2.3 Issues for consideration

Barwon Water acknowledges one of the fundamental premises of incentive based regulation is to provide a continuous incentive for regulated businesses to reveal their efficient costs. This benefits both the regulated business, through higher profits in the short term, and customers, through lower prices in the long term. The efficiency carryover assists in providing this incentive.

Notwithstanding this, Barwon Water is of the view in practice, an efficiency carryover mechanism for the Victorian water sector could be costly to establish and maintain, especially given the large number of water service providers, many of which are small businesses compared to the electricity distributors subject to an efficiency carryover mechanism, and the continuing uncertainty for the sector in light of the prolonged effects of the drought.

As part of the consideration as to whether the benefits of an efficiency carryover mechanism would outweigh these costs, Barwon Water believes the Essential Services Commission must at least address the following issues:

- consistent with regulatory precedence, the Essential Services Commission has proposed to allow the retention of benefits for a five-year period. In net present value terms, this results in a sharing ratio whereby the regulated businesses receive around 30 per cent of the long-term benefits. Barwon Water considers this sharing ratio be considered to ensure it provides an appropriate incentive for businesses.
- the definition and measurement of efficiency and what constitutes an efficiency gain or loss is a fundamental component of an efficiency carryover mechanism. The water businesses must have a clear understanding of how the Essential Services Commission will identify efficiency gains and losses separately from changes in the cost structure beyond the control of management. In this regard, there are a number of interdependent issues:

- How the Essential Services Commission would take into account volumetric differences between actual outcomes and the forecasts, and changes in service standards, relative to base line service standards. It is accepted the Essential Services Commission has to formulate benchmark cost forecasts based on a range of assumptions, including the levels of customer demand, levels of service, and external obligations on a business. However, it may not be a reflection of an operator's level of efficiency, or inefficiency, where those assumptions prove not to reasonably reflect reality, particularly in light of the ongoing demand and supply restrictions in association with drought conditions, or through sustained increases in levels of service.

  We note the Essential Services Commission's decision on the efficiency carryover amounts to be included in the 2006-10 revenue requirements for the Victorian electricity distributors included growth adjustments to 2001-05 expenditure forecasts to account for cost consequences of the difference between forecast and actual demand. We would expect any efficiency carryover mechanism applied to the water sector would provide for similar adjustments to be made to adjust the benchmark forecasts costs up or down as required.

- How and when adjustments to the efficiency carryover calculation would be made to account for asymmetric events (e.g. earthquakes and terrorism events). Barwon Water would expect some events can be identified as having discrete, once-off impacts, would be treated as pass-through events, whilst others have ongoing impacts and/or change the fundamental cost structure of the business will be accounted for by adjustments to the benchmark cost forecasts. In either case, the expectation is the costs associated with such events should be excluded from the efficiency carryover mechanism calculation, as they are outside management control, and furthermore, they are unlikely to be embedded within a regulated businesses baseline operating cost forecasts.

- If an efficiency carryover mechanism is introduced to the water sector, Barwon Water supports the application to operating expenditures only.

- Barwon Water agrees with the Essential Services Commission's stated position (Guidance Paper) that "the carryover amounts should only be applied where the net increment to the revenue requirement over the whole of the regulatory period would be positive, after adjusting for the time value of money". Barwon Water interprets this as meaning efficiency gains/losses incurred in one year would be offset against any efficiency gains/losses in subsequent years, WITHIN a regulatory period, but there would be no negative carryover carried forward into future regulatory periods.

- Barwon Water supports the use of business' fifth year Water Plan forecast for operating costs to be included within the efficiency carryover calculation, with this being adjusted to take account of the impact of exogenous events and volumetric changes.

In conclusion, Barwon Water understands in principle, the potential advantages associated with adopting an efficiency carryover mechanism for operating expenditure within the water industry. However, there a number of uncertainties the Essential Services Commission would need to clarify before it would consider supporting such a mechanism.

9.3 Service incentive mechanisms (S-factor)

9.3.1 ESC guideline for the 2008-2013 regulatory period

As highlighted on page 47 of the *Guidance Paper 2008 Water Price Review.* The Essential Services Commission has decided against the use of an S factor mechanism in the current regulatory period.

In addition, the Essential Services Commission confirms it does not propose to introduce an S factor adjustment mechanism across the water sector in the upcoming regulatory period and it does not expect businesses to address the issue in their Water Plans. This decision is a result of the Essential Services Commission expecting businesses to only maintain service levels consistent with the three-year average, therefore the S-factor will not provide any significant incentive unlike the electricity sector where the S factor adjustment mechanism was

implemented in conjunction with the expectation of large increases in service reliability and corresponding expenditure levels to deliver these outputs.

Barwon Water supports the Essential Services Commission's proposal of not implementing s-factor mechanism for the first and second regulatory period.

10 Financing Capital Investments

10.1 Introduction

This section provides Barwon Water's proposal for the regulatory asset value, return on and return of capital, rate of return and income tax considerations that have been applied for the 2008 regulatory period.

10.2 Regulated asset value

The regulatory asset value provides the basis for which the return of capital (depreciation) and return on capital are calculated in the building block approach.

10.2.1 Roll forward of asset value from 2005

The Essential Services Commission states in their Guidance Paper the regulatory asset value represents "the value, as assessed by the Essential Services Commission, of past capital investments". Furthermore, in the Guidance Paper, the Essential Services Commission has proposed an overarching process for rolling forward the regulatory asset value is consistent with regulatory precedence. At a conceptual level, Barwon Water agrees with the Essential Services Commission's proposed process for rolling forward the regulatory asset value. In particular, Barwon Water believes the opening regulatory asset value for the next regulatory period must be based on the:

- opening RAB from the previous regulatory period
- adjusted for actual capital expenditure where available (2005/06 and 2006/07)
- adjusted for estimated capital expenditure where actual capital expenditure isn't available (2007/08)
- less contributions and disposals of assets
- less regulatory depreciation.

Whilst it is not specifically mentioned in the *Guidance Paper*, Barwon Water assumes the figure derived from the process mentioned above would need to take into account an estimate of the rise in cost levels that have affected the cost of that asset over time (ie. to index the asset to up to current dollars). This is consistent with the Essential Services Commission's Final Decision (page 47), which states:

'*the Essential Services Commission will adjust the components of the regulatory asset base for inflation over time, which implies that financial maintenance is preserved in real terms, and depreciation reflects the return of the real cost of the asset'.*

In accord with the *Water Industry Regulation Order*, the establishment of the initial value of assets in place at 1 July 2004 (opening regulatory asset value) was set at $357M by the Essential Services Commission and approved by the Minister. In accord with standard regulatory practice, the Essential Services Commission has advised the value will be adjusted over time to reflect actual inflation. This provides an increase of $26.8M, increasing the opening 2004/05 asset base to $383.78.

Table 10-1 Opening regulatory asset value ($M, real)

	2004/05	2005/06	2006/07	2007/08
Opening asset base	383.78	405.40	423.60	451.62
plus Gross capex	43.28	34.36	44.34	88.95
less Government contributions	0.00	0.00	0.00	2.01

	2004/05	2005/06	2006/07	2007/08
less Customer contributions	11.03	3.34	1.67	1.84
less Proceeds from disposals	1.22	1.54	1.31	1.39
less Regulatory depreciation	9.42	11.28	13.33	15.23
Closing asset base	405.40	423.60	451.62	520.10

However, whilst Barwon Water agrees conceptually to the Essential Services Commission's proposed approach for rolling forward the regulatory asset value, it proposes to roll in an updated forecast of capital expenditure for the 2007/08 year, rather than the capital expenditure forecast underpinning the *2005 Water Plan*. Refer to Table 10-1 above.

10.2.2 Estimating 2007/08 capital expenditure

As Barwon Water stated in response to the Essential Services Commission's initial *Guidance Paper*, that to ensure the most indicative revenue requirement is calculated when utilising the building blocks approach the regulatory asset value must include actual data, where available, and the most up-to-date forecast data for years where this data is not available. This represents the most accurate estimation of likely capital investment and associated regulatory asset base value to calculate the return on investment component of the revenue requirement. Barwon Water understands this has regulatory precedence, with the Australian Competition and Consumer Commission adopting a similar approach when regulating GasNet.

This is particularly important during this review process, as the circumstances in which capital forecasts are currently being developed differ considerably to those existed when the *2005 Water Plan* was developed. In particular there are a number of external influences on capital expenditure, such as diminishing water supply/demand balances, which no water authority could have predicted in 2004.

Given the current conditions facing water utilities that no water utility could have foreseen at the time of the *2005 final determination*, Barwon Water considers it important it is able to roll in updated capital expenditure forecasts to the regulatory asset value. Barwon Water does note some perceived difficulties in doing this, which are discussed below.

10.2.2.1 Prudent and efficient capital expenditure

Barwon Water is willing to assist the Essential Services Commission to facilitate assessment of the prudence and efficiency of the 2007/08 capital expenditure forecasts. In relation to the development of the 2007/08 capital expenditure budget:

- the majority of the medium to large water and sewerage asset cost estimates are obtained from consultants, normally as part of overall strategies. Furthermore, Barwon Water also had servicing plans developed by consultants in consultation with local government, which provides justification of the cost and timing of assets required to meet new development;
- the capital budget is thoroughly reviewed as part of the development of the overall Corporate Plan. The capital plan is compiled with focus placed on deliverability and the necessity to undertake work now or defer it. The Corporate Plan is presented to Barwon Water's Executive followed by the Board at the Board Strategic Planning Workshop. Final Board sign-off occurs at the April Board meeting prior to the beginning of the next financial year.

10.2.2.2 Incentives for managing capital program

Barwon Water believes the exogenous nature of the drought means the rolling in of a revised capital expenditure forecast will not mute the incentive for Barwon Water to be efficient in capital planning and capital delivery processes. Furthermore, Barwon Water agrees with the Essential Services Commission that "*given the unprecedented severity of the drought it would also be reasonable for customers to bear some of those risks through increased prices during*

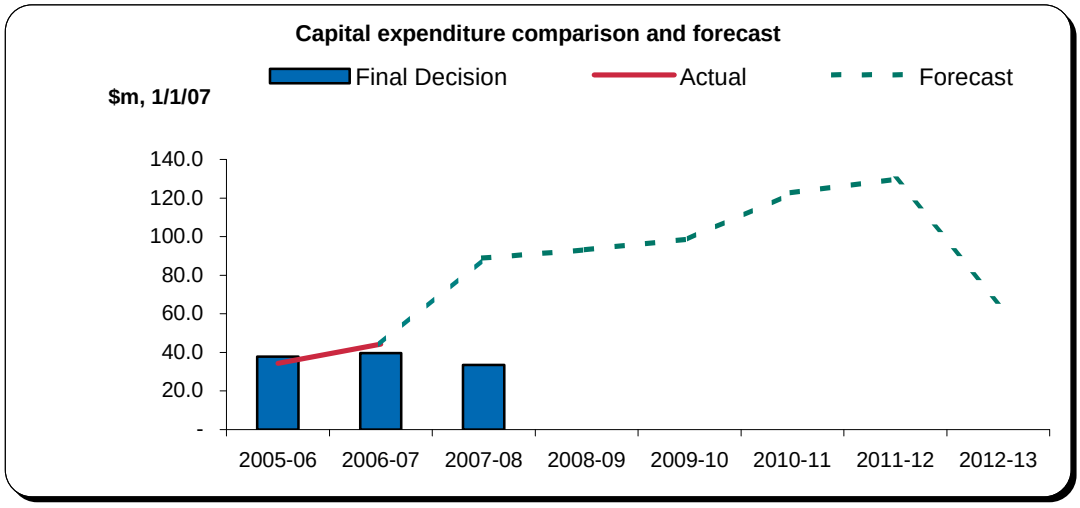
the regulatory period[3]". Whilst the Essential Services Commission stated this in relation to the adoption of an adjustment mechanism for the forthcoming regulatory period, Barwon Water sees no reason why this principle should not underpin decisions with regard to the rolling forward of revised 2007/08 capital expenditure forecasts into the regulatory asset value.

10.2.2.3 Rebalancing capital expenditure to last year

Barwon Water acknowledges by allowing water businesses to provide updated capital expenditure forecasts for the last year of the regulatory period, there is a possibility that regulated businesses may over recover the true financing costs of their overall capital expenditure program for the regulatory period. This would occur if businesses have underspent in early years and then sought to increase their overall capital expenditure budget in the final year. In some cases, where projects were deferred, this would lead to a double counting of the costs of financing capital works.

Barwon Water's spending has been consistent with forecasts for the first two years of the regulatory period (see Figure 10-1). It has not recouped additional financing costs above the level of the actual capital program. Without rolling forward the 2007/08 capital expenditure forecast, Barwon Water would experience a significant shortfall in the recovery of the financing costs of this necessary investment.

Figure 10-1 Capital expenditure comparison and forecast



10.2.3 Return of capital (depreciation)

Regulatory depreciation provides for the recovery of expenditure on investment and establishes the timing of related cash flows. Barwon Water has continued to apply straight-line depreciation for this regulatory period. The establishment of asset classes was based upon asset functionality and use, and where possible, grouping assets with similar expected useful lives.

The depreciation or return of capital of the rolled forward regulatory asset value has been calculated at an asset class level. The remaining asset lives of each class of asset are based on the remaining life accounting values.

Depreciation rates for new capital investment have been set based on the average rate of depreciation for that particular asset class. As states, asset classes group assets on a functional and expected useful life basis. The rates utilised in the templates are reproduced in Table 10-2.

[3] 2008 Water Price Review Guidance Paper – Page 9 – March 2007

Table 10-2 Regulatory depreciation lives

Asset Class	Depreciation Rate (%)
Buildings	1.25
Information Technology	27.25
Land	0.00
Plant & Equipment	15.00
Sewer Collection Civil	1.75
Sewer Collection Mechanical & Electrical	5.00
Sewer Treatment & Disposal Civil	1.75
Sewer Treatment & Disposal Mechanical & Electrical	5.00
Water Distribution Civil	1.75
Water Distribution Mechanical & Electrical	5.00
Water Infra Harvesting & Transfer Civil	1.50
Water Infra Harvesting & Transfer Mechanical & Electrical	5.00
Water Treatment Civil	1.50
Water Treatment Mechanical & Electrical	5.00

10.2.4 Disposals

Asset disposal activity has been forecasted considering planned asset retirements and historical data. There is a relative constant or core level of asset disposals due to the cyclical replacement program for various types of plant and equipment. This is reflected in both proceeds and written down value estimates.

10.3 Regulatory asset value 2008-2013

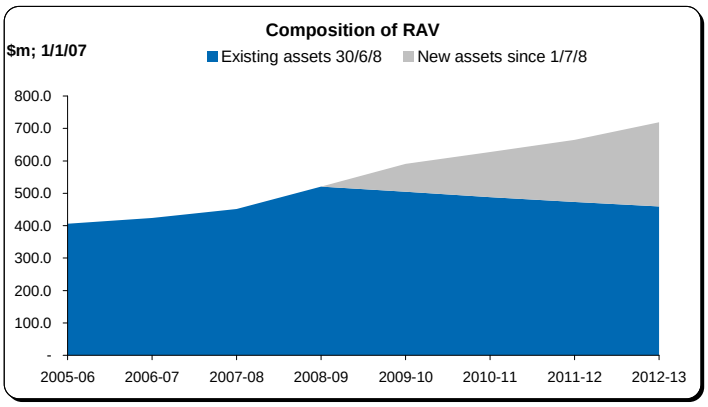
Table 10-3 shows the forecast closing regulatory asset value at 20012/13 is $835.24M being a 47 per cent increase over the upcoming regulatory period.

Table 10-3 Regulatory asset value 2008-2013

	2008/09	2009/10	2010/11	2011/12	2012/13
Opening asset base	520.10	586.29	629.99	706.89	796.73
plus Gross capex	93.25	98.89	122.79	129.78	66.76
less Government contributions	8.04	33.85	21.30	14.13	-
less Customer contributions	1.93	1.96	2.44	2.03	2.07
less Proceeds from disposals	1.41	1.43	1.43	1.43	1.44
less Regulatory depreciation	15.69	17.96	20.72	22.35	24.74
Closing asset base	586.29	629.99	706.89	796.73	835.24

This represents a significant investment in both water and sewer projects with funding including significant government and customer contributions.

Figure 10-2 Composition of regulatory asset value



10.4 Return on capital

10.4.1 Calculating weighted average cost of capital

As part of the Water Plan, each water business is required to propose an estimate of the rate of return using a real post-tax weighted average cost of capital. In relation to the weighted average cost of capital, the Essential Services Commission has endorsed the application of a real after-tax vanilla weighted average cost of capital calculation and the Capital Asset Pricing Model to estimate the after-tax return on equity.

10.4.2 The real vanilla post-tax WACC equation

The real vanilla WACC formula is as shown:

$$WACC = R_e.\left(\frac{E}{E+D}\right) + R_d.\left(\frac{D}{E+D}\right)$$

where:

R_e = the (real) after tax return on equity

R_d = the (real) cost of debt

$\left(\frac{E}{E+D}\right)$ = the proportion of equity in the capital structure

$\left(\frac{D}{E+D}\right)$ = the proportion of debt in the capital structure

The CAPM formula for calculating an estimate of the real after-tax return on equity is as shown:

$$R_e = R_f + \beta_e.\left(R_m - R_f\right)$$

where:

R_f = the estimated real risk free rate of return

$ß_e$ = the estimated equity beta

$(R_m - R_f)$ = the market risk premium (required return over the risk free rate)

10.4.3 Weighted average cost of capital values

The Essential Services Commission's *Guidance Pape*r has provided an indicative WACC of 5.1 per cent based on the market data for the 20-day period from 7 February 2007 to 6 March 2007. This is similar to the value of weighted average cost of capital used in the current prices (5.2 per cent), with the difference attributed to movements in the real risk free rate and the debt premium.

