Expenditure Forecast Review for the Victorian Regional Urban Water Businesses

- BARWON WATER
  Recommendations on Expenditure Forecasts – FINAL REPORT
- 27 March 2008

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1. Introduction and Background

Sinclair Knight Merz has been engaged by the Essential Services Commission (ESC) to undertake an independent review of the expenditure forecasts provided by the following eleven Victorian regional urban water businesses as part of their Water Plan submissions for the 5 year regulatory period commencing 1 July 2008 and ending on 30 June 2013:

- Barwon Water;
- Central Highlands Water;
- Coliban Water;
- East Gippsland Water;
- Gippsland Water;
- Goulburn Valley Water;
- North East Water;
- South Gippsland Water;
- Wannon Water;
- Western Water;
- Westernport Water.

The key objectives of the reviews are to determine whether the capital and operating expenditure forecasts in the Water Plans are:

- Reasonable and prudent;
- Appropriate in relation to key drivers and obligations;
- Robust and justifiable (with adequate demonstrated supporting analysis and systems); and
- Deliverable over the 5 year regulatory period.

In undertaking these reviews, SKM's key responsibilities are to:

- Assess the appropriateness of the expenditure forecasts in relation to the key objectives of the review;
- Provide independent advice to the ESC regarding the appropriateness of the forecasts; and
- Where SKM's advice indicates that a proposed expenditure level is not appropriate, propose to the ESC a revised expenditure level.

The key outputs to be provided to the ESC in relation to these reviews are:

- Issues papers: 23 November 2007;
- Draft Reports (one report for each water business): 31 January 2008; and
- Final Report: 5 March 2008,

[or other date agreed with the ESC].

A draft report, presenting the review team's preliminary views on the proposed expenditure forecasts and the further work undertaken to clarify the issues identified in the Issues Paper, was submitted to the ESC for the various businesses between late January and mid February 2008. The Draft Report, including preliminary recommendations, was made available to the relevant regional urban water business for its review and feedback. Barwon Water provided a written response and a further meeting and discussions with the business were undertaken to clarify any remaining issues, to ensure any factual errors or misinterpretations were corrected and to help the review team formulate its final recommendations.

This Final Report, which constitutes the third key output of this review, presents final recommendations on adjustments to be made to the operating and capital expenditure forecasts from the review.

1.1 Report Outline

The following layout has been adopted for this Draft Report:

- **Section 2** briefly describes the approach taken for the expenditure forecast review;
- **Section 3** discusses the key general issues that arose, common to many if not all of the water businesses, that provided a key focus for further more detailed review;
- **Section 4** provides background on the process used by the review team to form its view on the expenditure forecasts and identifies some of the key issues faced by the water business driving expenditure during the second regulatory period;
- **Sections 5 and 6** respectively address the issues identified for Barwon Water's capital and operational expenditure forecasts, and contain recommendations as to adjustments to be made to the forecasts and capital contributions, as appropriate.

2. Approach to the Review

2.1 Assessment of Operating Expenditure

The key item in assessing operating expenditure is the evaluation of the additional operating costs relative to actual operating costs incurred in 2006/07. These additional costs were assessed and changes recommended in order to achieve a productivity improvement during the second regulatory period. This is discussed in **Section 2.1.1** below.

2.1.1 Evaluating Productivity Improvement

The ESC has recommended that a productivity gain of 1% per annum, growth adjusted, should be assumed. In instances where the forecast level of the OPEX that is controllable by the business does not exhibit the desired level of productivity gain and/or there are increases above the assumed productivity, clarifying explanations for this will be sought.

The procedure proposed to test the increase above appropriately growth adjusted Business As Usual (BAU) operating expenditure is as follows. For each year of the regulatory period:

1) Establish a **Growth Adjusted Target BAU Opex** (BAU refer below for it's determination),
2) Compare the water business' **Forecast Gross Opex** for that year (as identified in its Water Plan) with the Growth Adjusted Target BAU Opex;
3) Establish the **"Variance from Growth Adjusted Target BAU Opex**" [Item (2) less Item (1) above]; and,
4) If the "Variance from Growth Adjusted Target BAU Opex" is positive (i.e. the Growth Adjusted Target BAU Opex is less than the Forecast Gross Opex), seek an explanation of the activities and the related expenditure comprising this difference.

The Variance from Growth Adjusted Target BAU Opex is a starting point for discussions and SKM will be considering the make-up of the positive variances and the justification and reasonableness of them with the water business. There will potentially be a variety of explanations.

Further elaboration of this proposed procedure and determination of the above parameters is provided below:

- The **Growth Adjusted Target BAU Opex** (BAU = business as usual) for a particular year will be determined by taking the actual gross operating expenditure for the business for the most recently audited full year's operation (i.e. Actual Gross Opex in 2006/07), subtracting the expenditure for licence fees, purchases of bulk water and the environmental levy, adjusting the remaining expenditure upwards in proportion to the growth in customer numbers that has occurred since 2006/07 and then reducing this amount by the ESC's stipulated minimum productivity gain of 1% p.a. year on year.

Thus the formula applied to establish the Growth Adjusted Target BAU Opex is:

- $A = B *(C_{(year\ n)} / C_{(year\ 2006/07)}) * (1\text{-}0.01)^{(year\ n\ -2006)}$ **Equation 1**

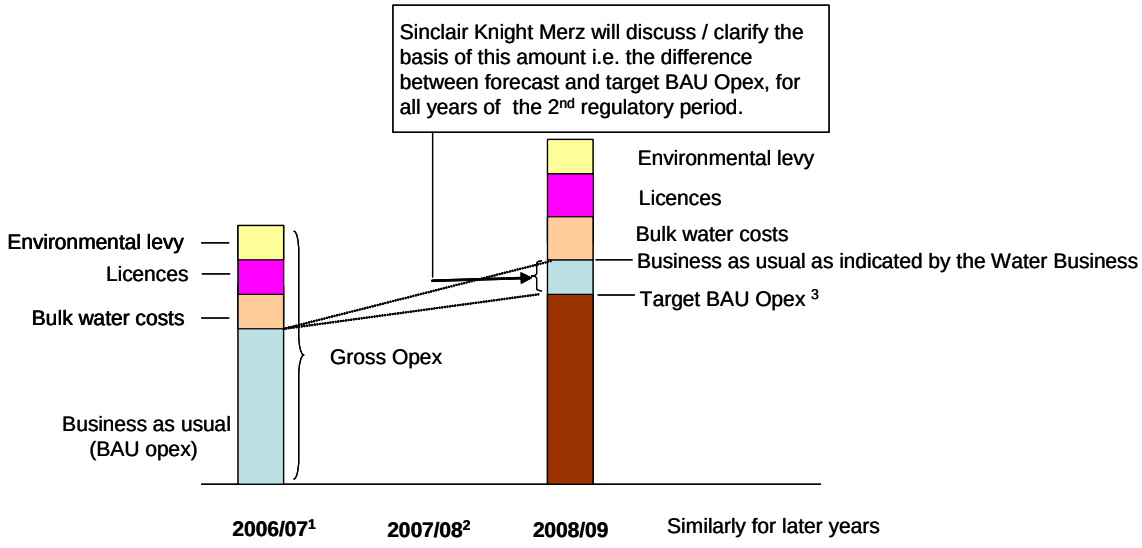
Where **A** is the Growth Adjusted Target BAU OPEX for year n;

B is the actual audited Gross Opex in year 2006/07 excluding costs for licence fees, environmental levy and water purchases.

C is the number of water supply customers (for the year indicated).

This is illustrated schematically in **Figure 1** below.

- **Figure 1: Illustration of Growth Adjusted Target BAU Opex**



Notes:

1. 2006/07 was selected by the ESC as the base year because this is most recent year for which recorded data is available.
2. 2007/08 is outside the 2nd regulatory period and will not be assessed in detail.
3. Target BAU Opex is estimated from BAU Opex in 2006/07 allowing for growth in customer numbers and productivity gains of 1% per annum (cumulative).

2.1.2 Issues which the ESC will resolve

The ESC will review and resolve the amounts to be budgeted for Licence fees, Environmental Levy, and the tariffs applicable to bulk water purchases (if any). These issues thus fall outside the scope of SKM's review.

It should be noted however that the forecast volumes of bulk water purchases fall within the scope of the SKM review. In so far as the assessment of bulk water purchases and the related expenditure impacts on Barwon Water's expenditure forecasts the review team has relied on the outcomes of the preliminary review of the demand forecasts undertaken by PWC.

2.1.3 Water Demand Forecasts

Information on the review of the demand forecasts undertaken by PWC for the ESC was made available to the SKM review team and was considered at least to the extent that the outcomes of that review were consistent with the demand forecasts influencing this expenditure review.

2.2 Assessment of Capital Expenditure

The process for reviewing capital expenditure forecasts is summarised below:

- A number of projects were selected, on a sample basis, but including any projects comprising a significant proportion of the total forecast capital expenditure;
- The selected projects were reviewed to confirm that the following criteria would be met:
  - **Appropriate in relation to key drivers and obligations** - with evidence provided of such drivers and in accordance with the Statement of Obligations that sets outs the responsibilities of each of the Water Business;
  - **Robust (with adequate demonstrated supporting analysis and systems)** - as may be demonstrated by a report which clearly enunciates the problem faced by the water business, and sets out the analysis undertaken of the options to resolve that problem and identifies the preferred solution. Evidence may also be sought to demonstrate that the preferred solution falls with in the overall strategy adopted by the water business.
  - **Deliverable over the 5 year regulatory period**. Usually evidenced by a Gantt chart, or similar detailed program, demonstrating that the key activities comprising the delivery of the project from planning to construction have been identified and thought through, and assigned an appropriate sequence and duration.
  - **Reasonable Cost Estimate**. The cost estimate is well supported either by a schedule of quantities using typical rates currently being experienced in the industry, or compare favourably with other similar projects or preferably both of the above.

3. General Issues

3.1 Issues Identified for Capital Expenditure

3.1.1 Pressure on Resource Availability

Expenditure on capital works in the Victorian water industry, based on data provided by all (metropolitan and regional) the water businesses in Victoria is expected to increase dramatically as shown in **Table 3-1.**

- **Table 3-1: Historical and Forecast Total Capital Expenditure in the Victorian Water Industry**

	1st regulatory period		2nd regulatory period				
Year	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**
Expenditure ($M / year)	950	1,680	2,800	3,220	2,150	1,000	820

The aggregate capital expenditure levels for the Victorian water industry are forecast to increase steeply from current capital expenditure levels in the first three years of the second regulatory period and then decrease but remain high for the final two years of the regulatory period. This is expected to place great pressure on available resources - in the water businesses themselves, the consulting sector and the contractors, especially in the first three years of the second regulatory period (RP2). Although this pressure may be mitigated somewhat as some of the large projects, such as the proposed Sugarloaf Pipeline for Melbourne, may not consume such large amounts of resources as the costs of those projects alone may indicate, the pressure is nevertheless expected to be severe. Furthermore, it will be exacerbated by high to very high workload levels in other infrastructure areas such as transport and in the mining sector. A positive aspect is the constructor resources coming off some of the big road projects currently nearing completion (e.g. Eastlink).

The limitations on pipeline supply, particularly steel pipeline, is a particular constraint facing the industry at present requiring businesses to place orders early or face price premiums for accelerated delivery.

In considering project deliverability and in reviewing the expenditure forecasts therefore the review team has considered the urgency of projects whose expenditure is forecast for the first three years of the second regulatory period and in some cases spread this expenditure and/or reassigned the expenditure to later years.

3.1.2 Country Towns Water and Sewerage Program

The Country Towns Water Supply and Sewerage Program is a program managed by the Department of Sustainability and Environment in which the Government of Victoria will invest amounts as follows totalling $42 million (including some overlap between categories).

- $21 million in water and sewerage services for priority towns with the most urgent health and environment issues.
- $12 million on towns in the Gippsland Lakes area;
- $6 million on "showcase" towns that will develop innovative solutions that other towns can learn from;
- $4 million in upgrading water supply in towns with the most urgent problems; and
- $3 million in helping councils to prepare domestic wastewater management plans.

In January 2006 the Victorian Government announced the 35 priority country towns which would receive sewerage systems (23 towns) and /or improved water supplies (14 towns). The media announcement of January 9, 2006 states that the "statewide program aims to stop leaking septic tanks polluting rivers, groundwater and other waterways and damaging the environment".

While the obligation to undertake these works, comprising the media announcement concerning the sewerage schemes in the Gippsland Lakes region and "priority towns" is understood, the review team is not aware of any specifications concerning timing associated with this obligation.

The review team recommends that the ESC should seek stronger guidance from DSE and the government on the priority, business decision framework/rules and funding arrangements in the light of current market conditions (and project costs) for these proposed schemes.

In terms of the business case for these projects the review team is not in a position to form a firm view on the business / financial merits of proceeding with these schemes. We understand however that implementing these schemes requires cross subsidy from existing customers. Our general recommendation therefore is to defer the regulatory expenditure concerned so as to minimise the adverse impact on customers and reduce the impact on water price increases.

3.2 Issues identified in relation to Opex forecasts

The preliminary reviews of the Water Plans and the operational expenditure forecasts focussed particularly on items brought forward by the businesses to explain the Variance from Target BAU Opex. Effectively this comprised a list of activities where the costs are for new obligations, operating new infrastructure or increased costs for existing activities. In this way the major issues for each business were identified and formed the basis of the reviews producing the outcomes as outlined in **Section 6** of this report. In addition the following key issues were identified that required consideration in relation to some or all of the businesses.