Barwon Water is aware the Essential Services Commission's indicative rate is intended to be a guide for water businesses when preparing their draft water plans and an updated weighted average cost of capital will subsequently be released by the Essential Services Commission for use in the final water plans. Furthermore, the Essential Services Commission has also indicated there is no obligation for a business to use the indicative weighted average cost of capital and each business is free to calculate and propose a different weighted average cost of capital figure. In this regard, Barwon Water has undertaken a review of the input parameters of the weighted average cost of capital calculation and proposes a draft weighted average cost of capital of 5.9 per cent, which is 0.8 per cent higher than the Essential Services Commission's indicative weighted average cost of capital.

As discussed further below, there are two primary reasons for the higher estimated weighted average cost of capital calculated by Barwon Water. Firstly, Barwon Water believes there is recent regulatory precedence in the water sector of other jurisdictions for a higher equity beta ($ß_e$) than proposed by the Essential Services Commission.

Secondly, Barwon Water also believes there is scope in the calculation of the weighted average cost of capital to include a '*small company premium'* that recognizes smaller companies tend to have more limited access to capital markets and higher than average cost of capital. In this regard, we have considered the value of small company premiums included in the cost of capital calculations for water companies in the United Kingdom and included a premium of 0.6 per cent in the calculation of the weighted average cost of capital for Barwon Water.

The value of each of the input parameters used to calculate each of the proposed weighted average cost of capital values is shown in Table 10-4.

Table 10-4 Weighted Average Cost of Capital Calculation

2008 WATER PRICE REVIEW
ESTIMATED WACC CALCULATION

		WACC Parameters		
		Current Price Review (2005-08)	ESC Indicative	Barwon Estimate
Risk Free Rate (Real)	R_f	2.70%	2.60%	**2.56%**
Debt Premium	D_m	1.20%	1.11%	**1.20%**
Market Risk Premium	$(R_m - R_f)$	6.00%	6.00%	**6.00%**
Equity Beta	$ß_e$	0.75	0.75	**0.85**
Gearing (Debt/Assets)	D/(E + D)	60.00%	60.00%	**60.00%**
Franking credit value	γ	0.5	0.5	**0.5**
Cost of Equity	$R_e = R_f + ß_e.(R_m - R_f)$	7.20%	7.10%	**7.66%**
Cost of Debt	$R_d = R_f + D_m$	3.90%	3.71%	**3.76%**
Small Company Premium	S	n.a.	n.a.	**0.60%**
Vanilla' After Tax Real Weighted Average Cost of Capital				
WACC	$R_e.(1-D/V) + R_d.(D/V) + S$	**5.20%**	**5.10%**	**5.90%**

10.4.4 Review of weighted average cost of capital input parameter values

10.4.4.1 Real risk free rate

In principle, the risk free rate is intended to represent the yield on a risk free investment (i.e. an investment with zero default risk). As the risk free rate is not directly observable in financial markets, a proxy variable is used instead with the redemption yield on a benchmark long-term government security typically used in decisions by Australian regulators. Since the 2002 decision by the Australian Competition Tribunal in relation to GasNet's appeal against the Australian Competition and Consumer Commission's revisions to the access agreement, the yield on the benchmark 10-year Treasury bond is accepted as the most appropriate proxy

for the nominal risk free rate. The current benchmark 10-year nominal government bond is represented by the bond with a maturity date of 15 February 2017.

Similarly, the yield on an Indexed Linked Government Bond with a term to maturity consistent with the nominal 10-year government bond is regraded as the most appropriate proxy for the real risk free rate. However, there is currently no equivalent 10-year Indexed Linked Government Bond with a maturity date in February 2017. Therefore, we have estimated the yield by linearly interpolating between the yields of the Indexed Linked Government Bonds with a maturity dates of 20 August 2015 and 20 August 2020. We also converted the quarterly yields published by the Reserve Bank into effective annual rates.

We note it has now become standard practice in regulatory determinations to adopt some period of historical averaging in estimating the risk free rate of return rather than rely on a rate based on one day. This avoids any distortion or bias in the data on any particular day caused by a temporary market anomaly. In previous regulatory reviews the Essential Services Commission has adopted a 20-day sampling window, consistent with most other regulators around Australia. Barwon Water agrees with this approach and has calculated a real risk free rate based on the average yield over the 20 trading days ending 26 March 2007.

Based on the above approach, Barwon Water has estimated a real risk free rate of 2.56 per cent. We understand the WACC value used by the Essential Services Commission in the draft and final reports will reflect the 20-day average of yields at a date in the future.

10.4.4.2 Equity beta

The capital asset pricing model methodology assumes business risk factors can be considered to fall into one of two categories – non-systemic (diversifiable) risks and systemic (non-diversifiable) risks. Non-systemic risks are a function of the unique characteristics associated with a particular assets or group of assets, whereas systemic risks are related to the broad economic or market factors that affect the value of all assets.

A principle tenet of the capital asset pricing model is non-systemic risks can be managed or eliminated by holding a range of assets in a well diversified portfolio of investments. In effect, diversification means the negative impact on expected investment returns from underperforming assets will be equally offset by the positive impact on expected investment returns from high performing assets. However, diversification cannot eliminate systemic risks since it affects the whole market.

Under the capital asset pricing model methodology, the equity beta ($ß_e$) refers to the relative riskiness of a particular business compared to the market as a whole. Alternatively, the equity beta factor reflects the extent to which expected future returns of a business will co-vary with the risks and expected returns from the overall market. The equity beta is a statistical assessment of the degree of undiversifiable risks associated with a business relative to the market. The beta of the market is defined as equal to the value of one (i.e. market unity = one). A business is therefore identified as being more or less risky than the market as a whole by the extent to which the estimated equity beta diverges from the market unity. Business activities with an equity beta of greater than unity are considered relatively more risky than the market and would be expected to earn a greater return than the market average, but business activities with an equity beta of less than unity are considered relatively less risky than the market and expected to earn less than the market average rate of return.

In practice, estimating individual equity betas for any particular business requires a range of comparative information on the economic performance of businesses over a continuous period, including dividend payments, capital repatriation, changes in market values and the overall economic returns of the businesses. This information has not been readily available for water businesses as virtually none are listed on the stock exchange or actively compete in equity markets. Typically, a proxy estimate of the equity beta is derived from a limited range of available information, often relying on regulatory decisions involving other similar businesses and industries.

Barwon Water notes the Essential Services Commission's *Guidance Paper* states the following in relation to the equity beta:

'As with the 2005 Urban Water Price Review, the Essential Services Commission has adopted a proxy of the equity beta of 0.75, based upon benchmark gearing of 60 per cent debt to regulatory assets. The equity beta is consistent with:

- *recent regulatory decisions in the water sector (0.81)*
- *empirical evidence from the Australian energy sector (0.70) and*
- *the range proposed in the last review.'*

The current water plans were also based on an equity beta of 0.75. In contrast, the Essential Services Commission's recent *Electricity Distribution Price Review 2006-10* reaffirmed an equity beta of 1.0 for the Victorian distributors' regulated activities.

Barwon Water acknowledges the Essential Services Commission is concerned with regard to stability and predictability in decision making and judgment is required by the Essential Services Commission as to whether or not and to what extent any new information would justify a change from previous decisions. Barwon Water also acknowledges the Essential Services Commission's comments in the Final Decision for the Electricity Distribution Price Review 2006-10 in relation to what extent the beta for regulated energy sector activities is likely to differ from the beta for regulated water sector activities. That report stated:

- *'… the Essential Services Commission formed the view when setting regulated charges for the water sector that the systematic risk for regulated water sector activities is likely to be lower than that for the energy sector. These conclusions, in turn, were based upon:*
- *the Essential Services Commission's a priori belief about the likely differences in betas between the water and energy sector;*
- *estimates of the betas for water businesses in the US and UK and the observed relativities between the betas for water businesses and energy businesses;*
- *the beta values that have been adopted by Australian regulators when setting water charges; and*
- *the water businesses' proposals, which were within the range of 0.75 and 1.00.*

In the absence of a detailed review of possible values of an equity beta specific for the water sector that objectively supports the Essential Services Commission's findings, Barwon Water consider there is scope for the Essential Services Commission to reconsider the value of the assumed equity beta, particularly given the apparent inconsistency with the beta values adopted by other Australian regulators for their water business, as highlighted in the extracts below:

(a) Independent Pricing and Regulatory Tribunal (New South Wales)

Final Determination and Report: Prices of Water Supply, Wastewater and Stormwater Services (Gosford City Council and Wyong Shire Council), May 2006.

'The Tribunal notes that in its 2005 determination for the regulated retail water agencies, it considered whether the water businesses face more or less systematic risk than the Australian gas and electricity network. The Tribunal concluded that there is no evidence to suggest that the water agencies face more or less systematic risk than the Australian gas and electricity network businesses. Therefore, the Tribunal set an equity beta in a range of 0.8 to 1.0. The Tribunal believes that this equity beta range of 0.8 to 1.0 is appropriate value for the Council's water businesses.'

(b) Economic Regulatory Authority (Western Australia)

Final Report: Inquiry on Urban Water and Wastewater Pricing, November 2005.

For its final recommendation, Barwon Water has adopted an equity beta value of 0.80, which is close to the Water Corporation's proposed value of 0.78, and is within the range of recent regulatory decisions on equity betas for similar water industry service providers in Australia.

In addition, in March 2004, the Independent Competition and Regulatory Commission in the Australian Capital Territory assumed an equity beta value of 0.9 in the final determination on water and wastewater service provider for Australian Capital Territory Electricity and Water.

(Barwon Water notes in the above referenced decisions by Independent Pricing and Regulatory Tribunal, Economic Regulatory Authority and Independent Competition and Regulatory Commission, the assumed debt to equity ratio in all three cases was 60 per cent).

Barwon Water is of the view recent regulatory precedent supports the use of an equity beta of at least 0.85, which is still consistent with the Essential Services Commission's belief there be a differential in the betas between the water and energy sectors.

10.4.4.3 Market risk premium

The market risk premium is a measure of relative risk calculated as the difference between the expected return on equity investments and the risk free rate. The market risk premium represents the additional reward equity investors require to accept the risk of uncertain outcomes associated with a particular equity investment, relative to the risk free rate (i.e. the opportunity cost of capital for providers of equity funds).

In recent regulatory decisions across the electricity, gas and water sectors throughout Australia, the market risk premium has generally been set at around 6 per cent. Although regulators have considered reducing the market risk premium as low as 4 per cent, statistical analysis and market evidence has not supported such a reduction.

Barwon Water notes the extent of information relevant to measuring the market risk premium that was recently reviewed by the Essential Services Commission as part of the *Electricity Distribution Price Review 2006-10* and supports the Essential Services Commission adopting an estimated value of the expected market risk premium of 6 per cent for the 2008 Water Price Review, as was the case for the last price review.

10.4.4.4 Debt margin

The cost of debt is the return debt issuers demand on new debt financing. The value is dependent on a variety of risk factors including the liquidity, period and default characteristics associated with the activities being funded by the borrowed funds. The cost of debt may be determined either as a weighted average of the existing debt of the business activity or the marginal rate at which a business activity can raise new debt financing. The latter is usually expressed as a margin over the risk free rate and provides an incentive to ensure debt costs are efficient.

The Essential Services Commission has proposed it follow what has become standard regulatory practice and use a benchmarked cost of debt rather than a water companies' actual finance charges. Essentially, this involves using the latest market data to derive a debt margin by reference to the difference between the yield of a 10-year corporate bond rate and the 10-year government bond rate and adding an additional margin for debt establishment fees.

Barwon Water understands the standard regulatory practice for estimating debt margins has been to reference the yield spreads from the CBA Spectrum database. However, the Essential Services Commission acknowledged in the recent *Electricity Distribution Price Review 2006-10* an adjustment of 25 basis points was required to correct a likely downward bias in the CBA Spectrum data. We note the Essential Services Commission also acknowledged it has become the regulatory norm to provide an allowance of about 12.5 basis points for debt raising (non-margin establishment) fees.

Barwon Water supports the general approach adopted by the Essential Services Commission and would expect the regulatory precedents established by it would be equally applicable to the Victorian water businesses. Despite this, we note in the *Guidance Paper*, the Essential Services Commission has indicated it intends to include an adjustment of just 18.5 basis points for bias in the CBA Spectrum data and an allowance of just 10 basis points for the debt raising (non-margin establishment) fees. Notably, the adjustment to the CBA Spectrum data was not a factor in the last price review but the Essential Services Commission did include the 10 basis points allowance for the debt raising (non-establishment) fees.

However, we do not see any reason why the Essential Services Commission would depart from the now well established precedent of adjusting the CBA Spectrum data by 25 basis points and providing an allowance of 12.5 basis points for the debt raising (non-margin establishment) fees.

Given the 1.11 per cent debt margin indicated by the Essential Services Commission (based on the 20 day yield spread to 6 March 2007), an underlying yield spread of 82.5 basis points has been adopted for the for BBB+ rated debt over the 10-year government bonds. Assuming the underlying yield spread of 82.5 basis points, we would expect an adjusted yield for a 10-year BBB+ bond of 120 basis points.

10.4.4.5 Gearing/financing structure

The level of a businesses gearing affects the level of financial risk and the return to equity holders. The higher the level of debt, the higher the equity beta will be and the higher the corresponding cost of equity. In general, there is potential for entities with predictable cash flows, particularly in regulated sectors, to operate with higher gearing ratios than other entities more exposed to a reliance on market-based cash flows. However, it is noted, and supported, the Essential Services Commission's intent is to estimate a weighted average cost of capital that is consistent with the cost of capital a hypothetical private sector business undertaking similar activities would face.

Barwon Water accepts although the gearing levels of most water businesses would most likely be less than that maintained by private sector businesses, it accepts it has become standard practice by Australian regulators to assume an efficient benchmark gearing ratio of between 50 per cent and 60 per cent. However, the 60 per cent ratio has become more common in recent decisions, including the three recent decisions by Independent Pricing and Regulatory Tribunal, Economic Regulatory Authority and Independent Competition and Regulatory Commission, which we referenced earlier in the discussion on the value of the equity beta.

Barwon Water believes the Essential Services Commission should continue to adopt a gearing ratio of 60 per cent debt to equity, consistent with regulatory precedence in relation to the underlying assumptions for both gearing levels and the equity beta.

Value of franking credits (gamma - γ)

Barwon Water accepts the Essential Services Commission proposes to adopt a value of 0.50 for gamma and notes this is consistent with the value assumed in all of the Essential Services Commission's regulatory decisions to date. We also note recent regulatory decisions have employed a gamma value of 0.5, except for Independent Pricing and Regulatory Tribunal, which uses a range between 0.3 and 0.5 to reflect both the uncertainty surrounding the value investors attach to imputation tax credits, as well as the different franking credit distribution rates of companies.

Adjustment to the cost of capital - small company premium

In addition to the 'standard' calculation of the weighted average cost of capital, Barwon Water believes there should be an additional premium component recognising the higher costs small companies typically face in raising both equity and debt financing.

We understand in recent water pricing determinations in the United Kingdom, the Water Services Regulation Authority has included an allowance for a small company premium in the calculation of the cost of capital, based on a range of work undertaken by National Economic Research Associates that showed a strong relationship between the costs of debt and equity and the size of different water companies. In relation to the cost of equity, National Economic Research Associates' work noted:

> *'It is standard procedure in US rate of return decisions for regulated utilities to incorporate an allowance for floatation costs of new equity issues into allowed rate of return (or through an adjustment to operating costs) to account for the direct expenses and underwriting fees of issuing or additional equity. These floatation cost adjustments are measured as a per centage of the total common equity issuance, thus taking account of the fact that the costs of issuance are related to the size of the equity issue (which is often related to the size of the company).*

Floatation costs drive a wedge between the cost of equity required by investors and the effective cost of external finance. These costs should be allowed for through an adjustment to the allowed rate of return.'

NERA, "UK Water Cost of Capital – A Final Report for Water UK", July 2003.

National Economic Research Associates subsequently concluded taking account of floatation costs would translate into an adjustment to the cost of equity of around 0.32 per cent for the larger UK water and sewerage companies and 0.52 per cent and 0.67 per cent for the intermediate and small water only companies, respectively.

National Economic Research Associates also examined the small company cost of debt premium, based on an analysis of the weighted average of the observed premia on existing short-term and long-term debt for the small water only companies vis-à-vis the large water and sewerage companies. National Economic Research Associates reported regression analysis showed a strong negative relationship between debt yields and size of the company and concluded a reasonable estimate of the cost of debt premium for the small water companies was in the range of 0.5 per cent to 0.9 per cent and in the range of 0.4 per cent and 0.6 per cent for the intermediate sized water companies.

As part of the 2004 United Kingdom Water Price Review, the Water Services Regulation Authority indicated it accepted evidence of the 'small company effect' on the cost of capital and the premium varies with company size, although it believed it was difficult to quantify the precise relationship of the premium costs to business size. However, it subsequently set different debt premiums based on four bands of regulatory capital values. The Water Services Regulation Authority's final determination in relation to future water and sewerage charges for the period 2005 - 2010, allowed for a post-tax small company premiums ranging from 0.3 per cent to 0.9 per cent, depending on the size of the company, as shown in Table 10-5. In the previous price review in 1999, the Water Services Regulation Authority had also allowed a premium to the post-tax cost of capital ranging between 0.45 and 0.75 per cent.

Table 10-5 Water services regulation authority bands for small company premiums

	Regulatory asset base		Estimated equity premium	Estimated debt premium	Total estimated premium
	Ofwat RCV UK Pounds	Indicative Aud Value*			
1	< £70m	$175m	1.50%	0.50%	0.90%
2	£70m - £140m	$175m - $350m	1.30%	0.40%	0.70%
3	£140m - £280m	$350m – 700m	1.20%	0.30%	0.60%
4	£280m - £700m	$700m - $1,750m	0.50%	0.10%	0.30%

** Based on a nominal conversion rate of $Aud1 = £0.40.*

Despite the underlying benchmark assumption of an efficient BBB+ rated business, Barwon Water believes it is not unreasonable to assume even two different BBB+ companies can have different abilities to access capital markets and obtain the same margins for financing requirements. For example, it would be reasonable to assume Melbourne Water, which has a regulatory asset value of almost $4.5 billion, could have greater access to lower cost finance than perhaps Barwon Water with a RAV around ten times smaller at less than $450M. This would be even more pronounced for other smaller companies such as Western Port Water, which has a regulatory asset value of approximately $50M.

Barwon Water believes, in principle, the Essential Services Commission's approach in establishing a weighted average cost of capital based on benchmark debt and equity assumptions is appropriate. However, we also believe there should also be consideration given to the spread of debt and equity costs would be available to different sized companies within an industry, and even across industry sectors. In this regard, and with a view to the precedence set by the Water Services Regulation Authority in regulating water prices in the United Kingdom, we have included a small company premium of 0.6 per cent in the calculation of the weighted average cost of capital for Barwon Water. This figure is the midpoint of the range used by the Water Services Regulation Authority.

10.5 Income tax

Barwon Water will not pay any income tax during the regulatory period. Barwon Water has carried forward tax losses since the introduction of the *State Taxation Equivalent Regime*, followed by the *National Taxation Equivalent* regime. These losses will increase for several years because of the ability to apply accelerated tax depreciation rates as a result of grandfathering provisions.

PART E: DEMAND

11 Demand Forecasting

11.1 Introduction

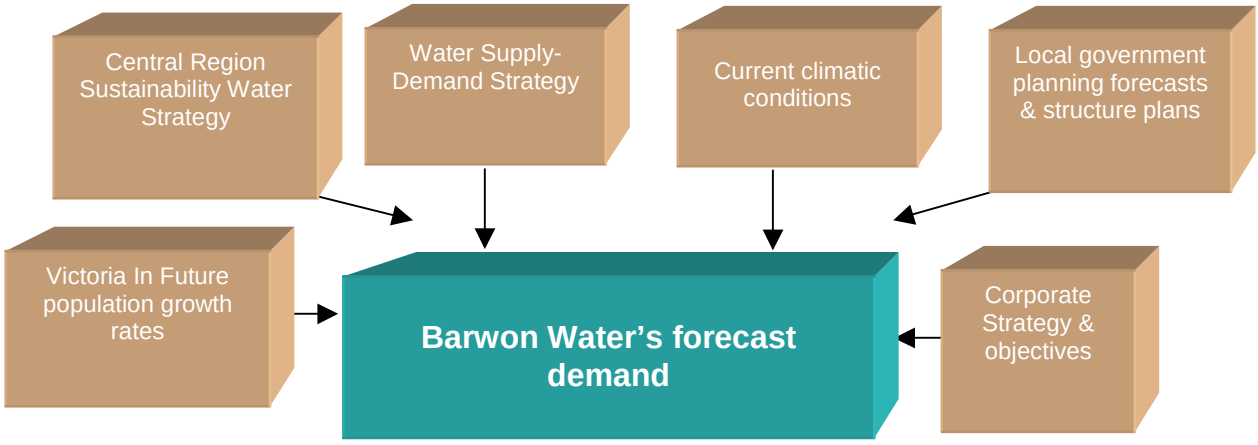
Demand forecasts are an integral component of Barwon Water's business planning process.

The forecasts not only represent the "units" on which Barwon Water has based revenue, but are also essential for forecasting capital expenditure and operating expenditure, including the timing of capital projects.

When developing demand forecasts, Barwon Water has used a mixture of historical trends, as well as incorporating the key drivers and external influences that will impact upon future water consumption and customer numbers.

Figure 11-1 provides an overview of the main external and internal strategies that influence Barwon Water's forecasts.

Figure 11-1 External and internal strategies



11.2 Demand forecasts for the 2008-2013 regulatory period

Barwon Water has considered the following issues when preparing demand forecasts:

- the need to recognise and reflect key drivers of demand
- take account of relevant trends in economic conditions and reasonable prospects for future market development
- be based on reasonable assumptions using the best available information
- use the most reasonable data available, as well as historic data that can identify trends in demand
- are statistically unbiased
- be assessed against any other existing forecasts or methodologies.

Barwon Water has disaggregated demand forecasts to a level consistent with the proposed pricing structure, and to a level consistent with capital expenditure and operating expenditure requirements.

11.3 Key characteristics of Barwon Water's Ccustomer base

Barwon Water serves many different communities, ranging from large urban areas to rural townships, from industrial and commercial centres to major tourism hubs.

Around 90 per cent of Barwon Water's water consumption occurs in the urbanised area of the greater Geelong region. This region, together with the Colac region, exhibit significant differences in relation to water consumption influences, relative to the coastal supply systems (excluding Torquay/Jan Juc, Anglesea and the Bellarine Peninsula).

Table 11-1 Comparative per capita consumption and non-revenue water per capita for 2005/06

	Greater Geelong	Colac	Apollo Bay	Lorne	Aireys Inlet
Total consumption L/h/d	394	736	483	673	369
Permanent residential %	60	35	40	28	53
Permanent residential L/h/d	217	258	193	188	196
Visitor residential %	n/a	n/a	23	42	40
Visitor residential L/h/d	n/a	n/a	111	283	148
Non-revenue water %Total	6.2	6.2	6.2	6.2	6.2
Total consumption ML/year	37,000	3,800	383	429	173
Population	246,000	13,800	2,220	1,900	1,300
Non-revenue water ML/year	2,294	236	24	27	11
Non-revenue water effective L/h/d	26	47	29	38	23

As can be seen in Table 11-1 above, there are many seasonal visitors and non-permanent homeowners in the coastal townships of Apollo Bay/Skenes Creek, Aireys Inlet/Fairhaven and Lorne, which influence water consumption significantly.

Water consumption in these towns can be seen in three parts:

- permanent residential population
- visitor residential population, and
- non-residential includes mixes of commercial, industrial, agricultural as well as hotels and caravan parks, which have a predominantly visitor population.

Water demand in coastal townships is highly seasonal due to significant visitor populations during summer and other annual holiday periods.

11.4 Forecasting overview

Barwon Water uses a demand forecast model to predict the impacts of increasing water demand. These demand increases introduce a need to invest in and operate new infrastructure, which, in turn, influences revenue requirements and hence the cost of water.

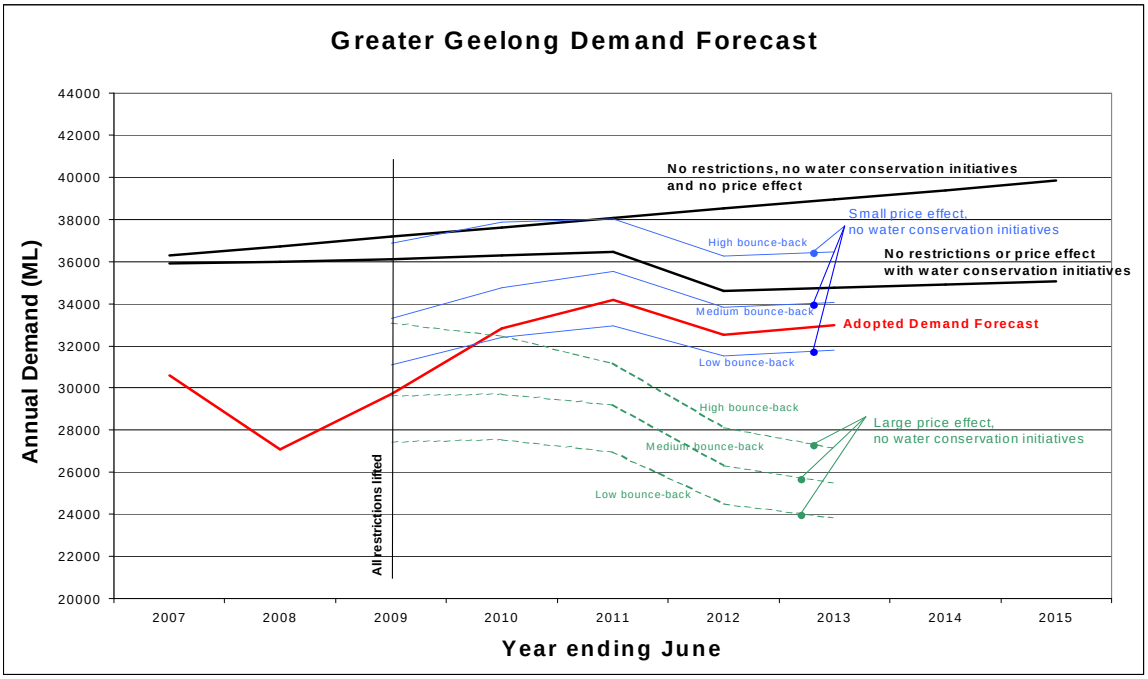
Four significant variables impacting upon demand have been identified:

- The influence of existing water restrictions on customer consumption, brought about by low stream flows due to changing weather patterns and climate change;
- Population growth rates and economic growth;
- Impact of price on demand; and
- Water conservation, which can be influenced by government policies, such as high level of water conservation promotion and including recycled water initiatives.

These variables have been used to develop the three demand forecasts for the greater Geelong water supply system.

For Barwon Water's other water supply systems, whilst the yield of these systems will be also influenced by climate change and conservation initiatives, these are not currently influenced by water restrictions and, as such, two demand forecasts have been modelled representing demand without conservation initiatives and the most like scenario, which includes conservation initiatives. The one exception to this is the Apollo Bay/Skenes Creek supply system, where restrictions will continue to be implemented each summer until a new water storage is constructed.

Figure 11-2 Forecast bulk water volume demand for the greater Geelong region



The methodology of how these forecasts have been developed is summarized below.

11.4.1 Baseline

Red line on Figure 11-2 – no water restrictions and no additional water conservation

This demand forecast provides a benchmark for comparison. The baseline is modelled on the assumption of no water restrictions pre or during the upcoming regulatory period with no additional water conservation. This serves as a baseline for assessing the impact of water conservation initiatives, climate change and also provides data to calibrate and refine future forecasting.

When forecasting future water demand under this scenario, the growth rate for both the residential and non-residential sectors is common, and is based on the Department of Sustainability and Environment's *Victoria In Future*.

11.4.2 Baseline with additional water conservation

Black line on Figure 11-2

The *Central Region Sustainable Water Strategy* set a per capita water conservation target of 25 per cent reduction by 2015 and 30 per cent reduction by 2020 (based on the 1990's average demand). The Department of Sustainability and Environment has since required these targets be included in water authorities' Water Supply Demand Strategies for all water supply service areas. For Barwon Water, the target use for each supply area is as follows:

Table 11-2 Required savings in total water usage per capita to achieve water conservation targets for each of Barwon Water's supply systems

System	1990's average use	2005 use	2015 target use (-25%)	2020 target use (-30%)
Geelong	464	394	348	325
Colac	800	751	600	560
Apollo Bay	514	494	386	360
Lorne	709	689	532	496
Aireys Inlet / Fairhaven	423	375	317	296

This demand forecast has been used for the revenue projections and operating costs for the Colac, Aireys Inlet/Fairhaven, Lorne and Apollo Bay/Skenes Creek supply areas.

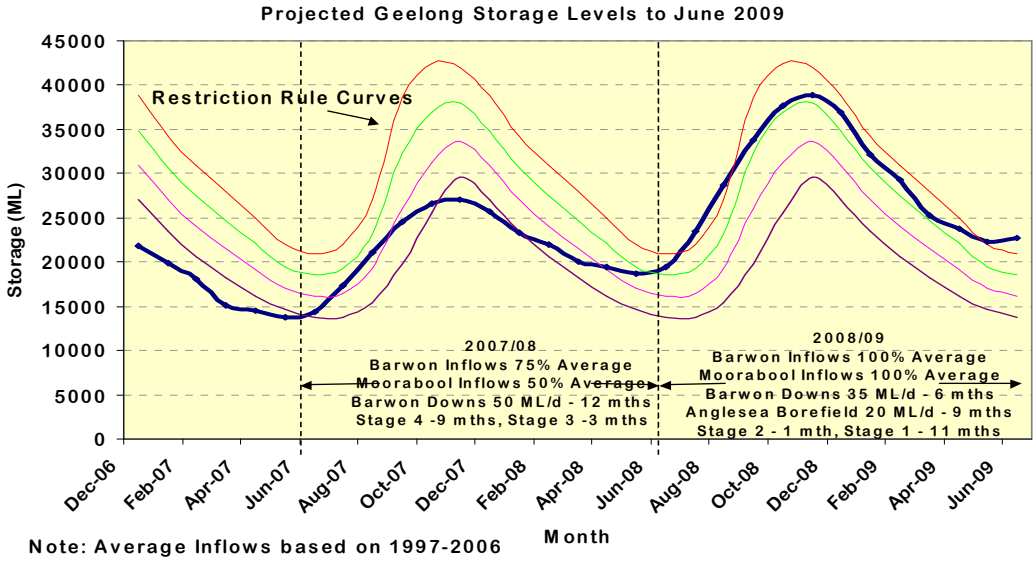
11.4.3 Baseline with additional water conservation and restrictions impact

Green line on Figure 11-2

Due to the current record low stream flow period, Barwon Water implemented Stage 1 restrictions in July 2006, increasing to Stage 4 restrictions by December 2006. As a result, current demand is well below the 25 per cent water conservation target set in the Central Region Sustainable Water Strategy.

Based on projected weather conditions, the demand forecasts include the assumption the Greater Geelong system will remain on Stage 4 water restrictions until early 2008, with a complete removal of water restrictions anticipated to occur in mid 2009. This has been based on modelling using the past 10-year low inflow period, together with increased groundwater pumping at Barwon Downs borefield and the implementation of the Anglesea borefield project by summer 2008/09. Refer to Figure 11-3.

Figure 11-3 Projected Geelong storage levels to June 2009



It is projected there will be an increase in demand when restrictions are lifted, however, it is anticipated there will be some permanent change in water consumption behaviour as well as the implementation of permanent initiatives maintaining consumption at the reduced level.

Accordingly, these influences have been taken into account in developing the proposed water conservation program. Whilst graph shows this demand forecast remaining below the previous forecast through to 2015, it is important Barwon Water develop and implement the identified water conservation initiatives to assist customers reduce their water consumption in light of the increasing water tariffs and to ensure the water conservation targets are achieved, particularly in Barwon Water's supply areas other than Geelong that are not currently subject to Stage 4 restrictions.

In addition, the green line includes the implementation of the Northern Water Plant which will reduce the Greater Geelong's potable water demand by approximately 2,000 megalitres per year by allowing Barwon Water's largest industrial water user to utilise recycled industrial wastewater which will also defer the need to upgrade downstream sewerage infrastructure and defer water supply augmentation.

The green demand forecast line has been used for the revenue projections and operating costs for the Greater Geelong supply system.

11.4.3.1 Demand forecast verification

Barwon Water has based the demand forecast adopted for the *Draft 2008 Water Plan* independently verified (Institute for Sustainable Futures: June 2007). Plausible demand forecast scenarios are based on a simplified end-use demand model taking into account the

impact of population growth, water restrictions, water conservation initiatives and also pricing, based on a range of price elasticity of demand data.

As can be seen from Figure 11-1, the demand forecast adopted by Barwon Water is approximately mid-range of the plausible demand forecast scenarios identified.

11.4.4 Growth rates

Forecasting demand requires assumptions to be made about how demand for certain customer classes will grow in the future. In particular, this will require growth rates to be derived for:

- residential customers
- non residential customers
- major industrial customers.

11.4.4.1 Residential growth forecasts

Barwon Water utilises the most up-to-date data from the Department of Sustainability and Environment's *Victoria In Future*, in conjunction with information from local councils, to prepare demand projections.

Consistent with the Department of Sustainability and Environment figures, Barwon Water has allowed for a long-term population growth rate of 0.81 per cent.

The Department of Sustainability and Environment's population projections are based on the Australian Bureau of Statistics estimates derived from the 2001 census and analysis of Victoria's economic, social and demographic trends and housing development information. It also takes into account regional service providers, peers and stakeholders, which include local government planning schemes and regional development strategies.

For the Geelong system, the projections forecast growth to gradually decline from 1.3 per cent to a rate of 0.8 per cent by 2031. This takes into account factors such as slow down in the birth rate, decline in migration from overseas and interstate, and an increase in deaths due to an ageing population resulting from the post World War II period and peak baby boom period of 1971.

The Department of Sustainability and Environment uses the best data available to produce timely, comprehensive and balanced projections for the state and for individual regions. The Department of Sustainability and Environment is also aware the environment is continually changing, therefore the revision of data is integral in ensuring the most accurate information is provided. Projections are updated after each census period and interim projections provided where required.

The alternative is to use Australian Bureau of Statistics' population projections, which are based on preliminary estimated residential population by Statistical Local Area) at 30 June 2002. This is forecasted by combining State/Territory assumptions from the Population Projections Australia, 2002 to 2101, which observed historical patterns in each Statistical Local Area.