3.2.1 Energy (Electricity)

3.2.1.1 Overview

Most water businesses have proposed **additional energy costs** throughout the regulatory period as a factor contributing to the explanation of the variance in BAU Opex. The following considers some of the issues relevant to this increased expenditure.

For a number of businesses, the current energy contracts with electricity suppliers were due to expire and be renewed with effect from around July 2008. In most cases the new agreements or contracts to cover the period beyond 1 July 2008 have not been executed. Consequently new tariffs were not yet established at the time of the Water Plan submission and the expectation was that significant increases throughout the regulatory period would occur.

The cost of electricity in 2006/07 generally ranged from about 5 to 13% of the total operational expenditure for regional urban water businesses in Victoria.

The water businesses, based on broad information provided to them from various sources in mid to late 2007, have in their Water Plans submitted variously put forward real increases in electricity costs over the second regulatory period ranging from

- No or minimal provision for real electricity cost increases relative to 2006/07 excluding new demands (e.g. Goulburn Valley Water, Central Highlands Water), to
- Substantial real electricity cost increases of up to 100% relative to 2006/07 (e.g. Barwon Water, Wannon Water). Such cost increases were a combination of predominantly price effects but also demand effects and other relevant impacting assumptions.

The review team notes that prices in the electricity market (and specifically the wholesale market) have moved considerably since the submission of the Water Plans and continues to have some volatility. However it is clear that the electricity prices have fallen considerably and reconsideration by the water businesses of this issue is appropriate.

The review team also notes that the current electricity contracts were for a three period and the negotiations for these were undertaken in circa early 2005 with effective operation from 1 July 2005. The base year of 2006/07 sits in the middle of the contract period.

In response to the Draft Report most businesses took further advice on the potential real increases in electricity costs. Notably, following provision of the Draft Reports to the respective water businesses, North East Water and Central Highlands Water provided the review team with copies of advice they had received from independent specialists in this area (Key Energy & Resources and Marsden Jacobs respectively). One business is well advanced in obtaining firm electricity prices for the next three years.

Based on circumstances prevailing at late February early March, this advice generally proposed that a likely outcome on real electricity prices (and therefore costs) over the regulatory period would be a flat increase of some 19 to 24 % overall (with the wholesale cost component being the primary influencer of this). [NB: It needs to be confirmed that there are no nominal (versus real) effects to be resolved.]

In summary, and as detailed in the rest of this section, the review team considered that these views took a slightly "pessimistic" or cautious view of the likely outcomes of electricity price increases to be negotiated by the water businesses before 30 June 2008. The methodology used by these advisers is broadly consistent with the strategic overview approach adopted by the review team in assessing likely electricity price outcomes.

The review team has concluded and recommends that the following increases in electricity energy prices should be adopted for regulatory expenditure purposes:

- 2008/09 12% (*relative to costs incurred in the base year, 2006/07)*
- 2009/10 onwards 15% (*relative to costs incurred in the base year, 2006/07).*

The review team notes the differences of views that the water businesses have on real electricity price increases (and their cost impacts). As is natural the water businesses have been cautious from a business management viewpoint in formulating their positions and it is expected that this would be moderated when viewed from a regulatory pricing position and the extent to which such costs should be incorporated into a reset regulatory "BAU" expenditure base. These differences will only be resolved when the water businesses enter into and conclude their respective negotiations with electricity providers. The review team notes that most businesses intend to adopt a similar approach as for the current contracts and use the Strategic Purchasing Unit to negotiate prices.

The review team recommends that the ESC revisit this issue following release of its Draft Pricing Determination and in moving to its final determination. This is prudent because this decision (given its significant impacts) needs to be made with the best and contemporaneous information when making its final determination and the water businesses should be well advanced in its negotiations for new electricity contracts that all will need to be entered into before 30 June 2008.

The review team has formed its views on real electricity price increases (underpinning cost impacts) using the approach described in the remainder of this section.

3.2.1.2 Proposed Increase in Energy Tariffs:

The components of the delivered cost of electricity (which are separated into peak and off-peak components for larger users) are:

- Wholesale forward price

- Profile cost (represents the extent to which the actual load shape is correlated to the NEM pool price over a day/week/month etc)
- Losses adjustment (for transmission losses (MLF) and distribution losses (DLF))
- Transmission Use Of System costs (TUOS)
- Distribution Use of System Costs (DUOS)
- NEMMCO (National Electricity Market Management Company) fees
- Ancillary services charges
- MRET (mandatory renewable energy target) costs
- VRET (Victorian renewable energy target) costs
- Retailer's margin.

The *transmission cost* and the *distribution cost* are the other major components of the delivered cost of electricity, and together with the *wholesale forward price* make up between **80 to 90 %** of the total energy price.

Transmission Use of System costs **(TUOS)** and Distribution Use of System Costs **(DUOS)** are both regulated costs and represent approximately **40 to 50%** of the overall energy price. These cost components of the total energy price are generally constant (i.e. are increasing at CPI) or are declining in real terms. [NB: This is different from 'standing offer customers' where real increases in TUOS and DUOS of up to 17% have been recently experienced.]

Of the balance of the components of the total energy price:

- The retail, which are negotiable, and other costs make up approximately 5 to 13% of the total energy price.
- MRET and VRET charges were minor in 2002 but are rising to become a more significant cost element as these programs transition up to full effect.
- Many of the other charges rise consequentially because they are often determined as a percentage of the other charges (e.g. margins, losses etc).

Impacts of Carbon Trading Scheme

From sometime in 2010 to 2012 a carbon trading scheme is expected to be implemented in Australia which will have a material impact on electricity prices but that impact cannot be estimated until the design of the scheme (notably the "glide-path" for emissions reductions) is known (expected to be known in 2009 or 2010). The review team has not considered the impacts of this increase here and have assumed that any material price impacts would be reviewed by the ESC later and, if appropriate, adjustments made.

Future Price Movements (Aggregate level)

The ***wholesale forward price*** has risen considerably recently. Some of the drivers for this are seen to be the tightening of the supply/demand balance and the drought (which impacts on the ability of some generators to operate). However the futures market sees the wholesale forward price declining. The ***wholesale forward price*** is the principle variable component of the cost of electricity and currently makes up approximately **40 to 50%** of the total energy cost.

The wholesale forward price of electricity may be obtained from the Futures Market. Although prices are volatile on this market it reflects current market perceptions of the future wholesale forward price. **Table 3.2** provides a market view of wholesale forward prices for Victoria at January 2008 (Draft Report stage), adjusted to real January 2007 prices by assuming a CPI of 2.5%, and averaged to cover financial rather than calendar years. The increase with respect to 2006/07 has then been calculated.

- **Table 3-2: Victorian Electricity Futures - Wholesale Forward Price only (Draft Report Stage, January 2008)**

Calendar year	Forward unit cost for calendar year ($/MWh – real Jan 07)	Financial year starting	Forward unit cost for financial year	% REAL increase in wholesale forward price - relative to 2006/07
2006	41.89			
2007	43.13	July '06	42.51	
2008	59.54	July '07	51.34	21%
2009	45.95	July '08	52.75	24%
2010	43.52	July '09	47.73	5%

The market is anticipating that current steep prices will decline in future and this is already reflected in Queensland (see Financial Review article in Appendix A) where drought breaking rains have occurred. There had been further movements in prices by the time of commencing preparation of the Final Report (from those at the Draft Report stage).

In forming its views the review team has been primarily informed by the information in the following:

- **Table 3-3** – which provides a view of the wholesale forward prices now (flat contract forward in nominal $/MWhr as at 4 March, the date of commencing preparation of the review team's Final Reports on the expenditure reviews) and which will provide a backdrop to the current electricity price negotiations of the water businesses; and
- **Table 3-4 –** which provides an indicative view of the wholesale forward prices in late 2004/early 2005 (flat contract forward in nominal $/MWhr) and which provided a backdrop to price negotiations at the time of entering into the current electricity contracts. [NB: The market appeared to be reasonably stable at that time.]

- **Table 3-3: Wholesale Prices - Flat Contract forward as at 4 March 2008**

Wholesale Prices - Flat Contract forward as at 4 March 2008 (in nominal $/MWhr)			
State	Calendar Year		
	2008	2009	2010
NSW	40.26	46.51	52.87
Vic	42.09	45.6	51.22
QLD	50.2	44.87	47.03
SA	69.8	60.51	50.03

- **Table 3-4: Wholesale Prices - Flat Contract Forward circa 2005 contract negotiations**

Wholesale Prices - Flat Contract Forward circa 2005 contract negotiations (in Nominal $/MWhr)				
State	Calendar Year			
	2005	2006	2007	2008
NSW	35.5	36.5	37	38
Vic	33	34	34.5	35.5
QLD	33	35	35.3	36
SA	39	41	41	42

3.2.1.3 Overall Approach:

In forming its view the review team has adopted the following overall approach:

- Establish from **Table 3-3** the "average" Victorian wholesale electricity price (flat forward contract) for the period of the current contract based on the generally prevailing market view of prices at the time of the negotiations for the current contract. This is assumed to be the average of the 2006 and 2007 calendar year prices, namely $34.3/MWhr. Fortuitously this also happens to be the base year for the current expenditure review.
- Escalate this price to current day dollars (assuming only 2.5% p.a. escalation). This yields a price for comparison with current view of 2008/09 prices of $36/MWhr.
- Compare this with the 2008/09 (average of calendar prices for 2008 and 2009 from **Table 3-4**, namely $43.9/MWhr). This yields an effective real increase in this wholesale price of 22% for 2008/09 relative to 2006/07.

- This can be repeated for other years. For 2009/10 the point of comparison is with the conversion of the average 2009 and 2010 calendar year prices de-escalated to give comparison in real terms. This yields an effective real increase in this wholesale price of 30% for 2009/10 relative to 2006/07.
- Assume that the real increase for 2009/10 (relative to 2006/07) also applies for the later years of the regulatory period.
- Input these real wholesale price increases into a spreadsheet assessment for the real overall price increases taking into account all components of the price as indicated in **Section 3.1.2** and their real movements, noting that the wholesale price component is the most volatile and represents approximately 40 to 50% of the overall price.

[NB: The real cost increases are relative to 2006/07, not year on year cumulative. Choosing other states and/or a mix of states may give rise to a lower percentage increase, noting that this is a national market. The forward prices also probably include a higher escalation factor than has been assumed by the review team].

For any water businesses demonstrating completed contracts with electricity suppliers covering the second regulatory period the forecast expenditure for energy purchases was based on the tariffs contained in that contract. The review team also understands that contracts being entered into currently appear to be for a three year period.

Recommendations: The review team recommends, based on the above approach, that the following increases in energy prices should be adopted for regulatory expenditure purposes:

- 2008/09 12% (*relative to costs incurred in the base year, 2006/07)*
- 2009/10 onwards 15% (*relative to costs incurred in the base year, 2006/07).*

In making these recommendations the review team also:

- Notes that these increases do not include changes in demands (as these are dealt with separately for the respective businesses; and they do not include any future impact of carbon trading on future prices.
- Recommends that the ESC review the real electricity price increases expected on the basis of any further and better information available during the period following release of its Draft Pricing Determination and before the final determination.

The review team has applied these real increases in electricity costs consistently across all the water businesses.

3.2.2 Green Energy

The ESC indicated in its' Water Plan Issues Paper (December 2007) that many water authorities had forecast increases in operating expenditure due to implementing greenhouse gas (GHG)

management strategies. Water authorities provided a number of reasons for implementing such strategies, including EPA requirements for licensed premises, statement of obligations requirements to develop greenhouse gas reduction strategies and the results of customer consultation which indicated that customers were willing to pay for (or contribute towards) carbon neutrality.

No water authority cited any requirement that set specific targets it was compelled to achieve. Within the regulatory period, reduction targets ranged between 0 percent and 30 percent, with some large new projects such as the Goldfields Superpipe targeting GHG neutrality (as mandated by government for that project).

The review team considered that GHG targets of the businesses should typically be in the range 10 to 15% (for the assessment of expenditure for regulatory pricing purposes). This is understood to be broadly consistent with government expectations at this stage.

The EPA outlines four broad categories of carbon offsets (EPA web site) including, bio-sequestration (e.g. tree planting), energy efficiency, renewable energy and greenhouse gas avoidance, capture and destruction projects. Water authorities who propose to reduce their greenhouse gas emissions and set themselves specific targets propose to undertake a range of activities that fit into these categories. The majority of authorities are proposing to review the energy efficiency of their assets in preference to buying green energy or carbon offsets. Some water authorities propose to buy green energy and carbon offsets.

The price of green energy and carbon offsets can depend on the "quality" of the energy/offset being offered. Some carbon offsets offered by the market are not accredited and even those that are accredited can be of a different "quality". A report produced by RMIT Global Sustainability, "Carbon Offset Providers in Australia 2007" compares products offered by 15 different carbon offset providers. The report found that there is a significant difference in price charged per tonne of offset, with tree planting focussed providers charging approximately $9 to $13 per tonne of CO_2 offset and renewable energy oriented providers charging between $20 and $40 per tonne of CO_2 offset.

The review of greenhouse gas reduction strategies considered the process that water authorities went through to set targets, strategies and budgets. Budgets which resulted in an effective price per tonne of carbon offset consistent with the RMIT report were considered reasonable.

For the purposes of this assessment the review team considers that an appropriate reasonable benchmark cost for carbon offsets is $20 per tonne of CO_2. It is acknowledged that the market is relatively immature and future prices may fluctuate.

3.2.3 Labour and staff costs

"EBA" real increases: Real increases (i.e. increases in excess of CPI) in overall employment costs were not generally considered as contributing to extraordinary growth in operational costs as they should be offset by improvements in productivity. Thus it could be argued that increased salary costs negotiated in enterprise bargaining agreements (EBA's) above CPI do not form part of the Variance to BAU Opex.

It is acknowledged that high levels of employment nationally may serve to drive up labour costs particularly in areas of skills shortage. In current conditions it is expected that professional technical specialists would be expected to command higher percentage increases than the average, while others lower.

We note the government's directive to its businesses that labour cost increases should be contained to approximately 3.25% per annum in nominal terms.

In summary, for this review labour cost increases of CPI + 1.25% were considered as reasonable. Increases above this are assumed to be absorbed in productivity offsets and not form the basis of increased operating expenditure above the Target BAU Opex. The allowance for a real increase of 1.25% p.a. (cumulative) on base labour costs was applied consistently across all water businesses.

The real labour cost increases of 1.25% p.a. (above CPI) are the only component of labour cost increases (fixed number of personnel) which are considered justifiable in terms of explaining the Variance from Target BAU Opex. The CPI increase does not represent a real cost increase and labour cost increases greater than 1.25% p.a. real are expected to have offsetting productivity gains - and neither have been passed through as justifying explanations of the Variance from Target BAU Opex.

New personnel resources: Costs for additional new operators of facilities completed after the base year (2006/07), or staff employed to meet new obligations imposed through the Statement of Obligations were however included, where appropriately justified.

Band increments: The review team notes that businesses have an obligation to pay band increments (and other) entitlements under appropriate arrangements. However in the context of this review for regulatory pricing purposes, such amounts are not an explanation of Variance from BAU. Thus in this assessment such amounts are expected to be funded from productivity improvements and/or already accommodated in the adjustment of Target BAU Opex through the growth rate adjustment and/or are already in the Base BAU Opex at a reasonable amount.

3.2.4 Labour on-costs

In addition to the direct salary costs for additional staff, and where appropriately justified, the on-costs of employment such as for superannuation contributions (9%), payroll tax (5.05%) and workers compensation (2%) and other items totalling approximately 19% were included in the

costs allowed for additional staff. Overhead costs such as for accommodation were not regarded by the review team as contributing to the increased operating expenditure above the Target BAU Opex.

3.2.5 Limit of Materiality

In explaining the variance from Target BAU Opex a number of businesses included numerous items amounting to less than 0.2% of gross operating expenditure. The review team considers that such items would be part of the normal "swings and roundabouts" of variations in operating expenditure from year to year. Such costs are either not material and/or are covered by the allowance for growth (in setting the Target BAU and establishing the Variance from target BAU Opex) and/or are in the base year and/or a part of the "swings and roundabouts" of expenditure which occur from year to year where activities come and drop off.

These have generally not been considered or as justified for inclusion as part of the explanation of the Variance from Target BAU Opex over the regulatory period, unless very clearly identifiable as being related to new infrastructure or new obligations.

3.2.6 Demand forecasts

The forecast water demands submitted as part of the Water Plans have been reviewed on a preliminary basis by PWC. The impact of the preliminary review has been considered in the preparation of this Final Report (see **Section 4.1**).

3.2.7 Adjustments Principles

Two key principles were applied in establishing any adjustments to be made:

- Any expenditure that was clearly not accepted [e.g. any real increases in the businesses Water Plan electricity expenditure in excess of the electricity costs (price effects) greater than that determined as indicated in **Section 3.2.1**].
- The total of any adjustments should not result in an actual recommended regulatory expenditure in any year less than the Target BAU Opex. established as indicated in **Section 2**.

4. Barwon Water: Overview

The initial approach to the review of the Water Plan expenditure forecast for Barwon Water has been as follows:

- Identification of the key issues through the preliminary review of the Water Plan and associated information templates submitted to the ESC in October 2007 and as communicated to Barwon Water on 23 November 2007 in the File Note titled "Barwon Water's Water Plan – Operating and Capital Expenditure Review";
- Further more detailed examination and investigation of the key issues through:
  - A meeting and discussion of the expenditure forecasts and key issues with relevant Barwon Water personnel on 28 November 2007;
  - Additional information provided by Barwon Water in response to the issues identified in the File Note and to queries arising out of the meeting on 28 November.
- Feedback received from Barwon Water on the preliminary recommendations outlined in the Draft Report dated 11 February 2008 and further discussions with Barwon Water to clarify any remaining issues through:
  - Barwon Water's written response to the Draft Report preliminary findings and recommendations, dated 11 March 2008;
  - A meeting and further discussion of the expenditure forecasts and key issues with relevant Barwon Water personnel on 27 February 2008;
  - Further responses and the provision of additional information by Barwon Water in response to queries arising out of and discussions at the meeting on 27 February 2008.

4.1 Key Issues

Some of the key points in relation to Barwon Water's expenditure forecasts are:

- The estimated average annual price increase for tariffs in Barwon Water's region, based inter alia on the CAPEX and OPEX forecasts submitted by Barwon Water is 10.6%. This estimate closely matches the estimate of 10.5% shown in Barwon Water's Water Plan 2008/2013;
- Barwon Water's expenditure forecasts for the Capex program total $563.10 million over the second regulatory period and forecast Opex totals $369.19 million.
- Substantial investment is planned to interconnect the Geelong water supply system with that of Melbourne. This project is scheduled for completion in June 2012. The Opex costs associated with this new supply have not been included in the Water Plan, as the costs are mainly associated with bulk entitlement costs, tolls and other costs that are yet to be resolved and which are not expected to occur in the second regulatory period.
- Barwon Water has adopted targets related to sustainability including:

- 100% biosolids beneficial reuse by June 2010;
- Greenhouse gas abatement and energy efficiency through emissions reduction of 13% by 2013;
- 25% level of water recycling by 2015 – equates to approximately 6.5 GL of water in 2015;
- 25% reduction in per capita water use by 2015, increasing to 30% in 2020.

- The management of biosolids is one of the key drivers of additional operational expenditure. Barwon Water have entered into a DBFO type contract with a service provider to dry and beneficially dispose of biosolids produced at Barwon Water's waste water plants. This contract will impact on Opex from commencement of the 2009/10 financial year.

- The preliminary review of the water demand forecasts undertaken by PWC as part of the Water Plan review does not indicate any issues that would impact on the expenditure forecasts.

5. Capital Expenditure (Capex)

Table 5-1 presents Barwon Water's forecast capital expenditure, both by asset category and by cost driver.

- **Table 5-1: Barwon Water: Historical and Forecast Capital Expenditure**

Expenditure in $ millions real (1/1/07)		FIRST REG PERIOD			SECOND REG PERIOD				
		2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Capital Expenditure									
Gross capital expenditure		**34.36**	**46.44**	**84.56**	**97.50**	**81.70**	**162.84**	**154.03**	**67.03**
Gross capex - business as usual		34.36	46.44	84.56	97.50	81.70	162.84	154.03	67.03
Gross capex - new obligations					-	-	-	-	-
Approved 1st period gross capital expenditure		37.79	39.73	33.58					
Average annual 1st period capex	55.12								
Average annual 2nd period capex	112.62	Annual 2nd period capex is on average 104% higher than the 1st period							
Breakdown of business as usual gross capex									
Water headworks		5.67	10.16	34.60	51.21	13.95	72.61	71.76	1.64
Water pipelines / network		7.29	11.43	15.55	10.14	14.91	20.53	33.52	28.64
Water treatment		3.17	3.06	8.18	1.81	0.59	0.34	0.96	0.55
Water Corporate		3.34	3.77	4.12	2.89	3.75	5.28	4.97	3.20
Water sub-total		***19.46***	***28.41***	***62.45***	***66.05***	***33.19***	***98.76***	***111.21***	***34.02***
Sewerage pipelines / network		9.04	11.11	12.41	21.99	22.55	21.16	31.89	27.89
Sewage treatment		3.44	4.36	6.67	1.61	1.51	4.17	0.66	1.79
Sewerage Corporate		2.11	2.41	2.60	1.83	2.37	3.34	3.14	2.02
Sewerage sub-total		***14.59***	***17.88***	***21.68***	***25.43***	***26.43***	***28.67***	***35.68***	***31.70***
Bulk Water sub-total		-	-	-	-	-	-	-	-
Recycled water		0.31	0.15	0.43	6.03	22.08	35.42	7.13	1.32
Rural Water		-	-	-	-	-	-	-	-
Breakdown of BAU gross capex by cost driver									
Renewals					19.46	15.41	19.78	16.29	14.80
Growth					63.48	35.63	92.67	104.31	39.33
Improved service					4.86	10.92	9.80	13.14	8.61
Compliance					3.10	0.90	3.07	1.16	2.10
Government contributions					4.68	16.87	35.09	17.09	0.13
Customer contributions					1.93	1.96	2.44	2.03	2.07

5.1 Deliverability of the Capex Program

It is noted in respect of the capital works programme that:

- average annual capital expenditure across the water plan period is forecast to be $112.62 million compared to actual annual average delivery of $40.4 million over the first two years of the current water plan
- there is a significant ramping up of Capex in 2007/08 to 2009/10; and,
- a further significant ramp-up in expenditure in 2010/11 and 2011/12 when forecast expenditures increase by more than 80%. Overall the proposed size of the capital program appears significantly higher than ever previously delivered.

Barwon Water is aware of the high levels of capital expenditure forecast in the Victorian water industry and the pressure that this will place on available resources. It has taken the following measures to ensure timely delivery of the capital works program:

- Establishment of a panel of three consultants to improve access to design and planning services;
- Restructuring of internal management arrangements to enhance project delivery including the establishment of a Major Projects Group;

- employment of additional resources within the capital works delivery team;
- strategic packaging of contracts to suit local contractors or to attract larger externally based contractors;
- regular liaison with key contractors to facilitate the most effective mechanisms of project delivery.

5.2 Key Projects

Barwon Water's Water Plan forecasts $563.10 million of capital expenditure over the regulatory period. The top nine projects make up nearly $346 million (61%) of this, and are listed in **Table 5-2**.

Table 5-2: Barwon Water: Key Projects

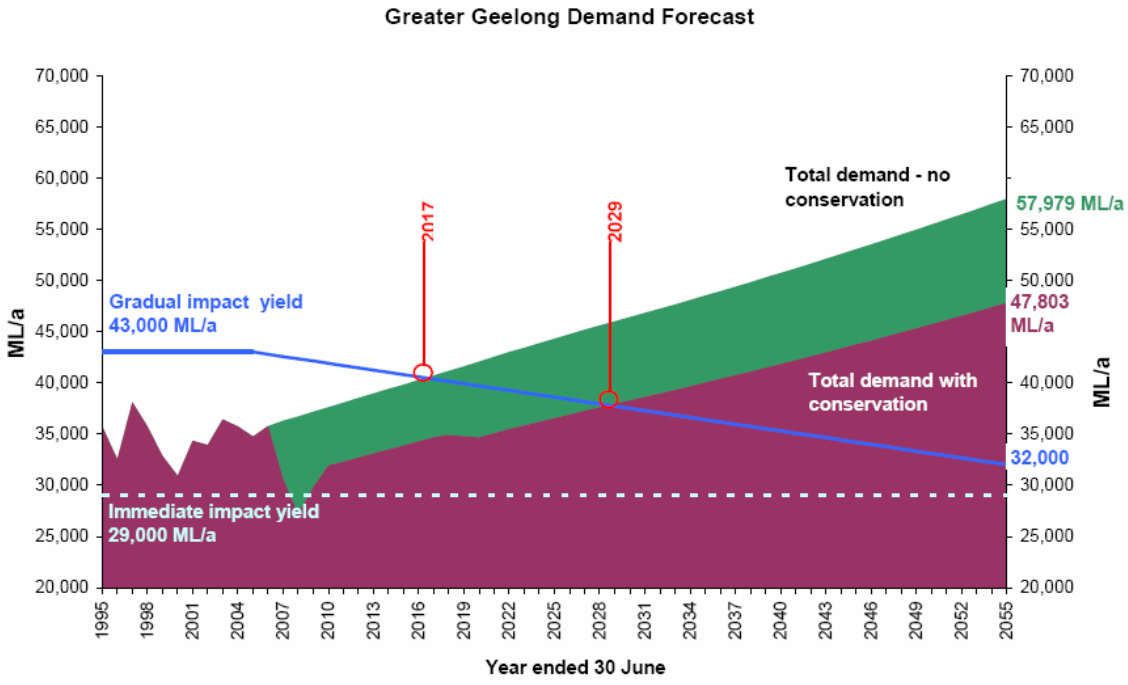
Expenditure in $ 000's real (1/1/07)	1st period	SECOND REG PERIOD						% of total Capex
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total	
Capital Expenditure								
Key projects								
Melbourne interconnector		3,000	4,000	65,000	70,000		**142,000**	***25%***
Northern Water Reclamation Plant	186	5,716	21,782	34,826	6,858	272	**69,454**	***12%***
Anglesea Borefield project	25,315	40,966	1,000				**41,966**	***7%***
Water main replacements	2,929	4,000	4,000	4,000	4,000	4,000	**20,000**	***4%***
Shared water and sewer reticulation assets		1,306	5,666	4,899	4,580	3,175	**19,626**	***3%***
Armstrong Creek sewerage scheme		-	117	352	4,338	6,844	**11,651**	***2%***
Bellarine transfer main		130	139	455	5,200	5,096	**11,020**	***2%***
BASIS replacement		-	2,000	4,000	4,000	1,000	**11,000**	***2%***
Leopold rising main No.1 replacement		303	408	4,903	4,789	9	**10,412**	***2%***
Appollo Bay / Skenes Creek bulk water supply	293	1,000	4,000	3,960	100		**9,060**	***2%***
Total							***346,189***	***61%***

5.2.1 Introduction: Need to augment water supplies

Two of the large projects involve augmentations of the Bulk water supply system. These two projects are the Melbourne Interconnection and the Anglesea Borefield Project. The need for these projects is based on the water supply shortage being experienced in Geelong, which is attributable to the drought, and the perceived risk that a climate shift may have occurred and current drought conditions may be the norm in future. The review team considers that it is prudent to plan for this contingency, although the timing of these schemes/ augmentations is open to further discussion and potential adjustment.