It takes into account fertility and mortality assumptions and net migration from both interstate and overseas. When preparing population projections, the Australian Bureau of Statistics does not liaise with local government to consider regional planning development and strategies. Therefore, this forecast is used for basic analysis only and does not provide a true reflection of the population growth in specific regions.

Concurrent with the above, Barwon Water takes into account Council structure plan growth projections where available. For example, a comparison of growth rates for Colac-Otway Shire and Surf Coast Shire with more localised Council structure plans shows for Colac-Otway Shire, the draft Apollo Bay Structure Plan indicates significant growth for the Apollo Bay district, potentially up to 3.6 per cent per year to 2023, whereas the Colac Otway Shire as a whole has a low projected growth – declining from 0.5 per cent to 0.1 per cent by 2031.

Conversely, the Surf Coast Shire growth rate of 2.4 per cent declining to 1.2 per cent at 2031 is not applicable to coastal townships of Lorne and Aireys Inlet/Fairhaven, due to constraints on land availability. For these systems, lower growth rates are used.

11.4.4.2 Non-residential growth forecasts

Historically, Barwon Water's non-residential customer connections have grown at a similar rate to residential customer connections. Given this, Barwon Water has applied the same regional growth rate to non-residential customers going forward as has been applied to residential customers.

11.4.4.3 Major industrial customers

The approach future increases in demand (without additional water conservation measures) will be proportional to the region's population growth provides for projected residential, industrial and commercial growth but does not include the possibility of a single high water use industry.

Barwon Water works closely with established industries to determine their ongoing water needs, including recycling options, and has regular interaction with local councils regarding potential new industries locating in the region.

The addition of new major customers requires careful consideration, in particular, given the current water shortage, the predicted gradual decline in available water and Barwon Water's commitment to existing customers. At the same time, regional social benefits arrive with new industry and the consultation clearly indicated it is not appropriate for Barwon Water to choose what is an appropriate use of water, or to whom it should be supplied. Therefore, two sides are presented to which a balance must be found.

A potential option to cater for additional industrial growth, or new major customers, is provision of recycled "fit-for-purpose" water for industrial processes where applicable. The benefits are clear – reducing demand on potable water supplies so in effect, "prolonging" the supply and increasing time until a major supply system augmentation is required, and additionally, reducing the load on sewerage systems. The degree of complexity associated with recycled water schemes varies in accordance with the end use volume and quality, the nature of additional infrastructure required – particularly if retrofitting on an existing site, as well as the potential for additional customers to be involved in the scheme. These parameters often result in the proposed scheme appearing economically unviable.

However, in conjunction with the potential major customer, Barwon Water will closely examine the potential for a recycled water supply on an individual case-by-case basis. In terms of managing the risk associated with increased major customers, exploration and availability of alternate water supply options may to a large degree influence the likelihood of a successful application.

Barwon Water has assumed no major high water use industrial customers will be supplied water during the next regulatory period.

11.5 Water supply planning framework

In 2004, the Victorian government published *Our Water Our Future*, which sets out long-term objectives and strategies to manage the state's water resources in a sustainable manner. One of the outcomes of this strategy was the development of regional sustainable water strategies, the first of which, for the Central Region, was published in October 2006.

As outlined in section 11.5.2, under the *Central Region Sustainable Water Strategy*, Barwon Water will be required to meet a water conservation target of 25 per cent in total demand based on the 1990's average consumption, by 2015. This means all consumption sectors – residential, commercial and industrial – will each need to reduce consumption by 25% to meet the overall target by 2015.

Our Water Our Future also requires water authorities to prepare a *Water Supply Demand Strategy*, which focuses on sustainable water management on a local level. In essence, the *Central Region Sustainable Water Strategy* allocates water resources between all users – urban, rural and the environment, while the *Water Supply Demand Strategy* details how allocations will be managed and how water conservation targets will be met.

Barwon Water's *Water Supply Demand Strategy*, submitted to the Department of Sustainability and Environment in May 2006 and available on Barwon Water's internet site, has adopted the 25 per cent conservation target for all of Barwon Water's service area. Therefore, whilst the following description of the water conservation program focuses on achieving the target for the Greater Geelong supply system, the program will also be implemented to achieve the targets of the other supply systems.

11.5.1 Water conservation progress and targets

Table 11-3 outlines the water conservation targets (litres per head per day) for the Greater Geelong system as set in the *Central Region Sustainable Water Strategy.*

Table 11-3 Water conservation progress and targets (L/h/d)

	1990s Average	2005 Baseline	2005 Current Use	2015 -25%	2020 -30%
Residential	255	229	217	191	179
Non-residential	209	187	177	157	146
Total	464	416	394	348	325

Note: Baseline consumption has been calculated based on no water conservation measures being implemented.

Current use is consumption including water conservation measures implemented through the *Water Resources Development Plan* and the introduction of permanent water saving measures.

Current Stage four water restriction consumption is 315 litres per head per day compared to baseline consumption of 416 litres per head per day.

Table 11-4 shows the annual targets in the *Central Region Sustainable Water Strategy* to be provided through water conservation and efficiency.

Table 11-4 Conservations and efficiency targets (megalitres per year)

Water conservation	2005	2015
Central Region Sustainable Water Strategy target Residential & Non-residential	2000	7000

Note: if population growth is different from what has been assumed, the assumed targets will also differ.

The above table shows the water conservation achieved by Barwon Water since the 1990's (approximately 2,000 megalitres per year in 2005) is significant. Although part of the reduction has been due to periods of restrictions, it reflects changing community attitudes to water use and conservation. Permanent water saving measures were introduced in 2003 (which have since been adopted as state-wide conservation measures) and Stage two restrictions were re-introduced in July 2006, increasing to Stage four by December 2006. Barwon Water has also been steadily achieving savings through the water conservation program in the *Water Resources Development Plan*.

Whilst achievements to date should not be undervalued, it is generally accepted these achievements have been easier to achieve than future savings, which will require a more sophisticated water conservation program able to retain existing savings and steadily increase water savings over time. A significant challenge is influencing ongoing behaviour change in residential, commercial and industrial sector's water practices. Although some demand reduction measures involve Government regulation, most are voluntary, some with incentives and some without. This means, unlike much of the engineering programs, Barwon Water can only influence, not control, the outcomes.

Significant learning has occurred within the water industry across Australia regarding the impact of various water conservation initiatives and the required implementation resources. This provides some confidence of the likely effectiveness of various water conservation options and how they are implemented.

11.5.2 Demand reduction / water conservation program – 2007-2015

Based on the cost benefit analysis modelling undertaken by Institute of Sustainable Futures (2006) and Barwon Water's own understanding of successful demand reduction programs, complimented by a community consultation process conducted in late 2006, the following programs have been included in the *Water Supply Demand Strategy*. The Barwon Water Board and Department of Sustainability and Environment support these programs.

Table 11-5 shows programs to be implemented by Barwon Water.

Table 11-5 Conservation programs

Program	Estimated savings by 2015 (ML/year)	Explanation	Budget ($/annum)
Indoor residential retrofit	405	Start 2007, 6 year program, assumes 15% participation (relative to house numbers in 5 yrs) and 20kL/hh/a saving	$494,000
Outdoor Program	65	Start 2007, 6 year program targets top 10% of homes, assumes 25% uptake and 15% reduction	$112,000
Clothes Washer Rebate	250	Start 2008, 5 year program, $150/rebate and 20kL/rebate saving, 12,800 rebates over program	$384,000
Business Efficiency - Large Users WaterMAPS	505	Start 2007, 6 year program to target 10% water reduction, 75% uptake rate in top 100 non-res	$300,000
Pressure & Leakage reduction	1335	Option costs and savings are conservative based on other jurisdictions and on Barwon pressure trial.	$190,000
Wurdee Boluc Inlet Channel lining	100	2010 onwards	Funded through Water Supply maintenance budget
Covering basins	40	Completed 2012	Funded through CWIP
Total	2,700		$1,480,000

In addition to the above estimated saving of 2,700megalitres per annum by 2015, other factors are expected to reduce water consumption. These include the implementation of minimum water efficiency performance standards in 2010, which are the minimum performance standards on appliances such as showerheads, taps, dishwashers and washing machines and are an extension of the mandatory labelling scheme is currently in place at a national scale. Other major influences are the current drought and Stage four restrictions and the proposed water price increases.

Current projections, based on continuing low flows, are Stage 4 restrictions will continue for the Greater Geelong system until at least early 2008, with a total lifting of restrictions not expected until mid 2009. After this time, there is expected to be a gradual return to increased consumption but with also some permanent change in water consumption behaviour compared to pre-drought conditions.

Accordingly, these influences have been taken into account in developing the proposed water conservation program described below.

11.6 Indoor residential retrofit

This program involves a qualified plumber visiting households to install efficient water using devices (e.g. efficient showerheads and tap flow regulators) and offering a minor tune up (i.e. fixing minor leaks, adjusting single flush toilets and evaporative air conditioners to reduce water consumption).

A similar program has been underway in Sydney for the past five years as part of Sydney Water's *Every Drop Counts* water conservation program. The program has successfully completed over 300,000 retrofits, equal to an estimated ongoing saving of approximately 6,000 megalitres per annum.

Based on Sydney Water results, it is estimated the implementation of a similar program could save an average of 20kL per household per annum. The retrofit program would include:

- a water audit based on an awareness of water use behaviours, appliances and existing fixtures and fittings
- three-star Showerhead supply and installation
- aerators and flow regulators supply and installation
- leak detection and correction
- toilet cistern improvements
- supply of signage and information.

The estimated average cost for each household visit is $160, two-thirds of which is plumber's time and program management and one-third equipment costs. Barwon Water will subsidise $130 per visit, with the customer responsible for paying the remaining $30.

It is estimated an indoor residential retrofit program implemented over a five-year period could save up to 405 megalitres per year by 2015, should 15 per cent of customers undertake the retrofit. This equates to approximately 19,000 homes. An initial estimate using a customer contribution of $30 equates to an adjusted Barwon Water cost of $2.47 million over five years.

The indoor residential retrofit program will initially be offered to high users and large families who are impacted on by future pricing, in conjunction with the Department of Human Services Smart Homes program, and then rolled out to all Barwon Water customers regardless of which supply region they live in. The program will be piloted for the first 12 months on a smaller scale depending on available external resources.

Barwon Water will also work with other residential property stakeholders, including the Department of Housing and the Real Estate Institute of Victoria, to implement water saving practices in the rental tenancy market.

11.6.1 Proposed delivery

It is proposed to outsource this program using an organisation that has experience with residential retrofit programs. This delivery model has been successfully be used by other water authorities, including Sydney Water, Gold Coast Water and Brisbane Water.

For the initial 12 months in 2007/08, the program will be run on a pilot scale before launching a larger program through the 2008-2013 Water Plan period.

11.7 Outdoor residential program

This program involves provision of expert advice and assistance to householders to improve the efficiency of their garden irrigation practices, initially focusing on areas not on Stage four restrictions or where alternative supplies are available. The program would be promoted to customers in the Greater Geelong region as Stage four restrictions were lifted.

It is recognised improvements in garden watering can reduce water consumption and still provide for aesthetically pleasing gardens. A qualified assessor would visit the garden and provide water savings tips and could also provide water saving devices and vouchers to a specified value.

The outdoor program will target those homes with identified high water use, aiming to address one quarter of the top 10 per cent of residential water users by 2012 (approx 3000 homes). The program has the potential to be extended to include other non-residential gardens. Estimates based on similar programs implemented elsewhere indicate savings of 15 – 20 per cent of outdoor demand for participating customers. For the Geelong supply system, the

saving is estimated to total approximately 65 megalitres per annum at the end of a five-year program.

It is estimated an outdoor residential retrofit program implemented over a five-year period could save up to 65 megalitres per year by 2015, should 25 per cent of the top 10 per cent of residential water consumers undertake the retrofit. This equates to approximately 3,100 homes. An initial estimate using a customer contribution of $40 equates to an adjusted Barwon Water cost of $0.56M over five years.

The estimated cost is $220 per visit, two-thirds is labour and program management and one-third equipment. It is proposed to pilot this program on 100 homes up until 1 July 2008.

11.7.1 Proposed delivery

It is proposed to develop a program similar to the indoor retrofit program in partnership with the Sustainable Gardening Australia and the Nursery and Garden Industry of Victoria. The program could be delivered by, for example, local garden centres undertaking garden audits, providing advice and recommending low water use plants and products that were also ecologically suitable for each garden. Community learning and promotional events would also need to be conducted.

The program will include auditing of household garden areas including their watering practices and plant selection and zoning. Advice will be provided on plant species that can be changed to drought tolerant species, alterations that can be made to irrigation systems and watering practices. The homeowner will also be provided with useful watering and irrigation information including products and devices.

11.7.2 Proposed delivery

This program is deferred until Stage 4 water restrictions are lifted as many households are currently relying on water from top loading washing machines for greywater to water their gardens.

11.8 Business water efficiency program

The State government has announced as of 1 August 2007, all non-domestic users who consume 10 megalitres or above, based on 2005/06 figures, will be required to develop *Water Management Action Plans*. The plans will be mandatory and delivered as an amendment to the existing *Permanent Water Saving Rules* and managed by Water Authorities.

The *Water Management Action Plans* will be developed by each business with guidance and assistance from water authorities. There are 200 businesses within the Barwon region who will be required to develop *Water Management Action Plans* from the customer sectors outlined in Table 11-6.

Table 11-6 Customer sectors

Sector	Property type
Commercial premises	Air field; ice works; gaol; hall; hospital; nursing home; office; public utility; service station; shop; warehouse; workshop
Food preparation	Abattoir; factory; food processing
Horticulture/Agriculture	Farms (with house); farms (vacant, no house); farms animal husbandry; golf course; market garden; parks and gardens; racecourse; sport and recreation; vacant land
Manufacturing industry	Factory, mill, refinery, wool processing
School	School
Tourism	Caravan park; hotel/motel
Washdown	Carwash/truckwash, saleyards, swimming pool

11.8.1 Proposed delivery

The program delivery will largely involve assisting organisations with the development of a *Water Management Action Plan*. This will commit the organisation to having water conservation and efficiency managed on a day-to-day basis within their operations.

The *Water Management Action Plan* process involves Barwon Water working with customers to:

1. identify water conservation and efficiency measures
2. ascertain baseline water consumption patterns within the customer's business
3. identify innovative and practical solutions for water conservation and efficiency
4. develop action plans (containing practical and costed water efficient solutions, including consideration of potential energy and sewer discharge savings
5. facilitate the implementation of the plans
6. monitor implementation and review of *Water Management Action Plan*.

Barwon Water will continue to encourage other non-domestic customers who do not require a *Water Management Action Plan* to develop a voluntary water management plan.

The business water efficiency program will also work with 50 per cent of schools within Barwon Water's region over three years and to save up to 50 megalitres per year.

This will be run in conjunction with the State Government's *Water - Learn It! Live It!* program recently introduced for primary and secondary schools.

The hospitality and tourism sector will also be targeted through this program in conjunction with Geelong-Otway tourism.

11.9 Water volume forecasts

11.9.1 Bulk water and loss factor

Bulk water is the volume of treated water supplied to distribution systems. During transportation from treatment plants to the customer's meter, there is a loss in water resulting from water pipe bursts, leakages and marginal discrepancies in meter recordings.

Table 11-7 Bulk water and loss factor

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Average
Total Bulk	38,335	41,295	40,624	39,433	41,012	33,381	39,013
Metered Water	35,470	38,535	37,855	36,300	38,460	31,253	36,312
Loss Amount	2,865	2,760	2,769	3,132	2,552	2,128	2,701

Barwon Water has a strategy in place to reduce losses of this nature but with large aging infrastructure the status quo tends to be maintained. The present strategies include the existing main replacement program, reducing pressure where appropriate, and carrying out an active leak detection program to locate and repair high loss areas. This area is subject to diminishing returns in that more funds expended would not return significant savings on present water losses. Barwon Water rates are around average for reticulation losses by Australian water authorities (*WSAA 2001*).

The percentage of unaccounted water (loss factor) is subject to fluctuations primarily due to the manner of determining the amount of metered consumption. Changes in water availability (demand) during the last quarter of meter readings can carry over for a year.

The 2006/07 loss factor is considerably lower than seen in recent years. Loss factors will change when there has been an 'artificial' influence on demand or supply during the last quarter of the year. Therefore Barwon Water is basing the forecast loss factor on the five-year period from 2001/02 – 2005/06, where "normal" supply and demand has applied.

Table 11-8 Forecast loss factor (megalitres)

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Loss factor	2,816	2,816	2,816	2,816	2,816	2,816

11.9.2 Residential water volume

As stated previously, Barwon Water's *Water Supply Demand Strategies* outlines an array of measures to increase supply, reduce consumption or improve environmental flows, all of which have subsequently been incorporated into the *Central Region Sustainable Water Strategy.*

Table 11-9 Estimated residential savings from specific measures (megalitres per year)

Option	Volume saved	Period	Target
Indoor residential retrofit	405	2007-2012	15% of homes, saving of 20 kL/home
Washing machine rebate	250	2009-2011	75% of sales, saving of 20 kL/rebate
Outdoor program	65	2008-2012	25% of the top 10% customers, saving of 60 kL/rebate

These measures will allow Barwon Water to meet the Government's requirement for it to work with customers to achieve a 25 per cent reduction in total per capita water use for Geelong by 2015, increasing to 30 per cent by 2020. These targets mean total water use will need to be reduced from 394l of water per person per day (current use) to 348l by 2015 and 325l by 2020.

Further to the aforementioned water conservation initiatives, Barwon Water's demand forecasts include a reduction in demand as a result of the impact of proposed 42.0 per cent increase in the marginal price of water. Based on estimates of the elasticity of demand for residential customers, Barwon Water has factored in a permanent reduction in water demand in 2008/09, with consequent reductions in water demand of for the remainder of the regulatory period.

11.9.3 Non-residential water volume

Barwon Water's has implemented initiatives to assist non-residential customers to save water. Specific programs are identified in Table 11-10.

Table 11-10 Estimated non-residential savings from specific measures (megalitres per year)

Option	Volume saved	Period	Target
Large users program	435	2007 - 2010	Top 100 users, average saving of 10% per property
Schools program	52	2008 - 2011	50% of schools, saving of 20% per school
Hospitality and tourism	25	2008 - 2011	50% of sector, saving of 20% per property

Further to the above water conservation initiatives, Barwon Water's demand forecasts also considered the impact of the proposed 40.4 per cent increase in the marginal price of water. Based on assumed demand elasticity of –0.6[4] Barwon Water considered factoring in a permanent reduction in water demand in 2008/09, with consequent reductions in water demand of the remainder of the regulatory period, however, due to the high level of uncertainty surrounding forecast demand it was decided not to build any further vulnerability to the demand forecasts.

[4] *Demand elasticity cited from page 27 of ACIL Tasman's Economics Policy Statement, Pricing for water conservation in the non residential urban sector, June 2006.*

11.9.4 Total water consumption

The water volume demand forecasts in the table below represents Barwon Water's most likely case for water demand for the total region, taking into account the variables discussed above over the next seven years.

Table 11-11 Forecast bulk water volume demand for the total region (megalitres)

	2005/06 (actual)	2006/07 (actual)	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Residential	26,483	21,295	19,249	20,813	22,649	23,428	24,414	24,610
Non-residential	14,529	13,753	12,432	13,441	14,627	15,131	12,475	12,575
Total	41,013	35,048	31,682	34,255	37,278	38,560	36,891	37,186

Table 11-12 represents Barwon Water's most likely case for water demand for the total region after applying the loss factor to reflect forecast metered consumption.

Table 11-12 Forecast metered volume demand for the total region (megalitres)

	2005/06 (actual)	2006/07 (actual)	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Residential	24,835	19,779	17,636	19,208	21,055	21,839	22,666	22,863
Non-residential	13,625	12,774	11,229	12,230	13,405	13,904	11,408	11,507
Total Meter	38,460	32,553	28,865	31,438	34,461	35,743	34,074	34,369

11.10 Sewer volume forecasts

11.10.1 Residential forecast

Barwon Water is proposing to discontinue the levying of sewage volumetric charge to residential customers, therefore it has not provided a volumetric forecast for this customer class.

11.10.2 Non-residential forecast

The sewer volume for non-residential customers is calculated as a percentage of the metered water consumption per property. Monthly seasonal weightings are not applied, as it is assumed non-residential customers have relatively stable water usage profiles across the year, and therefore their flows to sewer are also likely to be relatively constant throughout the year.

The sewerage discharge factors that are applied vary dependant on property type, which are set based on data considered appropriate in order to provide a fair and reasonable assumption of discharge to property groups.

Forecasting non-residential volume forecasts are largely based on historical trends and projected forward using a ratio to water consumption forecasts.

11.10.3 Total inflow to treatment plants (including infiltration)

As per water, there is a variance between the volume flowing into the treatment plant versus the calculated amount based on the water used in each property. Table 11-13 identifies the forecast inflows to Barwon Water's treatment plants.

Table 11-13 Inflow and Infiltration (megalitres)

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Geelong	21,370	18,999	16,241	17,832	19,694	20,513	19,562	19,793
Colac	1,729	1,441	1,684	1,652	1,619	1,586	1,553	124
Apollo Bay	366	337	378	377	376	372	366	360

Lorne	300	281	328	323	318	313	308	303
Aireys Inlet	144	121	127	127	126	125	124	123
Total	23,909	21,179	18,823	20,375	21,596	21,772	21,977	22,161

11.11 Trade waste forecast

At 30 June 2006, Barwon Water had 65 industrial customers and 1,391 commercial customers.

All major agreements subject to quality charges have contaminant loads reviewed on an annual basis, with potential to review at any time. Part of the trade waste agreement requires the discharger to notify Barwon Water of any major changes that may affect the quality or quantity of trade waste discharged, which can in turn necessitate a review of those charges. These agreements generally have a term of between one and five years; so future loadings are taken into account at the application/negotiation stage and revisited when the agreement is renewed. When determining trade waste forecasts, Barwon Water has:

- used previous year's applications and volumes as the starting point for future demand forecasts
- trade waste customers connections are anticipated to grow at the same rate as non-residential customers for their region
- trade waste volume is forecast on the same volume rate as per sewer volumes, which takes into account specific demand management initiatives undertaken by Barwon Water.

Table 11-14 and Table 11-15 detail the total trade waste volume and trade waste quality parameters by water reclamation plant receiving trade waste.

Table 11-14 Trade waste volume forecast (megalitres)

	2005/06 (actual)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Total	3,570	3,053	2,886	2,886	2,886	2,886	2,286	2,286

Table 11-15 Trade waste quality parameters (Kg/Year)

Geelong[5]	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
COD > 1200mg	4,732,636	3,687,454	3,354,576	3,321,030	3,287,820	3,254,942	3,222,392	3,190,168
SS > 500mg	1,638,982	876,018	876,018	867,258	858,585	849,999	841,499	833,084
TKN > 60mg	173,329	153,936	122,947	121,718	120,501	119,296	118,103	116,922
S > 50mg	307,320	271,340	142,474	141,049	139,639	138,242	136,860	135,491
Colac[6]								
COD > 1200mg	456,021	432,723	432,723	428,396	424,112	419,871	415,672	411,516
SS > 500mg	39,828	10,873	10,873	10,764	10,657	10,550	10,444	10,340
TKN > 60mg	1,410	9,148	9,148	9,057	8,966	8,877	8,788	8,700
P > 14	183	1,687	1,687	1,670	1,653	1,636	1,620	1,604

[5] Geelong Parameters: COD = chemical oxygen demand, SS = suspended solids, TKN = Total kjedahl Nitrogen and S = Total oxidised sulphur

[6] Colac Parameters: COD = chemical oxygen demand, SS = suspended solids and P = Total phosphorus

11.12 Recycled water forecast

Barwon Water's recycling policy is aimed at establishing the use of recycled water as a key element in sustainable management of a limited resource. Barwon Water will encourage the commercial use of this valuable water resource while ensuring the highest environmental standards in land-use and recycled water management.

Barwon Water's *Water Recycling Strategy* of April 2004 is committed to promoting and providing recycled water services to customers for a range of beneficial uses. The *Water Recycling Strategy* reaffirms Barwon Water's commitment to reduction in potable usage rates while also setting an aspirational water recycling target of 25 per cent by 2015.

The *Water Recycling Strategy Action Plan* accompanies the *Water Recycling Strategy* and outlines specific water recycling priorities in the areas of infrastructure, research and development, economic and financing initiatives, and education and communication directives.

The *Regional Water Recycling Plan – Black Rock* further refines the strategic directions established in the *Water Recycling Strategy* and supports implementation by creating an allocation framework for recycled water, and by providing a policy context for longer-term strategic evaluation of water recycling opportunities. It also provides a basis for response to applications made to Barwon Water for access to the resource.

Overall, Barwon Water's recycling policy is aimed at establishing the use of recycled water as a key element in sustainable management of a limited resource. Barwon Water will encourage the commercial use of this valuable water resource while ensuring the highest environmental standards in land-use and recycled water management.

Historically, Barwon Water's recycling program has been built on the back of private investment (distribution mains, storage dams, pumps etc). It has been possible for purchasers to make the investment because of the surety provided by long-term agreements for the provision of recycled water, which ensures the investor/s receive a return of and on their investment. The original agreements were for 20 years and have varying lives left, but the minimum remaining life is 10 years.

As a result of this private investment, Barwon Water has a number of recycled water systems in operation, including horticulture, viticulture and golf course watering. A total of 2,845 megalitres of Class C/Class B water was recycled in 2005/06, out of a total production of 23,540 megalitres from the nine water reclamation plants. Table 11-16 disaggregates this figure into further detail.

The major recycled water initiative Barwon Water will be implementing during the upcoming regulatory period will be the Northern Water Plant. The Northern Water Plant will replace around 2,000 megalitres per annum of potable water use with recycled water.

Barwon Water is continuously working with private industry to develop other future recycled water schemes to ensure an alternative water source is a consideration, however estimates for what this demand is likely to be is currently unavailable.

Table 11-16 Volume of recycled water in current water systems (megalitres)

Classification	Volume
Potable Substitution	
Barwon Heads Golf Club	45.8
Anglesea Golf Club	60.8
Anglesea Reserve	9.5
Torquay Flower Farm	497.1
Torquay Sands Golf Club	0.7
13th Beach Golf Club	227.7
Market sector	
Commercial user	58.4
Portarlington WRP External Reuse	136.2
Bannockburn WRP External Reuse	4.0

Turf farm	401.9
Barwon Water	
Process water and treelots (all water reclamation plants)	1,300.0
Demonstration farm	102.4
Total	2,844.5

11.13 Lot growth forecasts

11.13.1 Residential lot growth

Consistent with the Essential Services Commission's *2008 Guidelines*, demand forecasts must reflect the required information to calculate revenue generated. As Barwon Water levies a fixed charge on each property, forecasts reflect household numbers and projected growth rates in those household numbers.

Generally, the connection growth rate grows at a higher rate than population. This is due to various trends, including a decline in the average household size and an increase in one-person households.

Table 11-17 provides the population growth forecasts used to calculate volume projections based on the Department of Sustainability and Environment's *'Victoria in Future'* population projections, together with local council planning frameworks; in particular their structure growth plans.

Table 11-17 Population growth forecast (%)

	2005/06 Actual	2006/07 Fcst	2007/08 Fcst	2008/09 Fcst	2009/10 Fcst	2010/11 Fcst	2011/12 Fcst	2012/13 Fcst
Total region	2.2	1.4	1.2	1.2	1.2	1.2	1.2	1.1

Barwon Water's customer connection trends have incorporated connection growth projections based on the Department of Sustainability's *'Victoria in Future'* household projections, together with local council planning frameworks, in particular, their structure growth plans.

Barwon Water's non-residential customer connections grow at a similar rate to residential customer connections. Given this, Barwon Water has applied the same regional growth rate to non-residential customers going forward as has been applied to residential customers. The table provides the connection growth rate for the total region.

Table 11-18 Connection growth forecast (%)

	2005/06 Actual	2006/07 Fcst	2007/08 Fcst	2008/09 Fcst	2009/10 Fcst	2010/11 Fcst	2011/12 Fcst	2012/13 Fcst
Water	2.0	1.9	2.0	1.9	1.9	1.8	1.8	1.8
Sewerage	1.9	1.9	2.0	1.9	1.9	1.8	1.8	1.8

11.13.2 Total projected customer numbers

Table 11-19 and Table 11-20 indicates the water and sewerage customer numbers Barwon Water has used based on the above forecast growth rate for the next regulatory period.

Table 11-19 Water customer number growth forecast

	2005/06 (actual)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Residential								
Geelong	103,870	105,892	108,040	110,175	112,321	114,484	116,668	118,867
Colac	6,010	6,068	6,132	6,193	6,253	6,312	6,372	6,431
Apollo Bay	1,864	1,916	1,963	2,006	2,048	2,078	2,098	2,118

Lorne	1,957	2,010	2,048	2,071	2,089	2,110	2,134	2,156
Aireys Inlet	1,393	1,431	1,458	1,474	1,487	1,502	1,519	1,535
Total	115,094	117,318	119,640	121,920	124,197	126,487	128,791	131,107
Non-Residential								
Geelong	8,624	8,792	8,970	9,148	9,326	9,505	9,687	9,869
Colac	983	993	1,003	1,013	1,023	1,032	1,042	1,052
Apollo Bay	159	163	167	171	175	177	179	181
Lorne	139	142	145	147	148	150	151	153
Aireys Inlet	42	43	44	44	45	45	46	46
Total	9,947	10,133	10,330	10,523	10,716	10,910	11,105	11,301
Total Water	125,041	127,451	129,969	132,442	134,913	137,396	139,896	142,408

Table 11-20 Sewerage customer growth forecast

Sewer	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Residential								
Total	104,435	106,448	108,552	110,617	112,681	114,755	116,843	118,941
Non-Residential								
Total	7,627	7,774	7,928	8,079	8,229	8,381	8,533	8,686
Total Sewer	112,062	114,222	116,479	118,696	120,911	123,136	125,376	127,627

11.14 Developer lot assumptions

Estimating the number of lots to be developed is primarily based on recent years' trends and projected forward using the regions household projections as per the Department of Sustainability and Environment's *Victoria in Future*.

There are a number of other trends impacting on this, including decreasing household size, increasing single person dwellings and an ageing population moving to coastal areas. Planning schemes and structure plans within the region are preparing for this change in demographics by implementing urban developments that include the provision of water and sewerage infrastructure.

However, customers may not occupy the area until after the upcoming regulatory period. As a result, developer lots forecasts used for calculating new customer contributions and to estimate the timing of future water and sewerage infrastructure are higher than the forecast connection growth rates used for calculating fixed revenue.

Table 11-21 Forecast developer lot numbers

	2005/06 (actual)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Water	1,879	1,641	1,830	1,865	1,900	1,935	1,970	2,005
Sewerage	1,632	1,595	1,750	1,783	1,817	1,850	1,884	1,917

PART F: PRICING

12 Tariff Pricing & Customer Impact Analysis

12.1 Key considerations when developing tariff strategy

Barwon Water had regard to a number of objectives that were often conflicting, when designing both 2008/09 tariffs, and the strategy for altering those tariffs over the remainder of the regulatory period. In particular, Barwon Water has been cognisant of:

- the pricing objectives outlined in the Water Industry Regulatory Order
- the objectives of the *Central Region Sustainable Water Strategy*
- Council of Australian Governments objectives.

These are discussed in further detail below.

12.2 Water Industry Regulatory Order

Barwon Water has ensured the proposed tariff design complies with regulatory requirements. The two key aspects to regulatory compliance are tariffs must:

- deliver a revenue stream not exceeding the maximum allowed revenue as determined by the Essential Services Commission, based on the demand forecasts that underpin the *Draft 2008 Water Plan*
- be economically efficient by conforming to the pricing principles established by the Essential Services Commission.

Furthermore, Barwon Water has been cognisant of the requirements of Clause 14 of the *Water Industry Regulatory Order* when setting tariff structures. These obligations include:

- tariffs must be consistent with a sustainable revenue stream for the business, and they do not reflect monopoly rents and / or inefficient expenditure
- tariffs must allow the business to recover the efficient capital and operating costs associated with running the business
- tariff structures should provide incentives to water users for sustainable resource use by providing signals about service delivery costs and alternative supply choices
- customers' interests should be taken into account, including low income and vulnerable customers
- tariffs should be able to be readily understood by customers.

12.3 Central Region Sustainable Water Strategy

As a result of the actions required for water corporations from the State Government's *Central Region Sustainable Water Strategy* released on 18 October 2006, it clearly states on page 110 "*it is reasonable to expect water prices will increase as a result of implementing the actions in the Central Region Sustainable Water Strategy".*

In addition, the strategy also states "*The government will work with water authorities and all industries in the region to explore alternative pricing options to encourage sustainable use by industry prior to the next pricing determination*"

Barwon Water has ensured the proposed tariff structure sends a water conservation message to both residential and non-residential customers in a consistent and equitable approach, which will also encourage the use of alternative supplies.

12.4 Council of Australian Governments objectives

The Council of Australian Governments' water resources policy report, released on 25 February 1994, sets out the Strategic Water Reform Framework for all Australian Water authorities. The principal objective was to address the economic, environmental and social implications of future water reform due to the degradation of the natural resource. The specific pricing requirements were:

- the adoption of pricing regimes based on the principles of consumption based pricing
- full cost recovery and desirably the removal of all cross subsidies that were not consistent with efficient and effective service, use and provision
- to adopt, no later than 1998 charging arrangements for water services comprising an access component and a usage component to reflect water usage
- the initiation of the *National Competition Policy Reform Act 1995*, which set out competition principles relevant to water authorities including the ability for State Governments to request the Australian Competition and Consumer Commission to become the regulator of prices for water services
- the key feature of the agreement was the requirement of State Governments to achieve defined reform milestones, which would see substantial payments from the Commonwealth to the states.

Barwon Water's Board made a commitment to achieve a full user pays tariff system for all customers. This was in conjunction with an extensive customer consultation program to gauge customers view and support of a user pay system.

On 1 July 1993 Barwon Water achieved a full user pays tariff system. This was widely recognised as a significant achievement in microeconomic reform as Barwon Water was the first Victorian water authority to implement the user pays structure.

12.5 Water tariffs

12.5.1 Current tariff structure

Barwon Water's current water tariff for residential and non-residential customers is a two-part tariff comprising:

- fixed access charge that is the same flat rate for all customers within Barwon Water's service area and does not vary with the amount of water consumed or the size of the meter
- variable charge that is the same price for all customers within Barwon Water's service area, however, it is calculated based on the amount of water consumed, which is derived from individual property meters.

As stated above, the Barwon Water Board made a commitment to a future program of tariff reform. An extensive consultation campaign was conducted in order to obtain the community's attitude to a change to a user pay system using the three basic criteria of:

1. Equity
2. Choice
3. Conservation.

In December 1990, it was resolved to introduce a two-part user pays water charge on 1 July 1991.