Geelong is Barwon Water's major customer centre by a considerable margin. The water supply situation for Geelong is illustrated in **Figure 5-1.**

- **Figure 5-1: Water Supply and Demand Situation in Geelong (source: Barwon Water 2007a)**



The figure shows the water supply system yield (29,000 ML/year) assuming that current drought conditions have become the norm and the demand both with and without water conservation. Clearly supply system augmentation is urgently required, coupled with water conservation. The Anglesea Borefields project can provide an additional 7,000 ML/year to the overall supply capacity and can be implemented sooner than the Melbourne Interconnection. This project is already about to enter the construction phase. The "life" of the overall system supply capacity, i.e. the duration before further augmentation will be required; will then depend on a number of factors, including:

- The efficacy of the water conservation program;

- Whether drought conditions do persist or not.

If it is conservatively assumed that drought conditions will persist and the water conservation program will achieve about half of the gains indicated then further augmentation would be required by about 2013 – this however is the switch-on date and development should take place beforehand, as indicated in the Water Plan.

However drought breaking rainfall, or possibly even strong success with the water conservation program, would allow the Melbourne Interconnection to be deferred for a short period and potentially outside of the second regulatory period.

The review team considered it prudent, at the time of producing the Draft Report, and based on the information available to it, to include both schemes in the expenditure forecasts. This was further considered and discussed with Barwon Water while preparing this Final Report and remains our view.

5.2.2 Melbourne Interconnection.

Melbourne to Geelong Interconnection Scheme

This scheme is designed to improve water supplies in Geelong by providing a connection between Melbourne and Geelong to deliver up to 16,000 ML/annum (44 ML/day) of potable water from the Melbourne supply system into Geelong. The scheme will comprise:

- A transfer pump station situated at Cowies Hill reservoir in Werribee;
- Approximately 50 km of 800mm nominal diameter pipeline linking Cowies Hill reservoir to the Lovely Banks service basins in Geelong; and a
- Chlorination plant.

The adoption of the scheme was announced by the Victorian Government in June 2007 together with announcements of the two major upgrade projects for Melbourne's water supply (namely the proposed desalination plant at Wonthaggi and the Sugarloaf Pipeline).

The Melbourne-Geelong Interconnection had been identified as a favoured water supply option for Geelong during investigations for the Central Region Sustainable Water Strategy and in Barwon Water's Water Supply Demand Strategy. A high level investigation of the scheme was also undertaken as part of the feasibility study and investigations for the Eastern Water Recycling Project (EWRP).

Barwon Water has undertaken more detailed work on the feasibility and conceptual development of the Melbourne to Geelong Interconnection scheme supported by KBR as technical adviser.

Barwon Water's most recent (November 2007) cost estimate totals $136 million including $26.3 million contingency allowance, and is based on desktop studies to define the preferred route. The EWRP mean cost estimate, which totalled $79.3 million, is compared to this latest estimate in **Table 5-3** below. The review team considers that this project cost estimate significantly underestimates the cost of the scheme both due to the change in the market environment which has occurred since development of the original estimate and the more detailed work on the scheme that has been subsequently undertaken by Barwon Water.

- **Table 5-3: Comparison of Cost estimates for Melbourne Geelong Interconnnector**

	BW	***EWRP***
Direct costs		
Pumpstation	4.5	4.1
Pipeline	79.3	55.1
Re-chlorination facility	incl.	1
River, road and rail crossings	5.3	
Indirect costs		
EPCM	13.4	
Technical resources		6.6
Project delivery team		1.5
Client costs, insurance, taxes and duties	2.7	
Environment costs	1.6	
Land securement costs	2.5	1.5
Total capital cost (excl. contingency)	***109.3***	***69.8***
Contingency	26.3	
Risk allocation sum		9.5
Total capital cost	***135.6***	***79.3***
Date of estimate	May '07	June '06
After adjustment for inflation	***135.6***	***81.5***
Pipeline length (km)	54.7	50

The most significant difference is the pipeline cost which is more than 40 % higher. This is partly attributable to the route selection, which has involved an increase in pipeline length. The pipeline cost then influences the EPCM cost (15% of direct costs) and the contingency cost (25% of direct and EPCM costs).

Until fairly recently (about 2004) pipelines have cost approximately $1 per mm diameter per meter of length. The increase in the cost of steel and high levels of demand for steel pipes on a number of competing water supply and water recycling projects has put upward pressure on prices. The equivalent cost used in the above estimates and for other recent and current large pipelines in Victoria is:

- BW estimate above $1.81 ($79.3M, 800mm diameter, 54.7 km long)
- EWRP estimate above $1.40 ($55.1M, 800mm diameter, 49.1 km long)

- Goldfields Superpipe $1.39 ($68M, 1050mm diameter, 46.5km long)

The allowances for contingency and EPCM costs appear high especially given the apparently high rate assumed for the pipeline – but noting that this higher rate is based on costs experienced in Queensland where similarly high levels of pipe laying activity were being experienced to those now envisaged in Victoria. At the time of preparing the Draft Report the review team understood that these are the standard rates adopted as part of Barwon Water's capital planning process but considered that lower rates should be adopted for regulatory pricing purposes given the size and nature of this project. The review team proposed in the Draft Report that these allowances be reduced to 15% (for contingency) and 10% (for EPCM) which reduces the overall cost to approximately $120 million.

Barwon Water provided the details of the analysis used to derive the contingency amount. For this analysis each of the line items in the cost estimate were assigned a contingency percentage both in respect of the quantity and the rate. These two contingency percentages were then combined and applied to the cost of the line item concerned. The "combined" contingency percentages ranged from 18% to 35% and in aggregate averaged 22%. The overall rate adopted was 25%. Notwithstanding the above the review team considers that the contingency and EPCM allowances are likely to be excessive.

The review team would have preferred a project risk based cost estimate as providing a more robust estimate of the likely project costs at this stage of project development. Had this been undertaken (either separately or in conjunction with the approach adopted) and been available for this review then more confidence in the cost estimate put forward by Barwon Water would have been possible.

The review team understands that Barwon Water intends to undertake further investigations including a risk based cost estimate to refine the cost estimate. In the event that any further investigations may have been completed before the current price review is finalised the review team recommends that the ESC considers such further information as may be available.

Construction is programmed to commence in August 2010 and continue for 18 months. Barwon Water has developed a detailed Gantt chart for the project identifying Gateway and Business Case reviews, stakeholder consultation, as well as planning approval periods and with allowances for functional and detailed design. Given the level of planning illustrated by the program the review team expects the project to be delivered within the second regulatory period.

However the review team considers that there is some uncertainty around the timing of the project given the potential delays in, and actual time likely to be required to finalise, approval processes and the design. There is also potential for delays in project delivery because of the high level of pipeline project activity around Victoria (and elsewhere) in the early part of the second regulatory

period. This suggests that it would be prudent to shift the expenditure back at least 12 to 24 months.

The review team also notes that Barwon Water has other initiatives in train to supplement its water resources (in particular the Anglesea borefields project). If these deliver the intended benefits, this will also place less pressure to undertake this project as early as indicated by Barwon Water in the Water Plan as submitted. This would be especially so if the borefields deliver greater volumes than currently anticipated and/or these borefields are utilised more heavily in the early years of the regulatory period. This uncertainty also supports the view that delay of the construction and expenditure on this project for one or two years would be a sensible business strategy.

The review team understands that the depreciation period proposed by Barwon Water for this asset is 65 years, which is considered very short for an asset of this nature. It is recommended that a significantly longer term be adopted for depreciation and design life purposes and that 100 to 120 years would be a realistic period to adopt which would be consistent with the asset life for similar pipelines adopted by other water businesses.

In summary, the review team considers that:

- The project is justified although there is scope for delaying its timing;
- There is a reasonable case to be made that there is sufficient uncertainty around the timing and cost of the project cost to remove it from consideration for regulatory pricing purposes.
- Neither of the above approaches should, if appropriately managed, impact delivery of the commitments announced by government.

The review team recommends for the Melbourne to Geelong Interconnector that:

- Either the expenditure be adopted at the reduced amount of $120M for current regulatory pricing purposes, with the timing as proposed in Barwon Water's Water Plan, or the expenditure is moved back 12 to 24 months. At this stage the former position is shown in the Capex adjustments table.
- Given the uncertainty around various aspects of the project, the ESC consider removing the full quantum of capital expenditure as currently proposed by Barwon Water for regulatory pricing purposes until sufficient certainty in project cost and timing is known. When sufficient certainty is obtained the impacts of such expenditure on pricing could be dealt with through a "reopening event".
- In any event, the ESC monitor the progress of the status of the quantum and timing of expenditure proposed for this project to more fully inform its views before making a final pricing decision.

- An asset life of at least 100 years (and probably more appropriately 120 years) be adopted for depreciation purposes.

5.2.3 Northern Water Reclamation Plant

This scheme is primarily designed to upgrade the sewerage infrastructure running through Geelong which is approaching its' capacity limitations. In addition to providing capacity for future growth in the sewerage network the Northern Water Reclamation Plant will supply Class A recycled water to the Shell refinery and provide approximately 2,000 ML/year of potable water substitution, while reducing effluent ocean discharges.

The project is to be co-funded by Shell, who are the major contributor to the project, Barwon Water, and the Federal and State Governments. Government contributions are fixed and cost overruns, if any, shall be borne by Shell and Barwon Water. The Business Case for the project has been completed and is with DTF and DSE for approval.

A range of options were analysed in arriving at the preferred solution. These included conventional reticulation upgrading and sewage treatment facilities at other locations. The review team considers the solution adopted to be appropriate, subject to satisfactory conclusion of the agreement with Shell. This agreement is expected to be finalised when the final cost has been refined to within 10% accuracy, in accordance with Shell's requirements. Procurement shall be by EPCM, which is preferred by Shell and suited to Barwon Water's purposes.

The project Gantt chart is contained in the Business Case. Construction is envisaged to commence late in 2009 and be complete by mid 2011, with operation to commence at the beginning of 2012. The programme includes allowances for Gateway reviews, and planning and EPA works approval. This programme is considered to be realistic.

The review team considers that the project is justified and the project cost is reasonable and the expenditure is prudent. The project timing is reasonable given the amount of work undertaken to date and the current status of the project. No adjustment to the project capital expenditure is recommended.

5.2.4 Anglesea borefield project

This project is intended to urgently augment water supplies to the Greater Geelong region by up to 7,000 ML/year. The Business Case has been approved by the Minister for Water and Department of Treasury and Finance. The scheme was evaluated in Barwon Water's Water Supply Demand Strategy and particularly against four other options including the Melbourne – Geelong Interconnector. It was preferred primarily as the additional water supplies could be made available sufficiently soon to avoid serious water shortages in Geelong, and as it was perceived to be cost effective.

Currently equipment purchasing (e.g. pipes and pumps for bores) has commenced and tenders for constructors are to be called shortly. Potentially the scheme may be commissioned by end 2008.

The review team considers the expenditure necessary, the costs estimated reasonable, the timing appropriate and the project capable of being delivered in the timeframe proposed. No amendment is proposed to the forecast expenditure.

5.2.5 Water Main Replacements

Expenditure of $4 million per year is planned for each year of the second regulatory period. This is about $1 million more than planned in 2007/08. The expenditure is managed through Barwon Water's asset management system, and which now includes the CSIRO developed Pipeline Asset & Risk Management System (PARMs). The pipe failure curves incorporated into the system are specific to Barwon Water and developed from statistical analysis of historical data. However PARMs is a broad based system and could be better linked to a business decision-making framework with decision rules to ensure that the both the global expenditure is economically prudent and reasonable and the right assets are being targeted for maintenance, replacement or rehabilitation.

The review team understands that the key elements of the asset management system are:

- **Service standards -** these are closely linked to the key performance indicators (KPIs) reported to the ESC e.g. number of unplanned interruptions, as well as maintaining flow and pressure standards;
- **Analysis –** records are kept for the system identifying pipe material, diameter, age, locality, failure record including adjacent failures, flooding potential, traffic disruption potential, number of residential (and business) properties affected and interruption to public facilities.
- **Strategy –** assets are replaced or upgraded according to the risk they pose to non-achievement of customer KPI's. In addition assets whose projected maintenance cost exceeds replacement (and ongoing maintenance) cost are indicated for replacement.
- **Programme –** the risk that assets will not achieve the required service standards are assessed and prioritised according to their impact on achievement of the (customer) KPIs. The repairs or replacements are then costed to derive an overall sum for expenditure in the upcoming regulatory period. This sum is smoothed, assuming equal expenditure, in real terms, each year;
- **Projects –** are identified through the prioritisation process based on risk.

The review team considers that the above process is generally sound, but is open to improvement to better establish a sounder basis for demonstrating that the expenditure is prudent and reasonable and the right assets are being targeted (economically efficient).

The review team has confirmed the reasonableness of the forecast expenditure. No amendment is recommended to the forecast expenditure for regulatory purposes.

5.2.6 Shared Water and Sewer Reticulation Assets

Barwon Water has analysed the requirements for new "shared assets" in some detail and consulted extensively in doing so, and employed consultants specifically for this purpose. The review team considers that the forecast expenditure is reasonable and no amendment to it is recommended. It is noted however that the timing for this expenditure is driven by developers and largely outside Barwon Water's control.

5.2.7 Armstrong Creek Sewerage Scheme

Armstrong Creek is a new growth corridor located to the south of Geelong. The driver is thus the forecast population growth anticipated, which is 13,000 people in the next ten years. The forecast expenditure provides for the gravity sewers ranging from 300 to 900mm planned to service this area, and strategically located pump stations and rising mains. A detailed servicing plan was developed to plan the overall service strategy and identify immediate requirements over the next decade (SKM, 2007).

The forecast expenditure is based on detailed cost estimates and is considered reasonable and prudent. No amendment to the capital expenditure for this project is recommended.

5.2.8 Bellarine Transfer Main

The Bellarine Transfer Main (BTM) is the principal water supply pipeline to the Bellarine Peninsula and draws water from the Pettavel Basin. Population growth on the Peninsula has required several previous augmentations of the BTM and this is the fifth such augmentation replacing approximately 5.7km of 750mm main with 1200 and 1050mm diameter pipeline. This augmentation will also provide for future growth in Armstrong Creek.

The cost estimate which totals $14 million is at a functional design level and includes a 30% contingency allowance. Forecast expenditure in the second regulatory period is only $11 million and this project is expected to continue into the third regulatory period. The unit rate per meter of pipeline per mm diameter is about $1.60. This cost estimate is considered reasonable.

The expenditure is considered prudent and necessary and no amendment to the expenditure forecast is recommended.

5.2.9 Leopold Rising Main No. 1 Replacement

The planned replacement of the Leopold Sewage Rising Main is attributable to the rapid growth occurring in the Bellarine peninsula. It forms part of an overall strategy the *Bellarine Peninsula Sewerage Management Strategy* developed during a study undertaken in 2005/06. This strategy

takes a 40 year view of projected growth and focuses also on the condition of existing assets and the need to replace high risk rising mains approaching the end of their useful lives.

The analysis undertaken of the Leopold Rising Main considered three options, including flow reduction by means of sewer mining, flow attenuation by installing detention storage before opting for increasing the delivery capacity by upgrading the pumpstation and rising main.

The project is at the conceptual design stage. Construction is planned for 2010/11 and 2012/13 and this is considered deliverable. The cost estimate is based on a schedule of quantities including a 15% contingency allowance and is considered reasonable.

The expenditure is considered prudent and necessary and no amendment to the expenditure forecast is recommended.

5.2.10 Apollo / Skenes Creek Bulk Water Supply

This project involves the construction of a pumpstation, transfer pipeline and a 250 ML off-stream storage to ensure adequate water supply security for Apollo Bay / Skenes Creek. This project has been carried over from the capital works from the first regulatory period as great difficulty was encountered in identifying a suitable location for the off-stream storage. This problem is presently unresolved but drilling is in progress at the fourth site identified.

A detailed cost estimate has been drawn up including allowances for design costs, investigations for approval purposes and a 20% contingency allowance. This cost estimate is considered reasonable, with the exception that no provision is shown for geotechnical investigations, which are however expected to be completed prior to the commencement of the second regulatory period. It is noted however that the cost estimate has swelled considerably from that put forward for the first regulatory period and now totals $9.36M (based on $January 2007) as opposed to $3.188M ($ January 2004).

Barwon Waterhave advised that, in addition to the CPI adjustment, the increase is attributable to the geotechnical conditions anticipated at the site, and .the increases in the cost of materials and resources that have occurred in the interim.

Barwon Water has prepared a programme showing nine key activities and appropriate for the current stage of this project. It includes an allowance of 19 months for the land zoning application and acquisition, which is likely to be an area of difficulty with this project. The programme however is not consistent with the expenditure forecast and indicates that the higher levels of expenditure should occur in 2010/11 than indicated in the forecast. Geotechnical investigations are programmed to occur in 2007/08 which is before the second regulatory period. A redistribution of the forecast expenditure was recommended in Draft Report and has been agreed with Barwon Water.

5.3 Recommendations

Final recommendations on the Capital expenditure forecasts are that:

- the overall expenditure forecast for regulatory purposes of the Melbourne Interconnection be reduced to $120 million;
- the ESC consider any further supporting information concerning the cost estimates for the Melbourne Interconnector that may become available before the final pricing decision is made; and
- Minor adjustments be made to the forecast cash flow of the Apollo / Skenes Creek Water Supply Scheme to improve the consistency with the project programme,.

Table 5-4 outlines the recommended revisions to Barwon Water's capital expenditure forecasts for the five year regulatory period.

- **Table 5-4: Barwon Water: Final Recommended Changes to Regulatory Capital Expenditure Forecast**

Change Item	Project/Description		$M						
			2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Later Periods
1	Melbourne Interconnection	Original Water Plan Forecast:	0.0	3.0	4.0	65.0	70.0	0.0	
		Recommended Revised Forecast:	0.0	3.0	4.0	53.0	60.0	0.0	
		Recommended Net Change:				-12.0	-10.0		
2	Apollo / Skenes Creek bulk Water Supply	Original Water Plan Forecast:	0.3	1.0	4.0	4.0	0.1	0.0	
		Recommended Revised Forecast:	0.3	1.0	2.0	6.0	0.1	0.0	
		Recommended Net Change:			-2.0	2.0			
		Total Recommended Net Change:	$ -	$ -	$ (2.00)	$ (10.00)	$ (10.00)	$ -	$ -
		Original Water Plan Total Regulatory Capex:	$ 84.56	$ 97.50	$ 81.70	$ 162.84	$ 154.03	$ 67.03	
		Recommended Revised Total Regulatory Capex:	**$ 84.56**	**$ 97.50**	**$ 79.70**	**$ 152.84**	**$ 144.03**	**$ 67.03**	

6. Operating Expenditure (Opex)

The upper half of **Table 6-1** presents a breakdown of forecast operating expenditure by cost driver. The lower half of this table shows the increases (or decreases) in each year relative to the cost incurred in the base year of 2006/07 for each line item.

This lower half of the table indicates that the use of external resources (consultants and other service providers, but mainly the operation of the biosolids plant) is the key driver of increased operational expenditure for the second regulatory period relative to actual expenditure in 2006/07.

The key contributors to the increase are:

- External resources (44% of total increase);
- Labour (20% of total increase); and
- Electricity (18% of total increase).

Table 6-1: Barwon Water: Historical and Forecast Operating expenditure by cost driver

Expenditure in $ million real (1/1/07)	FIRST REG PERIOD		SECOND REG PERIOD					SECOND REG PERIOD	
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total	%
Chemicals	2.25	2.89	2.28	2.53	2.53	2.90	3.48	13.72	3%
Materials	5.57	5.17	5.80	6.27	5.75	6.12	6.50	30.44	7%
Electricity	2.76	3.84	5.99	5.82	5.22	5.24	5.82	28.09	7%
Other utilities	0.94	1.06	1.05	1.05	1.05	1.05	1.05	5.25	1%
External resources	23.11	26.57	28.58	32.73	29.91	29.60	29.52	150.34	37%
Labour	20.68	22.44	23.02	23.28	23.58	24.24	24.89	119.01	29%
Insurance	0.86	1.01	0.91	0.91	0.96	0.99	1.02	4.79	1%
General expenses	5.53	6.49	6.68	6.77	6.92	7.18	7.59	35.14	9%
Environmental Contribution	3.68	3.59	3.91	3.91	3.91	3.91	3.91	19.55	5%
Total	**65.38**	**73.06**	**78.22**	**83.27**	**79.83**	**81.23**	**83.78**	**406.33**	**100%**
Less non prescribed	1.88	2.52	2.19	2.19	2.10	1.92	1.80	10.20	
Total prescribed expenditure	**63.50**	**70.54**	**76.03**	**81.08**	**77.73**	**79.31**	**81.98**	**396.13**	

Expenditure increase above 2006/07	FIRST REG PERIOD		SECOND REG PERIOD					SECOND REG PERIOD	
Expenditure in $ millions real (1/1/07)	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total	%
Chemicals	-	0.64	0.03	0.28	0.28	0.65	1.23	2.47	3%
Materials	-	(0.40)	0.23	0.70	0.18	0.55	0.93	2.59	3%
Electricity	-	1.08	3.23	3.06	2.46	2.48	3.06	14.29	18%
Other utilities	-	0.12	0.11	0.11	0.11	0.11	0.11	0.55	1%
External resources	-	3.46	5.47	9.62	6.80	6.49	6.41	34.79	44%
Labour	-	1.76	2.34	2.60	2.90	3.56	4.21	15.61	20%
Insurance	-	0.15	0.05	0.05	0.10	0.13	0.16	0.49	1%
General expenses	-	0.96	1.15	1.24	1.39	1.65	2.06	7.49	9%
Environmental Contribution	-	(0.09)	0.23	0.23	0.23	0.23	0.23	1.15	1%
Total	**-**	**7.68**	**12.84**	**17.89**	**14.45**	**15.85**	**18.40**	**79.43**	**1.00**

6.1 Derivation of the Variance from Target BAU Opex

Table 6-2 below summarises Barwon Water's forecast operating expenditure and shows the "Variance from Target BAU Opex" derived in the manner explained in **Section 2.**

- **Table 6-2: Barwon Water: Historical and Forecast Opex and Variance to Target BAU**

Expenditure in $ millions real (1/1/07)	FIRST REG PERIOD			SECOND REG PERIOD				
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
BAU opex	56.93	59.50	66.56	71.78	76.82	73.48	75.05	77.68
New obligations				-	-	-	-	-
Sub-total Opex	***56.93***	***59.50***	***66.56***	***71.78***	***76.82***	***73.48***	***75.05***	***77.68***
Bulk water charges	-	-	-	-	-	-	-	-
Licence fees	0.50	0.32	0.40	0.36	0.36	0.36	0.36	0.40
Enviro levy	3.79	3.68	3.59	3.91	3.91	3.91	3.91	3.91
Gross operating expenditure	**61.22**	**63.50**	**70.55**	**76.05**	**81.09**	**77.75**	**79.32**	**81.98**
Target BAU Opex			**60.08**	**60.61**	**61.14**	**61.62**	**62.10**	**62.59**
Variance from Target BAU Opex			**6.48**	**11.17**	**15.68**	**11.86**	**12.95**	**15.09**
Customers and Consumption								
Total customers ('000)	125.04	127.17	129.71	132.18	134.68	137.11	139.58	142.10
Growth relative to 2006-07	-	1.00	1.02	1.04	1.06	1.08	1.10	1.12

The total forecast operating expenditure (excluding bulk water charges, licence fees and the environmental levy) in the second regulatory period substantially exceeds the Target BAU Opex in every year, and exceeds the Target BAU Opex by $66.75M in aggregate. That is the Variance from Target BAU Opex is positive for each year of the regulatory period, and requires explanation.

This indicates that there are real increases in planned operating expenditure above BAU (2006/07 as the base year) after allowance for growth and the stipulated 1% productivity improvement. Thus prima facie Barwon Water will not achieve the 1% productivity target unless all of the new/additional costs planned can be justified as part of the future BAU Opex base. This indicates that (after allowing for growth) further productivity improvements may need to be considered.

The explanations of the items identified by Barwon Water as justifying the variance, and the associated expenditure involved, are discussed in the following sections.

6.2 Additional costs relative to the 2006/07 base

Barwon Water advised the review team of a number of "new" / additional costs that it expects to be incurred during the regulatory period and that it regards as additional to the normal BAU Opex incurred in 2006/07. As such these costs indicated the extent by which planned productivity improvements exceeded 1% per year, after allowing for growth. The additional costs advised by Barwon Water are shown in **Table 6-3**. .

The assessments of the particular items are discussed in the following sections.