The aim of the tariff structure was to communicate to customers the true cost of the service and secondly, to seek a better allocation of resources, being both physical and financial through conservation of water.

Barwon Water was the first water authority to introduce user-pays with all other water authorities following during the 1990's. This change resulted from the need to reflect the fact

water is a precious commodity, whilst also providing customers with the ability to control the size of their bill, as the more water they used, the more it would cost.

For the current regulatory period, the Essential Services Commission approved Barwon Water's application for the retention of existing variable and service charge, on the basis this tariff methodology provided appropriate incentives to all customers to conserve water, and further encouragement would be provided by increasing all tariff rates by 5.3 per cent plus consumer price index during the regulatory period to reflect the efficient cost of providing service.

Table 12-1 Current water prices - residential and non-residential customers ($real)

	2005/06	2006/07	2007/08
Water volume charge	0.86	0.90	0.95
Water service charge	133.71	140.83	148.29

12.5.2 Proposed tariff structure

In addition to the *Water Industry Regulatory Order*, *Central Region Sustainable Water Strategy* and Council of Australian Governments objectives, Barwon Water considered the following issues when developing water pricing structure for the *Draft 2008 Water Plan*.

Firstly, whilst Barwon Water was the pioneer of a two-part user pays tariff structure and sewer volume charges, drought like weather conditions, climate change impacts and an increasing population have reduced the security of Barwon Water's water supplies. This has led to the sustainability of water being a significant concern to Barwon Water's customers, and the Victorian community as a whole.

Secondly, the sustainable use of water was a specific focus of the Victorian Government's White Paper *"Our Water Our Future"*. Specifically, section six states that water pricing needs to ensure it recovers the cost of delivering the full range of water services and they be structured to reward water conservation.

Thirdly, the National Water Commission under the National Water Initiative has also stated water pricing needs to be consistent and pricing measures adopt outcomes that promote the sustainable use and provision of water.

At the 2006 Barwon Water Board Strategic Planning workshop, it was resolved to consult with all residential customers on their preference between the current two-part tariff structure or the implementation of an inclining block tariff structure, similar to that introduced for Melbourne retail water authorities in October 2004.

A customer inclining block tariff structure survey was distributed to every customer in the Barwon Region from November 2006 to early January 2007. Key outcomes from the survey are detailed in Part A of the *Draft 2008 Water Plan*.

On completion of extensive modelling and consideration to all of the aforementioned issues, including the Water Industry Regulatory Order, *Central Region Sustainable Water Strategy* and the Council of Australian Governments objectives, Barwon Water has chosen to maintain the current two-part tariff structure throughout the second regulatory period. Barwon Water's proposed tariff structure provides for:

- the variable charge to be increased by 42.0 per cent to $1.35 per kilolitre
- the increase in the variable charge to be offset by a consequent reduction in the water fixed charge from $148.29 to $102.66
- an increase in the proportion of total water revenue to be generated from volumetric revenue (from 61 per cent to 76 per cent)
- a slight increase in the proportion of revenue generated from the non-residential customer class, relative to the residential customer class to reflect cost recovery.

12.5.3 Proposed water prices

Table 12-2 reflects Barwon Water's indicative water prices for the upcoming regulatory period.

Table 12-2 Proposed water prices - residential and non-residential customers ($real)

	2008/09	2009/10	2010/11	2011/12	2012/13
Water volume charge	1.35	1.51	1.69	1.90	2.13
Water service charge	102.66	115.00	128.84	144.33	161.69

Based on the pricing frameworks, Barwon Water's proposed prices ensure the total revenue determined under the building block approach has been achieved.

Furthermore, Barwon Water's proposed prices to recover the revenue required has taken into account the underlying cost justification and main cost drivers of the business to ensure the appropriate demand signals are being reflected to customers and, the costs of providing the water system are equitably and efficiently recovered from residential and non-residential customers.

The key components of Barwon Water's proposed tariff strategy for the upcoming regulatory period are:

- revenue determined under the building blocks approach is sufficient to recover the costs associated with providing services
- to maintain Barwon Water's two-part tariff structure (volume charge and service charge) throughout the upcoming regulatory period

12.5.4 Tariff strategy - water

Barwon Water has disaggregated the water tariff strategy into two components:

- The strategy underpinning the 2008/09 tariff structure
- The strategy will guide its proposed tariff changes for the remainder of the regulatory period.

12.5.4.1 Tariff strategy – 2008/09

As stated above, Barwon Water is proposing to increase (relative to the status quo) the variable price for water it charges its residential and non-residential customers. It is proposing to maintain a common variable price for these two customer classes. The rationale for this tariff structure and level is:

- it sends a strong water conservation signal, due to a higher (relative to the current) marginal price of water for all consumers. This is consistent with the Water Industry Regulatory Order requirement that prices provide incentives for the sustainable use of water
- it enhances each customer's ability to control their own water bill, as they can make conscious decisions to reduce their usage or to adopt alternative water sources (eg: greywater, recycled water)
- it is more equitable, as all customers see the same price signal, rather than residential customers facing significantly higher marginal price signals than non-residential customers (as occurs in other jurisdictions)
- it is consistent with the *Water Industry Regulatory Order* requirements that prices provide signals about the cost of future supplies. More specifically, the proposed variable price is economically efficient as:
    - average annual usage is the primary driver of the long run marginal cost of water supply, which is unlikely to vary by customer class. Therefore, it is appropriate for the marginal prices for all customer groups to be broadly equivalent. Furthermore, this is consistent with the Essential Services Commission's *2005 Draft Decision*, which stated that: *"It is reasonable to expect the long run marginal cost of supply of water to non-residential customers to be similar to the long run marginal cost of supplying water to residential customers - given that both customer classes are generally serviced by common headworks and treatment infrastructure;"*

- Barwon Water's proposed variable price is broadly consistent with the long run marginal cost for the greater Geelong system of $1.00, especially when taking into account the non-monetised environmental costs associated with water extraction (externalities) and the higher long run marginal cost price for the coastal system of Apollo Bay of $1.56, which is currently cross subsidised by customers across the total region.

- hardship schemes have been introduced to ameliorate the possible negative consequences associated with the increased variable price for residential customers [refer to section nine *"Barwon Water's Hardship Policy"* – this is consistent with WIRO requirement to protect low income and vulnerable customers.

- customer impact analysis shows most residential customers will incur either only marginal increases in their overall bills due to the change in tariff structure, or reductions, depending on their usage levels – this should assist in ameliorating the possible negative ramifications associated with the increase in the marginal price of water.

- as stated by the Essential Services Commission on page 49 of the *Guidance Paper*, "*the Essential Services Commission is concerned with the suggestion that concession card holders should be funded by other customers. Ideally the subsidisation of low income customer consumption should be addressed through concession card arrangements. If prices are to provide some form of welfare support then this would be best done through the fixed annual charge so as to preserve the ability of usage charges to provide signals to customers"*.

- non-residential customers prices increases will provide a clearer alignment between what they use and what they pay. Previously residential customers have been cross subsidising the water volume revenue for non-residential customers. Whilst a number of large non-residential customers will face substantial bill increases, Barwon Water believes this will provide enhanced financial incentives to adopt alternative water sources, or to undertake onsite water conservation initiatives. Barwon Water has, and will continue to assist these customers to assess these possibilities. In particular, Barwon Water has included $0.5M in the Water Plan to undertake water conservation programs in the non-residential sector, and the Victorian Government is proposing to extend 'Pathways to Sustainability Program' for customers using more than 10 megalitres per year. Furthermore, Barwon Water is proposing to provide recycled water to largest non-residential customer (subject to federal government funding), which in turn would mitigate fully the increased cost of potable water to that customer.

Also, Barwon Water is proposing to reduce the water fixed price it currently levies residential and non-residential customers. The rationale for this is:

- the reduction in the fixed charge broadly offsets the increased revenue generated from the higher volumetric price, thus maintaining the overall revenue mix between water and sewerage. This provides for equity between "water only" customers, and "water and sewerage" customers;

- it increases the percentage of the overall revenue generated from the non-residential sector, which is consistent with Barwon Water's current cost allocation modelling, and again, is equitable on a cost causation basis; and

- the levying of fixed prices allows Barwon Water to maintain revenue adequacy, which is consistent with the *Water Industry Regulatory Order* requirement requiring prices to allow a sustainable revenue stream.

12.5.4.2 Tariff strategy – 2009/10 – 2012/13

Barwon Water is proposing to adopt the following overarching tariff strategy to guide the refinement of water tariffs over the remainder of the regulatory period. The key components of this strategy are that Barwon Water is proposing to:

- maintain proposed two-part tariff structure for both residential and non-residential customers over the regulatory period;

- annually review and if necessary, update the long run marginal cost over the regulatory period, in order to guide assessment of the economically efficient variable charge level it will propose during the yearly price review process under the proposed tariff basket form of price control. For instance, if the supply / demand situation improves, resulting in a lower long run marginal cost, then there would be a prima facie case for Barwon Water to lower the variable price signal, and increase the fixed component, and visa versa if the supply / demand situation worsened;
- undertake a detailed cost allocation study into water services, with a view to refining the relative mix between residential fixed charges and non-residential fixed charges, which would guide the weighted price changes proposed under the yearly tariff basket review.
- propose to expand the scope of the cost allocation study to assess the cost of providing water services to each of the discrete water supply systems. The outcomes of this cost allocation study will guide the development of Barwon Water's tariff strategy for the next regulatory period (2013/14 and beyond). This will allow Barwon Water to assess the merits of introducing geographic based charges for discrete water supply systems. Any decision to do so would be subject to significant customer consultation through the next Water Plan process.

12.5.4.3 Long Run Marginal Cost Estimates

One of the principles under the *Water Industry Regulatory Order* is water businesses set prices that provide incentives for the sustainable use of Victoria's water resources.

Long run marginal cost pricing supports efficient decision-making as it reflects the costs incurred due to an incremental change in demand. It is therefore effective at signalling to both customers and water business the longer-term consequences of making decisions to invest in either water efficient appliances or in augmenting existing water supplies.

It can also assist both businesses and their customers by encouraging:

- efficient investment decisions by water businesses (such as investment in transportation, treatment and storage infrastructure) and households (such as investment in water efficient appliances and gardens)
- efficient procurement and provision decisions such as when to pump water and when to use stored water
- consumers to match the marginal benefits from an additional kilolitre of water consumed with the costs of providing the water, and hence provide appropriate incentives to encourage the efficient use of resources.

Marginal costs do not include costs unaffected by future decisions, ie. sunk costs, only future costs that can be changed.

Barwon Water has completed extensive calculations estimating long run marginal cost prices for discrete systems, which are detailed in the Table 12-3.

Table 12-3 Long run marginal cost price for discreet systems ($)

Discreet System	Greater Geelong	Apollo Bay	Lorne
LRMC Price	1.00	1.56	1.00

Barwon Water has considered the long run marginal cost price estimates when setting the proposed volume charge. However, to ensure all *Water Industry Regulatory Order* principles are achieved, the volume charge also takes into account externalities unable to be quantified, reflects water conservation signals and the interests of Barwon Water customers, specifically low income and vulnerable customers.

12.5.5 Customer impacts

Table 12-4 identifies the average quarterly water bill for residential customers within the region from the current regulatory period against the first year of the upcoming regulatory period.

Table 12-4 Quarterly water bill for residential customers ($, real)

Use per annum	2007/08	2008/09
75 kilolitre	54.89	50.98
150 kilolitre	72.70	76.29
200 kilolitre	84.57	93.16
300 kilolitre	108.32	126.92

Note – 1kl = one kilolitre = 1,000 litres

Note – under the Residential Tenancies Act 1997, *residential tenants are only required to pay for the water volume used, and do not incur water service charges.*

Table 12-5 identifies the average quarterly water bill for non-residential customers within the region from the current regulatory period against the first year of the upcoming regulatory period.

Table 12-5 Quarterly water bill for non-residential customers ($, real)

Use per annum	2007/08	2008/09
500 kilolitre	155.82	194.41
1,000 kilolitre	274.57	363.16
3,000 kilolitre	749.57	1,038.16
5,000 kilolitre	1,224.57	1,713.16
10,000 kilolitre	2,412.07	3,400.66

12.5.6 Consultation

Barwon Water has a strong commitment to customer consultation. Barwon Water has established a proactive Customer Consultative Committee that considers a wide range of issues including pricing proposals. Barwon Water has used the Customer Consultative Committee both formally at set meetings and informally to provide input into the pricing proposals.

The Customer Consultative Committee has been supportive of price changes that reflect the value of water, having pricing consistency across the region, the reduction of cross-subsidies and consideration of social obligations. The social obligations are stated in Barwon Water's Customer Charter and Customer Care policy.

The Customer Consultative Committee has also been significantly involved in providing input and feedback on behalf of the community on Barwon Water's first and second water plan.

As stated above, extensive customer consultation was also undertaken to gauge customer feedback on the choice between the introduction of an inclining block tariff structure or the current structure for the second regulatory period.

The key communications objective was to provide all residential customers with clear information about the two alternative tariffs systems and to provide a mechanism to enable informed feedback.

The key messages communicated by Barwon Water to customers included:

- customers who are water efficient should be rewarded
- the impact of climate change on our water resources and the increased need to encourage greater water-saving and reward water conservation
- feedback from customers will be considered in the decision about the future pricing structure within the region
- revenue neutrality would be maintained
- mechanisms would be put in place to help low income and vulnerable customers, including large families
- the new pricing structure will be introduced on 1 July 2008.

12.5.7 Compliance of charges with the Water Industry Regulatory Order

Table 12-6 illustrates Barwon Water's proposed prices are compliant with the pricing principles set out in the *Water Industry Regulatory Order*.

Table 12-6 Proposed prices compliance with Water Industry Regulatory Order

Water Industry Regulatory Order principle	Barwon Water's proposed prices
Ensure a sustainable revenue stream that does not reflect monopoly rents and/or inefficient expenditure	Achieves a revenue stream sufficient to recover operational, maintenance and administrative costs, with an increased focus on cost reflectivity between prices charged and costs of providing service, and with assistance of debt, fund expenditure on renewing and rehabilitating assets.
Incentive to water users about service delivery costs and alternative supplies	Barwon Water considered the results of LRMC when modelling proposed prices, ensuring the proposed variable charge provides water conservation signals to customers and options to use cheaper alternative supplies
Take into account customer interests	Barwon Water's proposed price path provides customers more control over the size of their water bill. Furthermore, it does not burden specific customer groups, and provides equity across the region by charging one single water volume price
Customer understanding	The current two-part tariff has been in place for over 15 years and has strong community support and understanding.

12.6 Sewerage and trade waste tariffs

12.6.1 Current tariff structure

Barwon Water's current sewerage tariffs are based on a two part tariff comprising:

- a fixed access charge the same flat rate for all customers within Barwon Water's service area; and
- a variable charge the same price for all customers within Barwon Water's service area, but which is based on various discharge factors dependant on the individual customer's class. This is otherwise referred to as a sewer discharge factor.

This two-part sewerage structure was implemented in the Geelong region in January 1993. On 1 July 2005, this structure was extended to the Colac, Lorne, Aireys Inlet and Apollo Bay regions. The primary reason for this latter change was to ensure a consistent charging structure was adopted across the entire Barwon Water region.

Barwon Water currently meters only incoming water to individual properties. In most cases sewage leaving the property is not metered. Therefore, the sewer discharge is an estimation based on the premise that a proportion of the water supplied to the property will be discharged to the sewer.

The discharge factor for residential properties is set at 90 per cent of the average daily winter water use. This reflects not all water consumed goes directly to the sewer.

A seasonal factor is further applied to reflect the ratio of water in to sewage discharged is less during the summer months due to increased outdoor usage, such as garden watering and topping up swimming pools etc.

The formula for calculating the residential sewer discharge is as follows:

Sewer Volume Price = Metered Water Volume X Seasonal Factor X Discharge Factor X Price

For non-residential customers, the formula is simplified and does not take into account a seasonal factor. This is based on the assumption the majority of non-residential customers use a similar amount of water for the total year. Straight-line discharge factors do vary depending on the property classification. Discharge factors are set having regard to facts, estimates, engineering aspects and other formulae as considered relevant and shall be generally assessed according to the specific property description.

12.6.2 Proposed tariff structure

Barwon Water is proposing to move away from the two-part tariff structure for residential customers, but to maintain the two-part tariff structure for the non-residential customers. More specifically, Barwon Water is proposing to:

- remove sewage variable charge for residential customers, but significantly increase the fixed price
- maintain non-residential variable price at levels broadly consistent with the status quo
- maintain the methodology currently used to estimate non-residential customers' sewage discharge.

The justification for this is outlined in more detail in Barwon Water's tariff strategy section.

12.6.3 Proposed prices

Barwon Water's proposed sewerage prices ensure the revenue determined under the building block approach is sufficient to recover the costs associated with providing sewerage services, and these costs are equitably and efficiently recovered from residential and non-residential customers.

The table below provides the proposed price path for sewerage services for the regulatory period.

Table 12-7 Proposed sewerage prices ($, real)

	2008/09	2009/10	2010/11	2011/12	2012/13
Residential					
Sewer Volume Charge	-	-	-	-	-
Sewer Service Charge	326.08	365.30	409.24	458.46	513.61
Non Residential					
Sewer Volume Charge	1.17	1.31	1.46	1.64	1.84
Sewer Service Charge	206.23	231.04	258.83	289.96	324.84

12.6.4 Tariff strategy - sewerage

Barwon Water has disaggregated the sewerage tariff strategy into two components:

- the strategy underpinning the 2008/09 tariff structure
- the strategy will guide the proposed tariff changes for the remainder of the regulatory period.

12.6.4.1 Tariff strategy – 2008/09

As stated previously, Barwon Water proposes to:

- remove sewage variable charge for residential customers, as:
  - the LRMC for the sewerage system is very low, relative to the average cost of the system, and, furthermore, the elasticity of demand in relation to sewage volumetric charges is likely to be virtually zero for residential customers. Therefore, the zero marginal price signal for volume proposed for residential customers by Barwon Water is unlikely to significantly impact on economic efficiency, and therefore, it is consistent with the WIRO requirements to provide signals about the cost of future supplies;

- maintain a variable sewage charge for non-residential customers, as:
  - the maintenance of a variable price provides some financial incentive to investigate and adopt alternative treatment and re-use options. This sector, relative to the residential sector, is likely to have greater scope to adopt these alternative options; and
  - this reflects the fact non-residential customers are in a much better position to mitigate the pollutants and volume entering the sewage system (hence a higher elasticity of demand for these services), and therefore, a variable price should provide incentives for the sustainable use of service (consistent with the WIRO).
- increase the fixed sewage service charge for residential customers, as
  - this allows the revenue lost due to the removal of the sewage variable price to be rolled into the sewage fixed charge (rather than into any water product), which means there is an equitable allocation of costs between water and sewerage services, which in turn maintains the cost reflectivity between a "water only" customers' bill, and "water and sewerage" customers' bill
  - fixed charges allow Barwon Water to maintain revenue adequacy, which is consistent with the *Water Industry Regulatory Order* requirement requiring prices to allow a sustainable revenue stream.

12.6.4.2 Tariff strategy – 2009/10 – 2012/13

Barwon Water is proposing to adopt the following overarching tariff strategy to guide the refinement of tariffs over the remainder of the regulatory period. The key components of this strategy are that Barwon Water is proposing to:

- reduce non-residential variable sewage tariff over the regulatory period, in order to bring it more in line with estimate of the long run marginal cost
- maintain a fixed residential service charge only (ie. it does not contemplate the reintroduction of a variable sewage tariff for residential customers during the regulatory period)
- undertake a detailed cost allocation study for its sewerage services, with a view to refining the relative mix between residential fixed charges and non-residential fixed charges, which would guide the weighted price changes proposed under the yearly tariff basket review
- propose to expand the scope of the cost allocation study to assess the cost of providing sewerage services to each of the discrete sewer supply systems. The outcomes of this cost allocation study will guide the development of Barwon Water's tariff strategy for the next regulatory period (2013/14 and beyond). This will allow Barwon Water to assess the merits of introducing geographic based charges for discrete supply systems. Any decision to do so would be subject to significant customer consultation through the next Water Plan process.

12.6.4.3 Long run marginal cost estimates

As stated above, Barwon Water completed an extensive analysis on the long run marginal costs for a discrete system to ensure the proposed sewer volume charges reflected the underlying costs and cost drivers associated with providing sewerage services.

Modelling on the Geelong system has not been completed due to the complexity relating to measuring trade waste. However, this will be completed during the coming months to support Barwon Water's investigations into pricing for discreet systems.

However, as with water volume charges, additional issues were considered including externalities not quantified and customer impacts, specifically low income and vulnerable customers in each region.

12.6.5 Customer impacts

The proposed sewerage prices provide signals to customers about the cost of providing sewerage services, whilst also reinforcing the signals for water conservation. The table below details the customer impacts the proposed prices will have on various customer groups over the five-year regulatory period.

Table 12-8 Residential customer impact table – sewerage ($ movement per annum)

Household Profile	2008/09	2009/10	2010/11	2011/12	2012/13
Customer @ 80 kilolitre	84	39	44	49	55
Customer @ 150 kilolitre	32	39	44	49	55
Customer @ 185 kilolitre	7	39	44	49	55
Customer @ 210 kilolitre	(11)	39	44	49	55
Customer @ 308 kilolitre	(83)	39	44	49	55
Customer @ 400 kilolitre	(150)	39	44	49	55

Note – tenants are currently not charged for sewer volume or sewer service charges under the *Residential Tenancies Act 1997,* therefore are not included in the above table.

Table 12-9 Non Residential customer impact table – sewerage ($ movement per annum)

Non Residential Profile	2008/09	2009/10	2010/11	2011/12	2012/13
Small shop @ 150 kilolitre	26	45	50	56	63
Small industrial @ 2,000 kilolitre	68	291	326	365	409
Large industrial @ 50,000 kilolitre	1,181	6,681	7,485	8,385	9,394
Park @ 10,000 kilolitre	83	375	420	471	527
Hospital @ 20,000 kilolitre	266	1,426	1,598	1,790	2,005

12.7 Customer impacts – total water and sewerage prices

The tables below outline the price impact the proposed prices will have on an average annual bill for residential and non-residential users.

Table 12-10 Residential customer impact table ($ movement per annum)

Household Profile	2008/09	2009/10	2010/11	2011/12	2012/13
Customer @ 80 kilolitre	70	65	72	81	91
Customer @ 150 kilolitre	47	76	85	95	107
Customer @ 185 kilolitre	35	82	91	102	115
Customer @ 210 kilolitre	27	86	96	108	120
Customer @ 308 kilolitre	(5)	102	114	128	143
Customer @ 400 kilolitre	(36)	117	131	146	164
Tenant (water volume charge only)	70	28	32	36	40

Table 12-11 Non-residential customer impact table ($ movement per annum)

Non Residential Profile	2008/09	2009/10	2010/11	2011/12	2012/13
Small shop @ 150 kilolitre	40	81	91	102	115
Small industrial @ 2,000 kilolitre	823	628	704	789	883
Large industrial @ 50,000 kilolitre	21,140	14,816	16,598	18,594	20,830
Park @ 10,000 kilolitre	4,038	2,012	2,254	2,525	2,829
Hospital @ 20,000 kilolitre	8,222	4,687	5,251	5,883	6,590

12.8 Consultation

Barwon Water has always incurred customer issues and complaints regarding customers not understanding the sewer volume charge and how it is calculated.

The introduction of stage 4 water restrictions has resulted in households installing grey water systems and washing machine hoses to redirect water usually entering the sewer now being used to water gardens. This has reduced the amount of sewer flowing to reclamation plants.

As a result, customer complaints are suggesting the sewer volume charge calculated on water consumption does not accurately reflect the actual sewer entering the system.

Furthermore, as highlighted above, the LRMC for sewer volume is low and the costs associated with the sewerage system are approximately 90 per cent fixed.

12.9 Trade waste pricing

Trade waste is the wastewater discharged to a sewer from commercial and industrial processes. It is the liquid generated from these activities and can contain a number of substances used or generated in manufacturing, processing or food preparation.

One of the main objectives of Barwon Water's trade waste management policy is to recover the true costs associated with the receipt, carriage, treatment and disposal of trade waste, including the maintenance and repair of Barwon Water's sewerage system. Furthermore, Barwon Water seeks to encourage waste minimisation and cleaner production, including waste prevention and to promote water conservation, through trade waste pricing.

The following section details Barwon Water's current trade waste pricing structure for the region.

General prices

- an application fee:
    - Trade Waste Permit
    - Trade Waste Agreement
- a renewable licence fee for subsequent years
    - Category 5 – Very high risk
    - Category 4 – High risk
    - Category 3 – Moderate risk
    - Category 2 – Low risk
    - Category 1 – Very low risk
- re-sampling and analysis of non-compliant trade waste
- re-assessment of risk ranking

Specific customer prices

- a volume charge consistent with residential and non-residential sewer volume charge
- trade waste quality charges apply if the trade waste is above "domestic" strength waste for:
    - COD (for trade waste above 1200mg/L (replaces BOD)
    - Suspended solids (for trade waste above 500mg/L)
    - Nitrogen (for trade waste above 60mg/L)
    - Sulphur (for trade waste above 50mg/L)
    - Phosphorous (for trade waste above 14mg/L)

12.9.1 Trade waste volume charges

For the 64 major trade waste customers, the trade waste volume charge is determined by a per centage of the volume recorded on the water meter or the volume recorded on the trade waste meter.

12.9.2 Trade waste quality price

For trade waste customers, the trade waste quality price is the above domestic sewage strength quality charges passed on to the customer to recover the cost incurred for collection, transportation treatment and disposal of constituents of trade waste.

The trade waste quality price model determines a load-based charge for certain analytes, above an assumed domestic strength, based on the actual operational and maintenance costs to remove or treat each analyte at the water reclamation plant receiving the waste.

The data required for the trade waste quality price model are:

1. Flow data – domestic, trade waste and total plant inflow.
2. Plant removal rates for each analyte.
3. An apportionment of each of the asset classes, which are used to treat the removal of trade waste.

Barwon Water's trade waste policy provides further information on trade water pricing.

Barwon Water is currently considering the most efficient way to determine trade waste quality charges. This involves consulting with trade waste customers during the current *Draft 2008 Water Plan* consultation phase. The *Final 2008 Water Plan* will include the detailed pricing approach for the trade waste quality charges.

12.9.3 Minor trade waste customers – all regions

Trade waste licence fees are applicable to all minor trade waste dischargers. The trade waste licence fee is reviewed and billed annually on the anniversary of the agreement. The fee varies as determined by the category of waste, is paid in advance and is specific to the occupier.

All trade waste customers within Barwon Water's region are required by law to install a pre-treatment device before trade waste can be legally discharged into the sewerage system. This is to minimise the amount of grease, oil and fat, and other undesirable waste entering the system.

Trade waste revenue is forecast based on the previous years total revenue for each charge and increased for consumer price index rate and any significant changes to trade waste customers.

During the regulatory period, the following anticipated changes would result in the forecast trade waste revenue:

1. New application fee - Increase in line with regions growth rate
2. Asset protection charge - Increase in line with tariff increases only, no increase in customer numbers
3. Trade waste resampling/testing - Increase in line with tariff increases only, no increase to customer numbers
4. Risk minimisation - This charge is for the Shell Refinery only. As from July 2011 this charge will be removed as a result of Shell's new charging process via the northern water plant business case.
5. Contravention charge - Increase in line with tariff increases, no increase in customer numbers
6. Reassessment of risk ranking - Increase in line with tariff increases only, no increase in customer numbers

7. Trade waste quality - The introduction of cleaner production and increased use of recycled water by the 64 major customers, trade waste quality revenue is forecasted to reduce by a total of $0.19M for the five years.
8. Trade waste volume - Initial increase in line with tariff increases, no additional major customers are anticipated to enter the region during the five-year period.
9. Shell trade waste revenue - Based on results from the Shell business case, trade waste revenue forecasted from Shell from June 2011 when the new northern water plant is operating has been built into the trade waste revenue.

Trade waste prices will increase in line with the percentage increase applied to water and sewerage prices. In addition, Barwon Water is not proposing any material change to the current trade waste pricing structure, however, believe a tariff basket form of price control provides the flexibility to deal with any significant events that may occur during the longer five-year regulatory period. For example, the Victorian Government initiative to examine and assess current trade waste policies, regulations and management systems throughout the State may result in significant changes in measuring and pricing trade waste volume and pollutants.

12.10 Pricing for water recycling

As previously mentioned, Barwon Water has implemented a recycled water strategy to establish the use of recycled water as a key element in the successful management of water as a finite resource.

Recycled water prices for non-residential customers on an individual basis are calculated applying the pricing principles. These are consistent with the principles outlined in the Essential Services Commission's Guidance Paper[7].

The pricing principles are:

- maximise revenue earned from recycled water services, having regard to the price of any alternative substitutes and customers' willingness to pay
- cover the full cost of providing the service
- include a variable component.

As highlighted in the demand forecast section, Barwon Water has not included any costs associated with any future residential recycling schemes, therefore the above pricing principles will be applied for future non residential customers.

12.11 Miscellaneous charges

Barwon Water is developing a core set of miscellaneous services to provide a simpler and more concise list of services clearly linked to the service activity. A review of miscellaneous charges has been undertaken to ensure prices are transparent and efficient by ensuring they are based on recovering the full cost of providing the service.

It should also be noted all prices will vary depending on the service provided.

The completion of the review will be finalised for inclusion in Barwon Water's final *2008 Water Plan* on 8 October 2007.

12.12 New customer contributions

Barwon Water proposes a minor increase to account for consumer price index movement to the charge per lot for customer contributions put forward in the Essential Services Commission guidelines. The charge is to be based on the water use efficiency of particular developments, with the standard charge varying according to the water sensitivity of developments and the demand for future infrastructure.

The three different charges proposed are:

[7] Essential Services Commission: 2008 Water Price Review – Guidance Paper, March 2007

- $550 per water and sewer lot where minimal impact on future water resources and can be provided for in current capacity
- $1,100 per water and sewer lot where developments will require further investment within six years to cater for development, or where shared assets must be constructed ahead of schedule and the 'bring-forward' costs are greater than $1,100 the resulting calculated charge should apply
- $2,200 per water and sewer lot for developments that will create demand for water resources over and above high-density, water efficient homes.

13 Form of Price Control

In the Essential Services Commission's "*Framework and Approach" Paper* it stated the "preference is for individual price caps to be adopted in the upcoming regulatory period for urban businesses" and "any concerns related to the impacts of drought and other unforeseen events are better dealt with through a separate adjustment mechanism rather than through the price control".

Barwon Water's response to the Essential Services Commission's position is discussed in the following sections.

13.1 Alternative price control mechanisms

There are number of common price control approaches applied by Regulators across Australia, and across the world. Each has its own unique characteristics, advantages and disadvantages.

Table 13-1outlines Barwon Water's understanding of the key price control mechanisms applied previously by Regulators and the advantages and disadvantages of each.

Table 13-1 Forms of price controls

Price Control	Description	Advantages	Disadvantages
Individual price caps	Each individual price is escalated annually by applying the CPI + real increase. There is no rebalancing between prices or changes in structure during the regulatory period.	Provides certainty to customers as to the price levels (and structures) that they will face over the forthcoming regulatory period	Businesses bear the entire volumetric risk. No flexibility to introduce new tariffs, or modify existing tariffs
Tariff basket	Prices are increased based on a weighted average of the prices over the basket of regulated services. Business can increase some prices more than others, provided the weighted average increase in prices is within the overall cap.	Provides enhanced flexibility to a business to alter tariffs, based on the prevailing circumstances, for instance, the imposition of water restrictions, or exogenous impacts on demand.	Business still bears a substantial amount of volumetric risk. More complex to administer than individual price caps.
Revenue yield	This control places a cap on the average revenue per unit the business can earn in the period. This is calculated by dividing total revenue by total output. ie water volume or customer numbers.	There is an incentive for the business to reduce costs, expand services and meet growing demand for services	May not be a linkage between revenues and costs. Moreover, if marginal revenue is not aligned to the marginal cost of producing an extra unit, there may be an incentive to lower prices below economically efficient levels, in order to increase their overall profitability.

Price Control	Description	Advantages	Disadvantages
Revenue cap	This sets the maximum revenue that can be earned at the outset of the regulatory period. This ensures a total revenue amount regardless of volume.	A business mitigates its volumetric risk.	There may be a perverse incentive to reduce demand through inefficient price structures (eg: not cost based).

13.2 Current price control mechanism

For the current regulatory period, Barwon Water applied individual price caps as the form of price control, notwithstanding the original request for a tariff basket form of price control.

At the time, the Essential Services Commission stated the primary benefits of individual price controls were they provided certainty to all customers with regards to the tariff outcomes being proposed, and they provided certainty to the Essential Services Commission that the tariffs adopted will be consistent with the Water Industry Regulation Order.

13.3 Barwon Water's proposed price control mechanism

For this regulatory period, Barwon Water is proposing to adopt a tariff basket form of price control. Barwon Water's rationale for applying this approach is:

- believes a tariff basket form of price control is consistent with the Water Industry Regulation Order, in particular, when combined with a clearly defined tariff strategy, a robust customer consultation process and a rebalancing constraint
- provides Barwon Water with greater flexibility to adjust price levels year on year, given the circumstances prevailing at that time of the price adjustment process
- provides an opportunity to introduce alternative pricing structures during the five-year period, so long as the weighted average tariff increase is within the overall cap and any proposed alternative structure is consistent with the Water Industry Regulation Order principles.

These are discussed in further detail in the following sections.

13.3.1 Consistency with the Water Industry Regulation Order

The Essential Services Commission has previously confirmed the Tariff Basket mechanism is consistent with the Water Industry Regulation Order, most notably:

- in the Workshop Discussion Paper – "*Approach to Pricing*"(April 2004), the Essential Services Commission stated:

  "it considers that both the tariff basket and individual price caps would best meet the requirements of the WIRO. Both of these forms of price control encourage businesses to set prices in line with underlying costs, thus the uncertainty of demand forecasting can be allocated efficiently as changes in demand can be matched with changes in costs. They also provide greater certainty for customers about future prices, in contrast to a revenue cap approach that may result in price volatility. These forms of price control are also administratively simple and relatively easy to understand and provide flexibility for the businesses to adapt their tariff structures".

- in the previous final decision, where the Essential Services Commission implicitly accepted the tariff basket was consistent with the Water Industry Regulation Order, by allowing South East Water and Portland Coast Water to adopt a tariff basket. More specifically, the Essential Services Commission stated:

  "it was willing to consider proposals for a tariff basket where a business could demonstrate that it had a clearly defined tariff strategy, would adequately consult with customers on any price changes during the regulatory period and that there was a limit

on the extent to which prices could be adjusted for customer categories and tariff components through an approved rebalancing constraint".