- **Table 6-3: "New" Costs or Explanation of the Variance from Target BAU Opex submitted by Barwon Water**

Description	Movement in Expenditure relative to 2006/07 ($ 000 - real Jan 2007)						
		Second Regulatory Period					
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Biosolids (Combined Short Term & Long Term)	720	720	7,683	5,600	5,621	5,644	**25,267**
Increased Labour for EBAG @1.5%, Additional Positions	1,663	1,916	2,218	2,521	2,799	3,052	**12,506**
Electricity Price Increase + Green Energy & increased usage (excluding Borefield)	411	2,490	2,411	2,262	2,310	2,470	**11,943**
Water Conservation Program	554	895	1,363	1,363	1,363	1,363	**6,348**
Northern Water Plant (includes Labour & Utilities)	-	-	-	-	1,767	3,507	**5,273**
Pandemic/Self Insurance	-	1,000	1,000	1,000	1,000	1,000	**5,000**
Water Resource Options Investigations	3,766	4,326	-	-	-	-	**4,326**
Sewer Main outfall cleaning	-	1,500	1,500	-	-	-	**3,000**
Fluoridation	-	-	500	500	500	500	**2,000**
Software Licence agreements & Software Upgrade	635	342	342	342	342	342	**1,710**
Environmental Contribution	(90)	320	320	320	320	320	**1,600**
Water supply asset management & dam safety consultancy	228	228	228	228	228	228	**1,140**
WTP's sludge removal - not required 2006/07 due to low flows	225	225	225	225	225	225	**1,123**
Insurance premiums	146	195	195	195	195	195	**974**
Billing & Smart Meter	-	98	244	195	195	195	**927**
Sewerage Schemes & New Pumping Stations	-	38	83	121	242	438	**922**
Increased Rootfoaming	140	140	140	140	140	140	**700**
Borefield Requirements	698	698	591	29	- 459	- 459	**401**
Legal Costs	(129)	(129)	(129)	(129)	(129)	(129)	**(645)**
Net minor Consultancies & Contractors & other	(720)	(1,545)	(409)	228	483	577	**(666)**
Black Rock Treatment Plant Works	(187)	(99)	(99)	(79)	(509)	(313)	**(1,099)**
Systems Maintenance - Operational Costs	(1,013)	(813)	(813)	(813)	(813)	(813)	**(4,065)**
Total	**7,046**	**12,544**	**17,592**	**14,247**	**15,820**	**18,481**	**78,683**
Variance from Target BAU Opex	6,481	11,168	15,683	11,858	12,958	15,085	66,752
Difference		**1,376**	**1,909**	**2,389**	**2,862**	**3,396**	**11,931**

6.2.1 Operation of the Biosolids plant

The total cost put forward by Barwon Water totals almost $25.3 million which accounts for 32% of the explanation of the Variance from Target BAU Opex.

Barwon Water has entered into a DBFO type contract with a service provider to finance, design, construct, commission and operate a biosolids processing plant for twenty years, and ultimately to remove it shortly before the end of the contract. This new plant will be situated at the Block Rock WWTP and the current practice of delivering sludge to Melbourne Water's Western Treatment Plant for drying and storage will cease after the new plant becomes operational, as expected, in June 2009. Barwon Water refers to the costs of the new biosolids plant at Black Rock WWTP as "long term Biosolids" costs and those at the Western WWTP and the transportation costs as "short term" costs. In addition to the biosolids at Black Rock WWTP there are other transport costs involved for the delivery of biosolids from Barwon Water's various regional plants. The breakdown of these two costs as provided by Barwon Water is shown in **Table 6-4**.

- **Table 6-4: Breakdown of Biosolids Operational Costs (source: Barwon Water)**

		Second regulatory period					
	2007-08 $'000	2008-09 $'000	2009-10 $'000	2010-11 $'000	2011-12 $'000	2012-13 $'000	TOTAL $'000
Total costs							
Biosolids (Combined Short Term & Long Term)	**$3,404**	**$3,404**	**$10,361**	**$8,290**	**$8,310**	**$8,320**	**$38,685**
Breakdown							
Short term contract	$3,404	$3,126	$3,091	$350	$360	$370	$7,297
Long term contract	$0	$278	$7,270	$7,940	$7,950	$7,950	$31,388
Incremental costs relative to 2006/07							
Biosolids (Combined Short Term & Long Term)	**$720**	**$720**	**$7,677**	**$5,606**	**$5,626**	**$5,636**	**$25,985**
Breakdown							
Short term contract	$720	$442	$407	-$2,334	-$2,324	-$2,314	-$5,403
Long term contract	$0	$278	$7,270	$7,940	$7,950	$7,950	$31,388

Barwon Water expects the operations at the Western Treatment Plant to tail off over a period of 18 months after June 2009 in order to process remaining stockpiled material and rehabilitate the site. The costs of the biosolids operations in 2006/07 were $2,684K.

Having reviewed the costs and held further discussions with Barwon Water the review team considers that the costs indicated in **Table 6-5** should be adopted for regulatory pricing purposes. The key differences between **Table 6-4** and **Table 6-5** are:

- a reduction in the allowance for the costs of the short term contract in recognition of the cessation of the transport of biosolids from Black Rock WWTP to Werribee but which acknowledges the ongoing costs for transporting biosolids from the regional plants.
- a "rounding down" of the cost for consultancies [NB: The review team considered whether these costs should be more fully absorbed into the Target BAU OPex base and/or reduced further.].

- **Table 6-5: Biosolids Operational Costs recommended as forming part of the explanation of the Variance to target BAU Opex.**

	Second regulatory period					
	2008-09 $'000	2009-10 $'000	2010-11 $'000	2011-12 $'000	2012-13 $'000	TOTAL $'000
Total costs						
Biosolids (Combined Short Term & Long Term)	**$3,326**	**$9,170**	**$8,840**	**$8,300**	**$8,300**	**$37,936**
Breakdown						
Short term contract	$3,126	$1,900	$900	$350	$350	$6,626
Long term contract	$200	$7,270	$7,940	$7,950	$7,950	$31,310
Incremental costs relative to 2006/07						
Biosolids (Combined Short Term & Long Term)	**$642**	**$6,486**	**$6,156**	**$5,616**	**$5,616**	**$55,826**
Breakdown						
Short term contract	$442	-$784	-$1,784	-$2,334	-$2,334	-$6,794
Long term contract	$200	$7,270	$7,940	$7,950	$7,950	$31,310

Barwon Water has also advised no further revision was requested to the costs submitted for the long term contract for 2009/10 although these allowed for only 11 months of operations (and biosolids production) instead of twelve.

6.2.2 Increased labour costs

The total cost put forward by Barwon Water totals $12.5 million which accounts for 16% of the explanation of the variance. **Table 6-6** below presents the following breakdown between labour cost increases from EBA and additional positions to be filled as provided by Barwon Water in explanation of the overall increased labour costs, and the recommendation of the review team.

Barwon Water provided the review team with a breakdown of the additional costs which included components for:

- EBAG increases at a rate which seemed to be CPI+1.5%;
- An allowance for reclassification of personnel as part of a strategy to retain critical resources;
- Two items for additional resources as follows:
  - Filling of unfilled positions in 2006/07 which were either already filled or being filled in 2007/08; and
  - For a restructure during 2007/08 undertaken to ensure delivery of the operating program. This includes creation of two new management positions and new appointments within the newly created Major Projects Branch and Asset Development Branch.

Table 6-6: Breakdown of Increased Labour Costs

		Second regulatory period					
	2007-08 $'000	2008-09 $'000	2009-10 $'000	2010-11 $'000	2011-12 $'000	2012-13 $'000	TOTAL $'000
Major components of movement:							
Barwon Water Forecast Expenditure	**$1,663**	**$1,916**	**$2,218**	**$2,521**	**$2,799**	**$3,052**	**$12,506**
Final Review Team Recommendation	**$1,424**	**$1,611**	**$1,786**	**$1,961**	**$2,107**	**$2,220**	**$9,686**

As discussed in **Section 3.2.3** it is expected that labour and staff cost increases in excess of CPI+1.25% should be offset by improvements in productivity. An adjustment to the EBAG increases proposed is therefore recommended by the review team and has been calculated using the base cost for 2006/07 for labour indicated in **Table 6-1.**

The review team acknowledges the issues around the incentives to retain key resources, particularly in the current specialist labour market environment, but considers that all or the bulk of this expenditure would be managed within the above CPI increases proposed across the whole workforce. A quantum has been proposed by Barwon Water but this ssems on the high side particularly in comparison with other businesses.. Following the further discussion held with Barwon Water, and consideration of this issue the review team recommends that this allowance be

reduced (or removed). The review team considered this in its global assessment of appropriate additional resources and the related expenditure.

The costs put forward for the additional positions, including the allowance provided for on-costs, are considered reasonable.

The implications of the change to the total recommended costs from **Table 6-6** have been carried forward to the recommendations for the regulatory operational expenditure forecast **(Table 6-12)** and amounts considered to form part of the explanation of the variance to target BAU opex (**Table 6-11**).

6.2.3 Increase in Electricity Costs (excluding borefield and Northern Water Plant)

The total cost put forward by Barwon Water totals $11.94 million which accounts for 15% of the explanation of the variance.

Barwon Water has over 300 sites where electricity is consumed. Further sites envisioned to become operational during the second regulatory period include 13 new sewage pump stations, the Northern Water Plant and the further borefield operations. The sites are categorised as either "contestable" – currently the 31 larger sites where consumption exceeds 160 MWh/year, and 283 "franchise" sites whose annual consumption is less than 160MWh/year. The current contract with the supplier, which commenced in 2004/05 is due to expire on 30 June 2008. In terms of this contract unit costs (i.e. the variable component of the charges) for contestable sites are slightly less than $0.05 per kWh at peak times, and approximately half that at non-peak times. Overall at these sites the variable component of the charge makes up about 60% of the total charges with the fixed component comprising the remaining 40%. At the franchise sites six sets of tariffs are applicable across the range of sites and unit costs are approximately triple those for the contestable sites, (but vary slightly according to particular tariff applicable). About 15% of Barwon Water's energy usage is consumed at the contestable sites.

In 2006/07 the average overall total cost of energy consumed by Barwon Water was about $0.095 per kWh.

Following the expiry of their current contract Barwon Water presently intend to purchase energy utilising Strategic Purchasing under a joint arrangement with several other businesses that maximises the capacity to negotiate favourable tariffs. Forecast costs estimated by Barwon Water, based on information provided by Strategic Purchasing at the time the Water Plan was prepared assume that unit costs (i.e. the variable component of the charges) will double when the contract is renewed and that Barwon Water take on any risk of movement of fixed costs ie that fixed costs remain static for purposes of forecasting costs. The costs of energy and forecast consumption, as forecast by Barwon Water, will increase as shown in **Table 6-7**.

Table 6-7: Historical and Forecast Electricity Costs and Consumption (BW view)

ELECTRICITY COSTS			Second regulatory period					
Cost in $000 real (01/01/07)	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**Total**
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Segment	*(Actual)*	*(Budget)*						
Corporate	198.5	229.8	348.5	343.8	334.9	337.7	347.3	1,712.2
Sewerage operations	430.4	545.0	828.9	871.0	911.1	926.0	940.4	4,477.3
Sewage Treatment	945.5	1,082.1	1,785.0	1,783.2	1,789.7	1,788.0	1,811.4	8,957.3
Recycled Water	-	-	-	-	-	494.6	949.6	1,444.2
Water operations	868.6	1,667.7	2,498.7	2,232.4	1,744.1	1,372.6	1,355.4	9,203.3
Water Treatment	315.4	316.7	475.0	468.7	474.3	478.6	473.4	2,370.0
Non-Prescribed - Immaterial								
Total (1-1-07 $)	**2,758.6**	**3,841.3**	**5,936.1**	**5,699.0**	**5,254.1**	**5,397.5**	**5,877.5**	**28,164.2**
Above includes the following:								
Black Rock	699.6	780.5	1,317.1	1,317.1	1,317.1	1,317.1	1,331.7	7,380.5
Collection Systems	430.4	543.0	824.7	875.9	916.9	927.2	937.4	5,025.1
Colac WRP	140.0	167.7	269.1	273.5	273.5	273.5	273.5	1,530.9
Wurdee Buloc	82.1	104.2	156.3	156.3	156.3	156.3	156.3	885.7
Northern Water Plant	-	-	-	-	-	499.0	954.1	1,453.2
Moorabool WTP	94.4	93.7	140.5	140.5	140.5	140.5	140.5	796.1
Colac WTP	54.0	54.6	82.0	82.0	82.0	82.0	82.0	464.4
Borefields	518.7	1,190.2	1,785.4	1,492.7	1,006.8	641.0	641.0	6,757.1
Total (1-1-07 $)	**2,019.2**	**2,933.9**	**4,575.0**	**4,337.9**	**3,893.1**	**4,036.5**	**4,516.5**	**24,292.9**
ELECTRICITY CONSUMPTION	**MWhs**	**MWhs**	**MWhs**	**MWhs**	**MWhs**	**MWhs**	**MWhs**	
Total Consumption Base Year	**29,033**	**-**	**-**	**-**	**-**	**-**	**-**	
Black Rock	10,498	12,826	12,826	12,826	12,826	12,826	12,989	
Collection Systems	3,369	4,212	4,275	4,338	4,401	4,720	5,039	
Colac WRP	1,558	2,091	2,213	2,213	2,213	2,213	2,213	
Wurdee Buloc	1,077	1,077	1,077	1,077	1,077	1,077	1,077	
Northern Water Plant	-	-	-	-	-	1,800	3,600	
Moorabool WTP	380	380	380	380	380	380	380	
Colac WTP	392	392	392	392	392	392	392	
Borefields - Total	5,784	9,800	9,950	3,080	1,580	1,580	1,580	
Borefields - Barwon Downs	5,784	9,800	2,450	580	580	580	580	
- Anglesea	-	-	7,500	2,500	1,000	1,000	1,000	
Other facitilies usage	5,976	5,976	5,994	6,021	6,021	6,075	6,102	
Total Annual Consumption	**29,033**	**36,753**	**37,106**	**30,326**	**28,889**	**31,062**	**33,371**	
Average total cost ($/kWh)	**0.095**	**0.105**	**0.160**	**0.188**	**0.182**	**0.174**	**0.176**	
Percentage increase in tariff wrt 2006/07	**0%**	**10%**	**68%**	**98%**	**91%**	**83%**	**85%**	

The second last line in the above table shows the impact of the assumptions made by Barwon Water on the overall average cost of electricity, averaged across the broad spectrum of the sites involved. The final line shows that the percentage increases of those costs relative to 2006/07.