Based on this regulatory precedence, Barwon Water considers a tariff basket is consistent with the Water Industry Regulation Order requirements, and more specifically, it should be acceptable to the Essential Services Commission as long as it can show:

- there are appropriate rebalancing constraints in place
- it has a comprehensive and transparent tariff strategy
- it will consult customers throughout the regulatory period with regards to the tariff structures and levels it proposes to adopt year on year.

These criteria are discussed in further detail in the following sections.

13.3.1.1 Rebalancing constraint

Barwon Water believes it is important to provide certainty to the Essential Services Commission and to customers there will not be substantial customer impacts stemming from proposed tariff levels and structures over the regulatory period. In view of this, Barwon Water proposes to adopt a rebalancing constraint in relation to the proposed tariff basket. More specifically, Barwon Water is proposing to adopt a rebalancing constraint:

- CPI + X + 3 per cent from 2009/10 to2012/13
- that applies to each individual tariff component (eg: water variable, water fixed).

The rationale behind the structure of this rebalancing constraint is:

- applying the 3 per cent constraint, post the adoption of the X factor and the consumer price index, allows Barwon Water to refine tariffs levels, even when overall price rises are occurring (due to the positive X factor and consumer price index adjustments)
- the 3 per cent is consistent with regulatory precedence (eg: South East Water – three per cent)
- the 3 per cent is large enough to allow a material level of rebalancing to occur over time, whilst still providing a significant degree of protection to customers from substantial customer impacts. The latter is consistent with the Water Industry Regulation Order requirements to "take into account the interests of customers…including low income and vulnerable customers".

13.3.1.2 Tariff strategy

Barwon Water believes it has clearly articulated the tariff strategy to the Essential Services Commission in the previous section. To recap, Barwon Water's overall tariff strategy is to:

- increase the variable price levied upon residential and non-residential customers to encourage more sustainable use of this resource, and to refine this charge over time based on updated estimates of the long run marginal cost
- remove the sewage variable charge for residential customers, and to reduce over time the non-residential sewage variable charge
- undertake further analysis of the costs of providing water and sewerage services to residential and non-residential customers respectively, with a view to refining the relative percentage of revenues generated from the residential and non-residential water fixed charges
- propose to expand the scope of the cost allocation study to assess the cost of providing services to each of the discrete supply systems. The outcomes of this cost allocation study will guide the development of Barwon Water's tariff strategy for the next regulatory period (2013/14 and beyond). This will allow Barwon Water to assess the merits of introducing geographic based charges for discrete supply systems. Any decision to do so would be subject to significant customer consultation through the next Water Plan process.

13.3.1.3 Customer consultation

Barwon Water proposes to refine the tariff strategy year on year, based on consultation with customers, in particular, the Customer Consultation Committee.

This will allow Barwon Water to have regard to the prevailing attitudes of customers when deciding upon tariffs, which, as we have seen during the last couple of years, can change quite dramatically depending on the circumstance of the time (eg. supply/demand balance, restriction levels, environmental issues).

13.3.2 Flexibility

One of the key benefits of a tariff basket is it provides the regulated business with the flexibility to alter tariff levels based on the circumstances prevailing at the time. This flexibility is paramount, given the uncertainties faced by Barwon Water with regards to climate change, overall demand supply balance, the ever changing community attitudes towards water pricing, the nexus between demands and profit levels and the nexus between demands and *Central Region Sustainable Water Strategy* obligations.

The flexibility is also acknowledged and supported by the Essential Services Commission in their statement on page 13 of the guidelines released in March 2007, which states, "Particular mechanisms may be better suited to dealing with particular sources of uncertainty. For example the form of price control may be better suited to dealing with demand uncertainty."

More specifically, Barwon Water values this flexibility as:

- it allows Barwon Water to alter tariffs within the regulatory period to be more cost reflective, taking into account the prevailing circumstances. The tariff basket form of price control allows Barwon Water to adjust the variable tariff to reflect the scarcity value of water, thus leading to more efficient marginal price signals within the regulatory period, relative to an individual price capping regime
- the Essential Services Commission's proposed move to a five year regulatory period increases the uncertainty associated with developing demand forecasts, which in turn manifests itself in a greater level of risk being borne by Barwon Water. A tariff basket will allow Barwon Water to adjust price marginally to mitigate this risk
- Barwon Water is proposing to implement a sizable increase in volumetric tariff. Whilst it has factored these price increases into demand forecasts, it is entirely feasible the actual impacts will vary markedly relative to forecast impacts, given the uncertainties around estimates of elasticity of demand. This difference will manifest itself in either of two ways, both of which could be marginally mitigated if a tariff basket form of price control is adopted. These two ways are:
    - o if the elasticity of demand is higher than expected, Barwon Water will over forecast demand, which in turn impacts on financial viability; or
    - o if the elasticity of demand is less than expected, Barwon Water's demand will not reduce to the extent it has forecast, thus actual demand will be greater than forecast demand. This would impact upon Barwon Water's ability to meet requirements under *Central Region Sustainable Water Strategy*, which includes a reduction in per capita water consumption of 25 per cent by 2015 and 30 per cent by 2020 against 1994/95 per capita consumption levels.
- there are a number of external factors that can significantly impact upon actual demand and expenditure. In particular, climate change will impact upon the frequency and duration of water restrictions, which will result in a change in the level of demand. However, in today's environment, it is very difficult to derive robust estimates of the probability of restrictions from water supply modelling, therefore, there is a significant risk the frequency and duration of water restrictions assumed by Barwon Water may in fact be underestimated.

13.3.3 New tariffs

The adoption of a tariff basket would provide Barwon Water with the opportunity to adopt a new or refined tariff structure within the regulatory period, if the Essential Services Commission assesses:

- Barwon Water's customers would be financially neutral due to the implementation of the proposed tariff (based on the weighted average price rise approved by the Essential Services Commission, and volumetric assumptions pertaining to the new tariff)
- there was a broad degree of customer support for the tariff structure
- the requirements of the Water Industry Regulatory Order were met
- the benefits associated with that tariff change outweigh the costs.

As Barwon Water's tariff strategy indicates, it is not considering any major tariff reform going forward at this stage. Notwithstanding this, Barwon Water still believes there are benefits in allowing water business the flexibility to pursue alternative tariff structures within the regulatory period, in response to evolving attitudes, new information, new technology (eg. metering, billing systems), or some other unforeseen factor.

14 Adjusting Prices

14.1 Current regulatory period

14.1.1 Licence fees

For the current regulatory period the determinations provided for the Essential Services Commission to adjust prices at the end of the period to reflect any difference between the estimated and actual licence fees levied by the Environmental Protection Authority, the Department of Human Services and the Essential Services Commission.

The Minister for Finance sets the Essential Services Commission annual licence fees payable by each water business for economic regulation each year. The Essential Services Commission provided an estimate of the expected licence fee for the current regulatory period of $0.24M.

In accordance with the Essential Services Commission's *2005 final determination*, Barwon Water's *Draft 2008 Water Plan* provides for an adjustment to reflect the under estimation of licence fees during the current period.

Table 14-1 highlights the actual total license fees for the Essential Services Commission, Department of Human Services and the Environmental protection Authority against the original forecast.

Table 14-1 Total licence fees ($'000, real)

	2005/06	2006/07	2007/08	Total
Actual/revised forecast	504.6	356.3	397.0	1,257.9
Original forecast	322.5	322.5	387.0	1,032.0
Movement	182.1	33.8	10.0	225.9

14.1.2 Shared assets

As a result of the 2005 Determination, Barwon Water was required to fund shared assets which were not provided within the benchmark 2006 to 2008 capital expenditure. The total amount of unplanned investments in shared asset totalled $0.13M over the first two years of the current regulatory period - $0.11M for water and $0.02M for sewerage.

Barwon Water proposes these unplanned investments are rolled into the regulatory asset value for the commencement of the next regulatory period.

Barwon Water also proposes to roll forward the financing costs associated with these unplanned investments equivalent to the weighted average cost of capital assigned by the Essential Services Commission for the current regulatory period.

14.2 2008 regulatory period

14.2.1 Licence fees

In the Essential Services Commission's *2008 Framework and Approach* paper it sought feedback on the merit of adopting an 'L factor' mechanism to adjust for licence fees annually. Under an 'L factor' prices are adjusted as part of the annual tariff approval process to reflect the annual change in licence fees (with a one year lag).

As the majority of businesses also supported this mechanism, the Essential Services Commission is proposing to adopt an 'L factor' for upcoming regulatory period.

Barwon Water supports the introduction of an 'L factor' mechanism. This adjustment would be applied annually in the year following the payment of the actual fee.

The detailed mechanism and process will be developed as part of the consideration of the form of price control.

14.2.2 Changes in legislative obligations

To minimise administrative and other costs associated with any pass through arrangements, Barwon Water would seek a pass through of increased expenditure during the regulatory period, which are equal to or greater than 1.5 per cent of total revenue over the regulatory period, due to changes in the following instruments:

- Changes to all primary Acts and legislative instruments, including regulations
- Changes in taxes (or fees or similar charges) excluding income tax, penalties and interest in taxes, stamp duty, financial institution duty or similar taxes and levies
- Changes to Environmental Protection Authority licence requirements
- Changes to the *2007 Statement of Obligations*.

Barwon Water proposes to seek a pass through at the start of the 2014 regulatory period for any increases in expenditure of less than 1.5 per cent of total revenue over the regulatory period from changes to the instruments listed above.

14.2.3 Unforeseen events and sources of uncertainty

Barwon Water has identified events which reflect significant financial risk and may require price changes within the regulatory period should these events eventuate. These risks are outside of the reasonable control of Barwon Water or shareholders and are largely associated with climate related events and external influences.

Section 14.3 outlines the risk management framework Barwon Water applies to manage and mitigate the costs associated with unforseen events. This demonstrates Barwon Water applies a proactive approach to managing risks associated with unforseen events to minimise the potential losses and damages associated with such events. Barwon Water also takes out insurance coverage for certain events when it is economic to do so and where insurance products are available in the market place.

Barwon Water proposes to adopt a materiality threshold of equal to or greater than 1.5 per cent of total revenues over the regulatory period as being the trigger to determine if the adjustment to prices should occur during the regulatory period or at the commencement of the following regulatory period.

Furthermore, Barwon Water is proposing the adjustment mechanism apply to both costs and revenues above or below forecasts to more equitable share the risks and incentives with customers relating to those events deemed to be uncertain and unforseen.

Significant and unforseen events which have not been priced in the *Draft 2008 Water Plan* that could have substantial cost imposition or revenue impacts on the businesses and influence financial viability include:

- natural disasters or catastrophic events such as earthquakes, floods, bushfires, dam bursts and collapses of major sewers
- uncertainty associated with drought and water restrictions, that is, change in costs due to supply conditions, greater or lesser use of groundwater and different costs associated with water restriction programs, water quality and drought management strategies
- major projects under consideration by Government or other regulators
- significant changes to government or other regulator policies/legislative obligations (examples include inability to discharge to ocean outfalls, change from current "not for profit" classification, etc)
- acts of terrorisms or sabotage to water and/or sewer systems
- changes in financial compliance requirements (examples include a change to the taxation regime or a change to the International Financial Reporting Standards)
- occurrence of an avian influenza outbreak (bird flu pandemic), which directly or indirectly impacts Barwon Water's revenue stream and/or general costs to an unquantifiable level
- introduction of additional towns for *Country Towns Water* Supply & Sewerage Program by the State Government
- introduction of fluoridation of the water supply
- failure to achieve a satisfactory outcome to biosolids management
- loss of major industrial customers from the business
- establishment of a major private industry in the area requiring water.

Should any of these events, or a combination of these events, cause a significant change to the financial position of Barwon Water, it would seek:

- the re-opening of the approved price determination should a change in costs or revenues be greater than or equal to 1.5 per cent of total revenue; or
- request any change in costs, including any finance charges, or change in revenue are adjusted at the next regulatory period for events, or combined events, less than 1.5 per cent of total revenue.

14.3 Risk management policy

Barwon Water maintains a risk management system which is based on AS/NZS 4360:1999. The policy assigns responsibility for risk management to all Barwon Water employees and acknowledges the corporate responsibility lies with the Board, Chief Executive and Executive Management.

Barwon Water is committed to strategic risk management and operational risk management. Strategic risk management involves the identification of impacts or events that may prevent or impair the organisations ability to meet major objectives and to plan and co-ordinate appropriate responses.

Operational risk management is the practice of recognising in all day-to-day activities there are associated risks and these risks need to be appropriately addressed. It also establishes formal management and operational practices ensuring exposures to risks are identified, quantified and controlled through appropriate risk management strategies.

The water plan has been developed after a full assessment of the manageable risks. The costs in the plan are based on sound financial estimates that are supported by the stringent risk management and mitigation practices adopted. Risks that are considered highly likely to occur each year have been included in the direct expenditure budget.

Mitigation expenses associated with the following risk events are incorporated in the plan:

- major failure of sewerage infrastructure
- root foaming to manage increases in sewer blockages
- bushfire mitigation plan
- security to safeguard Barwon Water's assets
- stockpiling critical goods in preparation of supply chain breakdowns in preparation of the avian influenza.

Barwon Water has established an *Organisational Risk Management Plan*, which is overseen by the Risk Management Committee; this is a sub-committee of Barwon Water's Board. Barwon Water's Executive Management team is responsible for the implementation of the plan while the Management Review Committee monitors the progress of the plan.

The Risk Management Plan includes:

- the roles and responsibilities of the various parties to the Plan
- Risk Management Strategy Objectives
- corporate risks and key performance indicators
- proposed risk management actions to mitigate risks.

The *Risk Management Strategy* is currently under review to include emergency management aspects including Business Continuity Planning.

Risks are assembled in a risk register that is reviewed quarterly. The risk register comprises all the operational risks faced by the organisation and how they are to be treated. Due to the integrated management system at Barwon Water, the operational risk register also includes major environmental and occupational health and safety risks. Risks are categorised according to their importance as:

- operational risks
- corporate risks or
- dynamic risks.

High-level risks are lifted from the Operational Risk Register into a Corporate Risk Register. The corporate risks are further classified as dynamic risks if the impact will be within three months.

14.3.1 Major risks

Major risks faced by Barwon Water can be separated into operational, social or environmental. Table 14-2 provides details of some of the major risks and their mitigating actions. The costs of mitigating actions are built into Barwon Water's *Draft 2008 Water Plan*, as far as possible.

Table 14-2 Major risks and mitigating actions

Operational Risks	
Risk Description	Mitigation
Severe Business Disruption – Influenza (Bird Flu) Pandemic	1. Design and implement business continuity plan including Pandemic Response Plan 2. Incorporate advice from Department of Human Services including antiviral program (once Department of Human Services has established program) 3. Conduct Branch Managers scenario activity - completed October 06 4. Conduct Business Impact Analysis with individual branches as progress towards Plan. – in progress March 07
Geelong Sewerage management Strategy – non-	1. Negotiations with Shell

delivery of the Northern Water Plant due to failure to negotiate agreement with Shell/failure to obtain Federal funding/failure to obtain Department of Treasury and Finance approval	2. Preparation of business case by Department of Sustainability and Environment approved consultants 3. Stakeholder consultation 4. Manage expectations of stakeholders by highlighting that project is subject to successful negotiation of agreement and obtaining government funding support 5. Lobby Federal govt.
Failure to provide adequate information technology security against external infiltration	1. Computer strategy 2. Computer usage policy 3. Firewall protection 4. C.E.R.T (uni of QLD). Affiliation
Anglesea groundwater project - yield is determined to be less than expected after project has been fully implemented	1. Test/production bores established during early stages of project 2. Hydraulic model developed for groundwater area 3. Drawdown pumping carried out during design of infrastructure 4. Project timeline to be extended if water storages improve significantly, prior to commitment to commence construction (Sept 07)

Environmental Risks	
Risk Description	Mitigation
1. Inability to provide an effective long-term solution for biosolids management 2. Black Rock water reclamation plant receives criticism from minority group	1. A biosolids management plan has been prepared and a program developed to implement the plan 2. The plan is reviewed annually to ensure milestones have been met. 3. The plan is supported by Biosolids Community Consultation Plan (2004-2008) which is a dynamic document. 4. The Consultation plan is advised by the Biosolids Investigation Group which is a consultative group including community members who were selected through an application process. 5. Particularly vocal individuals/small groups are being directly consulted with 6. Pilot testing of proposed process to take place in April. Expect tender to be finalised by July. 7. Environmental Protection Authority has extended licence for Werribee
New CSIRO research on climate change predicts reduced rainfall in future.	1. Revised modelling undertaken 2. Latest data included in Central Region Sustainable Water Strategy and Water Supply Demand Strategy 3. Community awareness through ongoing water conservation programs 4. Water Supply Demand Strategy based on conservative assumption of step change in climate over last ten years.

Social	
Risk Description	Mitigation
Increasing age profile of workforce engaged on physical maintenance activities	1. Succession plan through traineeship program. 2. Formal training to certificate level 2 & 3 under the WITP for new employees/trainees. 3. Trainee employment program

Apollo Bay Water Storage - failure to locate suitable site, impacting on water availability for new development	1. Review of alternative site in progress. 2. Obtain external legal/planning advice on rezoning application 3. Zoning application to Colac Otway Shire to be placed.
Fire creation and exposure during maintenance operations within fire danger period and Total Fire Ban days - Seasonal Risk	1. Development of Branch Fire Prevention and Management Guidelines 2. Introduction of Total Fire Ban Day alert page in Intranet 3. Yearly employee briefing by Country Fire Authority on Total Fire Ban Day Permit requirements/obligations 4. Yearly employee Wildfire Awareness training conducted by the Country Fire Authority