The percentage increases proposed by Barwon Water generally correspond with expected increases if the methodology outlined in **Section 3.2.1** is used and increases of 100 to 150% in the wholesale price of electricity are assumed. While such large increases may have been indicated by market movements at the time of preparing the Water Plan, the review team considers that conditions are returning to normal and that these extraordinary increases will not occur.

Furthermore there is no information indicating that the tariffs paid by Barwon Water were lower than the average experienced in the industry which would suggest higher than average increases

might be anticipated for the second regulatory period. The review team has considered the fact that the existing contract commenced in 2004/05 and adjusted the approach used in the Draft Report to accommodate this consideration. This fact has now been taken into account in the way the real increases in electricity prices proposed by the review team have been determined.

The costs submitted by Barwon Water as explaining the variance from 2006/07 costs (shown as the third line item in **Table 6-3**) comprise both increased electricity costs and green energy, but excluding the borefields. In **Table 6-8** below the total cost excluding borefields and green energy (assumed as $130K/year as advised by Barwon Water) has been computed as well as the incremental cost compared to 2006/07. It is noted that this incremental cost is lower than that claimed by Barwon Water in explanation of the variance (**Table 6-3**).

The average unit costs per kWh are then calculated using the consumption data provided by Barwon Water shown in **Table 6-7**, excluding consumption by borefields and the Northern Water Plant. The percentage increases compared to 2006/07 are then calculated and it can be seen that these are considerably higher than the recommended real percentage increases in electricity energy costs during the second regulatory period as indicated in **Section 3.2.1**. By applying the recommended increases and the forecast growth in consumption indicated by Barwon Water (derived from **Table 6-7**) the increased costs recommended by the review team may be calculated as shown in the bottom line of **Table 6-8**.

- **Table 6-8: Recommendation on Increase to Electricity Costs (excluding borefields and Northern Water Plant)**

ELECTRICITY			Second regulatory period					
Costs in $000 real (01/01/07)	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**Total**
Total cost all sites($000)	**3,103.4**	**3,841.3**	**5,936.1**	**5,699.0**	**5,254.1**	**5,397.5**	**5,877.5**	**28,164.2**
Northern Water Plant	-	-	-	-	-	499.0	954.1	1,453.2
Borefields cost ($000)	518.7	1,190.2	1,785.4	1,492.7	1,006.8	641.0	641.0	6,757.1
Total cost excl. borefields & NWP	**2,584.7**	**2,651.0**	**4,150.7**	**4,206.3**	**4,247.3**	**4,257.5**	**4,282.4**	**21,144.2**
Cost movement relative to 2006/07	**-**	**66.3**	**1,566.0**	**1,621.6**	**1,662.6**	**1,672.8**	**1,697.7**	**8,220.6**
Total Annual Consumption (excludes borefields & NWP) (MWh)	**23,249**	**26,953**	**27,156**	**27,246**	**27,309**	**27,682**	**28,191**	**137,583**
Average total cost ($/kWh)	**0.111**	**0.098**	**0.153**	**0.154**	**0.156**	**0.154**	**0.152**	
Percentage increase in tariff wrt 2006/07	**0%**	**-12%**	**37%**	**39%**	**40%**	**38%**	**37%**	
Cost allowance green energy ($000)	**0.0**	**0.0**	**130.0**	**130.0**	**130.0**	**130.0**	**130.0**	**650.0**
Tot al cost excluding borefields, NWP and green energy ($000)	**2,584.7**	**2,651.0**	**4,020.7**	**4,076.3**	**4,117.3**	**4,127.5**	**4,152.4**	**20,494.2**
Cost increase wrt 2006/07 ($000)	-	66.3	1,436.0	1,491.6	1,532.6	1,542.8	1,567.7	7,570.6
Tariffs increases recommmended (%) (section 3.1.1)			**12%**	**15%**	**15%**	**15%**	**15%**	
Recommended average tariff ($/kWh)			**0.125**	**0.128**	**0.128**	**0.128**	**0.128**	
Recommmended cost increase attributable to price increase ($000)			**310.2**	**387.7**	**387.7**	**387.7**	**387.7**	**1,861.0**
Total additional cost associated with increase in consumption ($000)			**486.5**	**511.0**	**519.1**	**566.8**	**631.9**	**2,715.3**
Total costs recommended ($000)			**3,381.4**	**3,483.5**	**3,491.5**	**3,539.2**	**3,604.3**	**17,499.9**
Cost increase recommmended ($000)			**796.7**	**898.7**	**906.8**	**954.5**	**1,019.6**	**4,576.3**

Barwon Water has also put forward the proposition that the base year is not representative of flows in its sewerage system (and the water supply system) and that the electricity costs are therefore less than they would normally be in a "BAU" base year. Barwon Water has considered that as it comes out of restrictions during the regulatory period flows will return to their normal "high" levels and this should be reflected in its electricity cost provision.

Barwon Water has therefore built a provision for this into its real electricity cost base from which it escalates costs for the regulatory period an implied increase (in the 2006/07 electricity cost base of approximately 25%).

The review team does not consider this reasonable. Most historical evidence would at least suggest that the once behaviours change then there is only a low probability of a significant "bounceback" in flows and certainly not rapidly. The review team also notes that this is interrelated to other factors which are likely to result in either offsetting revenue or decreased costs. The review team is not convinced that there is a consistency between these assumptions.

Nevertheless, and given the sever restrictions that have been in place, the review team has allowed an approximate 12% increase in the base to establish future real electricity costs. The ESC may want to review this in some further detail if considered too high. The review team notes that if it had not taken account of this issue the reductions (in the operational expenditure adjustments table) for electricity costs would have been greater.

The table also distinguishes between the cost increases attributable to the increase in tariffs (assuming consumption is constant at the 2006/07 level) and increase attributable to the increase in consumption (based on Barwon Water's consumption forecast).

Barwon Water have indicated that they anticipate the contract to be entered into with their supplier will provide for fixed tariffs over a three year period. This was evaluated by the review team but found to result in an insignificant change to the outcome.

6.2.4 Greenhouse Gas Abatement / Green Energy ($130K/year)

Barwon Water intends to commence with a greenhouse gas program and in 2007 conducted a survey of their customers to test their "willingness to pay" for this program. The survey found that approximately 70 percent of Barwon Water's customers were willing to pay $1 per annum for this purpose. Accordingly Barwon Water plan to spend $130K/year (representing $1 per annum for each of their customers). Barwon Water indicated draft proposals to the review team as to the planned direction of the program and that the targeted level of reduction in greenhouse gas emissions that might be achieved with this expenditure would be in the 10 to 20% range relative to current emission levels.

The proposed expenditure is considered reasonable and no change is recommended.

6.2.5 Water Conservation program

The total cost put forward by Barwon Water totals $6.35 million which accounts for 8% of the explanation of the Variance from Target BAU Opex.

The Victorian government, through the Central Region Sustainable Water Strategy, requires all water businesses in the Central region to implement water conservation programs to attain savings of 25% and 30% by 2015 and 2020 respectively. These savings are to be measured on a per capita basis and compared to water use rates measured in the pre drought conditions of 1995/95. Whilst approximately 15% savings had already been achieved by 2005, much of these are attributable to water restrictions and further measures are required both for the further savings required and to sustain savings already achieved. Barwon Water has undertaken studies (Institute of Sustainable Futures, 2007) during the development of their Water Supply Demand Strategy to identify the most cost effective water conservation measures.

- **Table 6-9: Comparison of Water Conservation and Water Supply Options (Source Barwon Water, 2007)**

	Levelised Unit Cost (PV $/ PV kL)	Total Resource Cost (Million PV $)	Water saved or supplied (ML/year)		
			2015	2020	2030
Decreased usage mid 1990s to now	0.00	0.00	4,159	3,496	2,386
Mandatory Water Efficiency Performance Standards	0.02	0.42	1,384	2,133	2,133
Pressure and Leakage	0.14	2.55	1,333	1,333	1,333
Non Residential (Future)	0.20	1.74	344	562	2,104
Large Users	0.21	5.01	1,736	1,736	1,736
Supply: Dewing Creek	0.26	3.19	966	938	742
Showerhead Exchange 2006	0.31	1.44	351	351	351
Supply: Barwon Downs St. 3	0.32	13.53	3,664	3,384	1,424
Outdoor Program	0.47	0.79	129	129	129
Schools Program	0.52	0.38	52	52	52
Indoor Residential Retrofit	0.58	6.18	809	809	809
Sub-total water conservation options		**18.51**	**10,297**	**10,601**	**11,033**
Sub-total supply option		**16.72**	**4,630**	**4,322**	**2,166**
Northern Water Plant	2.75	67.72	2,000	2,000	2,000
Total		**102.95**	**16,927**	**16,923**	**15,199**

Clearly some expenditure is required to achieve the targets set down in the Central Region Sustainable Water Strategy, and prudence has been demonstrated to the extent that water

conservation is shown to be a cost effective measure – this shown in **Table 6-9** which is directly reproduced from Barwon Water's Water Supply Demand Strategy.

In the above table the "supply" (as opposed to water conservation) options are denoted as such. It may be seen that the levelised unit costs of many of the water conservation options compare favourably with the supply based options.

The programs which Barwon Water intends to implement are detailed in Table 11-4 of its Water Plan (Barwon Water, 2007c, reference number 4). The planned programs are:

- Indoor residential retrofit;
- Outdoor program;
- Clothes washer rebate;
- Business efficiency – Large users, WaterMaps;
- Pressure and leakage reduction;
- Wurdee Boluc Inlet channel lining;
- Covering basins.

Barwon Water indicated to the review team that the resources necessary to implement the will be obtained partly through recruitment but mainly through employment of external specialists.

The forecast expenditure is considered to be reasonable, prudent and deliverable and no adjustment is recommended. This expenditure also forms part of the explanation of the variance to target BAU opex.

6.2.6 Northern Water Plant (including labour and utilities)

The Northern Water Plant will supply 2,000 ML/year of Class A recycled water to the Shell oil refinery at Geelong for use in their industrial processes (thus providing potable water substitution). This water will be sourced from industrial site run-off and sewage effluent thereby reducing stormwater discharges into Corio Bay and treated effluent discharges from the Black Rock WWTP. The key elements of the proposed works are:

- Biological treatment, wet weather storage, ultrafiltration, reverse osmosis to treat trade waste from Shell Australia's Geelong refinery and sewage from Barwon Water's sewerage system (see **Figure 6-1**). This plant will be located adjacent to the Shell refinery.
- Delivery infrastructure to convey the influents and effluents to and from the above plant; and
- An ultrafiltration and reverse osmosis plant at Black Rock to remove salt from the Black Rock WWTP effluent for use by existing recycled water customers.

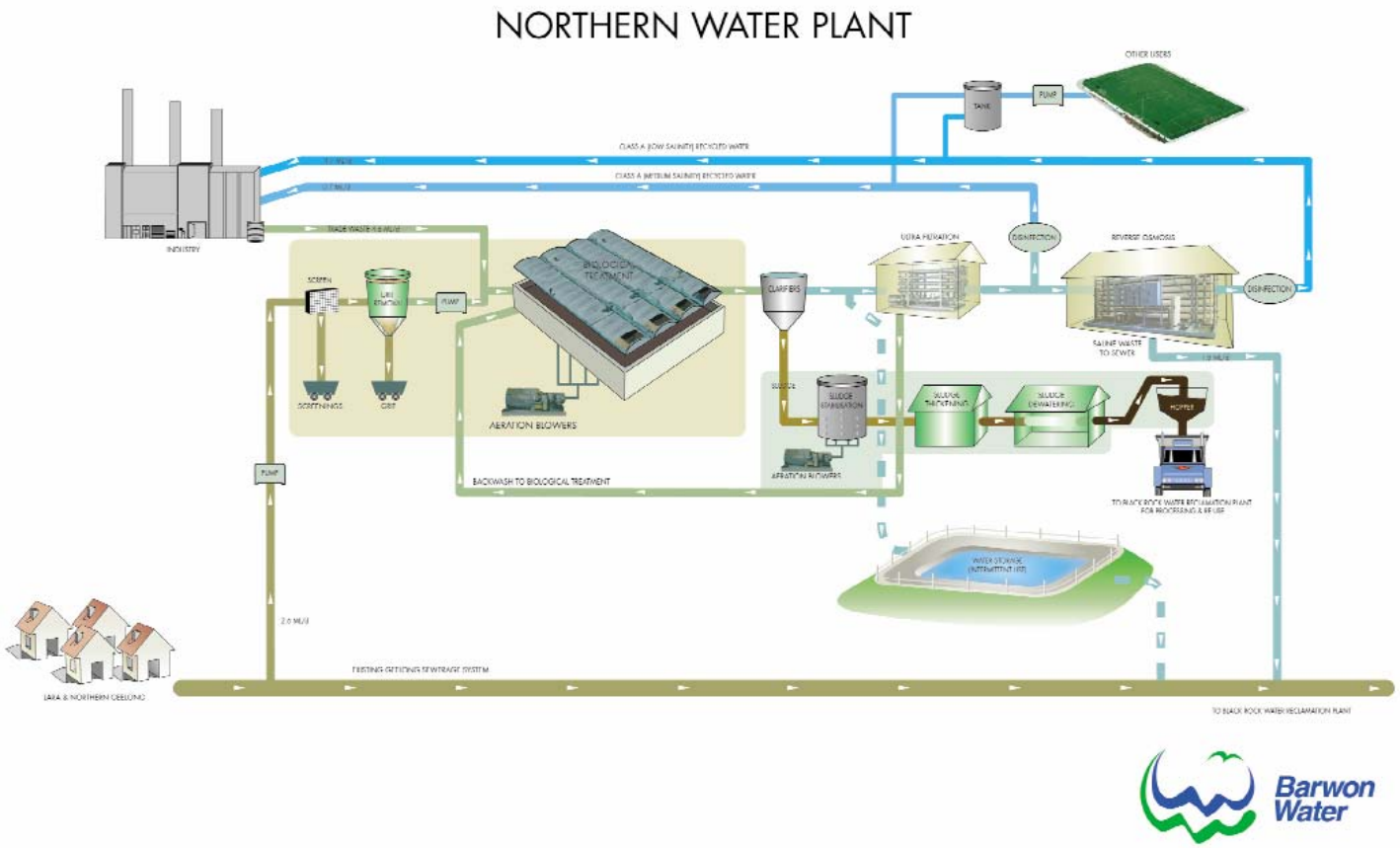
90 per cent of the high quality recycled water returned (2,000 ML/year) to the refinery will receive treatment by both ultrafiltration and reverse osmosis with the remaining 10 percent being treated by ultrafiltration only. The present program envisages the operating period commencing in January 2012, with sewage being diverted to works initially (during the commissioning process) in October 2011. The forecast operating expenditure (**Table 6-3**) matches the above program with expenditure in 2011/12 being half of that forecast for the following year.

The brine extracted at the Northern Water Plant is disposed to the sewer thus raising the salinity of the sewage received at Black Rock WWTP. The ultafiltration and reverse osmosis facilities at the Black Rock WWTP are intended to prevent the higher salinity adversely affecting the existing recycled water customers.

The review team considers the forecast operational expenditure for this plant reasonable based on a comparison with other like facilities with which it has experience. There are a number of issues that the review team wishes to clarify to confirm the expenditure is reasonable and prudent:

No amendment is proposed to this forecast expenditure, which is considered to form part of the explanation of the variance.

- **Figure 6-1: Northern Water Plant: Treatment Process Diagram (Source: Barwon Water)**



6.2.7 Pandemic Contingency Measures ($5 million)

Barwon Water has advised in its letter to the ESC dated 23 January 2008 that it proposes to reduce the costs for this item that were included in the Water Plan from $1 million p.a. to $0.1 million p.a. This expenditure comprised items for personal protective equipment ($25K), information technology ($15K), training ($20K), additional stock in store ($20K), and equipment /fixtures ($15K). The review team considers most of these costs should be considered as BAU expenditure. On this basis it is proposed that this expenditure be reduced to $20K/year.

This reduction in costs of $0.98 million/year will reduce forecast gross operating expenditure by the same amount, and $20K/year will in included as part of the explanation of "Variance from Target BAU Opex".

6.2.8 Water Resource Options investigations ($4.32 million)

The forecast expenditure shown is planned for investigations as described on pages 47, 48 and 84 of the Water Plan. The investigations relate to the following options:

- Newlingrook Aquifer; and
- Aquifer storage and recovery (ASR).

The forecast costs associated with these investigations, where feasibility is yet to be established, are considered reasonable at a global level given the nature of the investigations proposed and the need for extensive data, and to form part of the explanation of the Variance from Target BAU Opex.

Barwon Water provided the review team with a summarised breakdown of the costs which illustrated that these investigations and drilling are well underway, with contracts already let or with tenders being evaluated.

6.2.9 Sewer Main Outfall Cleaning ($3 million)

The Draft Report requested that Barwon Water provide supporting information to the review team to clarify the driver for this project, the basis of the cost estimate, the lengths proposed for cleaning, the timing for the work and the ability to spread this expenditure.

The project is driven by the critical importance of maintaining the main sewage outfall from Geelong to the Black Rock WWTP, and to comply with the EPA requirement to eliminate spillages below the 5 year ARI storm. This outfall is 15.5km long and laid at a flat grade (1:2750) that allows silt to accumulate. Sediment has been accumulating since operation commenced in 1968. In addition to reducing the hydraulic capacity this silt promotes anaerobic conditions leading to corrosion of the soffit of the outfall and several collapses have already occurred in the McIntyre Bridge to Reserve road section of the pipe. This section has already been relined leading to a considerable improvement in the hydraulic capacity of the main.

The budgeted expenditure of $3M is spread over two years (2008/09 and 2009/10), and is intended to allow for the cleaning of the Outfall Sewer from Reserve Road to the Black Rock WWTP – a distance of approximately 10km.

The review team fully supports the need to undertake this work and recognises that this serious problem needs to be addressed. The situation is similar to Sydney's Malabar system and the unit costs proposed have been compared to this operation conducted in Sydney, noting that the silt volumes there were probably greater but access more simple as the sewer concerned is larger. On this basis, and without further exploration, the forecast cost is considered reasonable. We understand that it is based on a contractor quotation.

The review team therefore considers that the costs are reasonable, necessary and prudent. Furthermore they form a part of the explanation of the Variance to target BAU Opex.

Alternatively it could reasonably be argued the maintenance of this critical item should be built into BAU operations and that the regulatory expenditure should be spread evenly across the regulatory period.

6.2.10 Fluoridation ($2 million)

The review team understands that this is a new obligation and Barwon Water have provided for $500K per annum from 2009/10.

The review team considers this cost to be unreasonably high. The cost of chemicals (hydrofluorosilic acid, usually sold as a 20% solution) is around $240 to $350 per tonne and is applied at a target dose of 0.9 mg/L. The range in costs is attributable to the range in volumes which may be ordered according to the scale of the operations involved. Applying the above parameters leads to a dosing cost range (chemicals only) of about $1.10/ML to a maximum of $2.00/ML. The further operational costs, given that the dosing would occur at existing facilities, are not expected to be large and the review team has assumed that these additional costs would be about $50K per year. The chemical costs for treating 40,000 ML/year, Barwon Water's approximate throughput would therefore range from $44K to $80K depending on the average chemical cost. The review team therefore expects that the maximum cost that Barwon Water would experience would be about $130K/year given the volume of chemicals that would be ordered.

The review team therefore recommends that the annual expenditure provided for regulatory purposes for fluoridation be reduced from $500K/year to $130K/year.

6.2.11 Items contributing 2% or less to the explanation of the variance

There are a number of items whose cost is not considered as significant as the above items and these are reviewed briefly below. These items include the following which are all considered prudent and reasonable and to form part of the explanation of the variance to target BAU opex:

- Software Licence agreements & Software Upgrade ($1.71 million)

The bulk of these costs are intended to cover entering a Enterprise Agreement with Software Assurance Scheme to provide updated Microsoft software throughout the organisation, which will be continuously updated on an ongoing basis;

- Water supply asset management & dam safety consultancy ($1.14 million);
- WTP's sludge removal - not required 2006/07 due to low flows ($1.12 million);
- Insurance premiums ($0.97 million);

The increase in costs is reflective of the high level of capital investment planned in the second regulatory period. Barwon Water also self insures its vehicle fleet and part of the increase is attributable to a low level of actual costs incurred in the base year (2006/07).

- Billing & Smart Meter ($0.93 million);

Sewerage Schemes & New Pumping Stations ($0.92 million).

The costs provided for Increased Root foaming ($0.7 million) are considered to form part of BAU opex and thus do not form part of the explanation of the variance to target BAU opex.

6.2.12 Borefield requirements.

Forecast expenditure covers increased costs relative to the 2006/07 base year for additional use of groundwater sources to maintain supplies while surface water resources are scarce. The decline in expenditure during the regulatory period reflects assumed declining reliance on groundwater and increased use of surface water supplies allowing the groundwater supplies to recover. The assumptions regarding the volumes of groundwater use appear reasonable as do the costs, except that component of the costs relating to electricity. The costs submitted are regarded as a justifiable contribution to the explanation of the Variance from Target BAU Opex.

The proposed adjustment for electricity costs for the borefields and resulting total borefields operating cost are shown in **Table 6-10**.

The electricity costs recommended by the review team have been based on the forecast electricity consumption put forward by Barwon Water. In this instance the review team's recommended costs allow for a higher average unit cost than calculated in **Section 6.2.3.** This is because the availability charges form a higher than usual proportion of the total cost especially as Barwon Water envisage reduced pumping from the borefields compared to 2006/07. The costs calculated allow for:

- Fixed charges of 45% of average total cost in the year of highest consumption (2008/09) and then held constant throughout the period;
- A total tariff in that year matching the recommended tariff from **Section 6.2.3** but averaged over the first three years so that the tariff is constant in real terms;
- Variable charges in each year based on the consumption forecast by Barwon Water and 55% of the total recommended tariff for that year, based on the recommendations in **Section 6.2.3;**
- **Table 6-10: Borefield Costs**

Item	Financial year					
	2006/07	2008/09	2009/10	2010/11	2011/12	2012/13
Barwon Water forecast						
Total Borefields operational costs ($000)	$ 1,214	$ 2,508	$ 2,303	$ 1,579	$ 1,029	$ 1,029
Total electricity costs ($000)	$ 519	$ 1,785	$ 1,493	$ 1,007	$ 641	$ 641
Consumption (MWh)	5784	9950	3080	1580	1580	1580
Unit cost ($/kWh)	0.090	0.179	0.485	0.637	0.406	0.406
Increase in unit cost wrt 2006/07		100%	440%	611%	352%	352%
Review team proposal						
Percentage increase (section 3.1.1)		12%	15%	15%	15%	15%
Unit cost ($/kWh)		0.100	0.103	0.103	0.103	0.103
Unit cost averaged over years 1-3 ($/kWh)		0.102	0.102	0.102	0.103	0.103
Consumption (MWh)		9950	3080	1580	1580	1580
Electricity fixed charge ($000)		$ 458	$ 458	$ 458	$ 458	$ 458
Electricity variable charges ($000)		$ 559	$ 173	$ 89	$ 90	$ 90
Total electricity costs ($000)		$ 1,017	$ 631	$ 547	$ 547	$ 547
Total Borefields operational costs ($000)	$ 1,214	$ 1,739	$ 1,441	$ 1,119	$ 935	$ 935
Incremental cost wrt 2006/07 ($000)		$ 525	$ 227	$ (96)	$ (279)	$ (279)

6.2.13 Environmental Contribution

The environmental contribution does not form part of the "Variance to Target BAU Opex". This item is to be evaluated by the ESC.

It therefore has been removed as a justification for the Variance to Target BAU Opex.

6.2.14 Legal costs, Black Rock Treatment Plant Works, Net minor consultancies & Contractors & other, Systems Maintenance- Operational costs

These costs all reflect forecast levels of expenditure lower than that which occurred in the base year and hence these costs are negative. The most significant are "Systems Maintenance- Operational costs" where higher costs were experienced in 2006/07 principally on account of the drought. In accordance with the principles outlined in **Section 3.1** these costs need not be considered when explaining the Variance to Target BAU opex.

6.2.15 Summmary

The review team's view of the additional operating expenditure contributing to the explanation of the variance from target BAU Opex is presented in **Table 6-11**

- **Table 6-11: Final View of Items Contributing to the Explanation of the Variance from Target BAU Opex**

Description	Movement in expenditure wrt 2006/07 ($ 000 - real Jan 2007)					
	Second regulatory period					
	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Biosolids (Combined Short Term & Long Term)	642	6,486	6,156	5,616	5,616	**24,516**
Increased Labour for EBAG @1.25%, Additional Positions	1,361	1,536	1,711	1,857	1,970	**8,435**
Electricity Price Increase & increased usage (excluding Borefield, NWP)	797	899	907	955	1,020	**4,576**
Green Energy	100	130	130	140	150	**650**
Water Resource Options Investigations	4,326	-	-	-	-	**4,326**
Water Conservation Program	895	1,363	1,363	1,363	1,363	**6,348**
Northern Water Plant (includes Labour & Utilities)	-	-	-	1,767	3,507	**5,273**
Pandemic Contingency Measures	20	20	20	20	20	**100**
Sewer Main outfall cleaning	1,500	1,500	-	-	-	**3,000**
Software Licence agreements & Software Upgrade	342	342	342	342	342	**1,710**
Fluoridation	-	130	130	130	130	**520**
Environmental Contribution	-	-	-	-	-	**-**
Water supply asset management & dam safety consultancy	228	228	228	228	228	**1,140**
WTP's sludge removal - not required 2006/07 due to low flows	225	225	225	225	225	**1,123**
Insurance premiums	195	195	195	195	195	**974**
Borefield Requirements	525	227	(96)	(279)	(279)	**98**
Billing & Smart Meter	98	244	195	195	195	**927**
Sewerage Schemes & New Pumping Stations	38	83	121	242	438	**922**
Increased Rootfoaming	-	-	-	-	-	**-**
Legal Costs	-	-	-	-	-	**-**
Black Rock Treatment Plant Works	-	-	-	-	-	**-**
Total	**11,291**	**13,607**	**11,626**	**12,995**	**15,119**	**64,638**
Variance from Target BAU Opex	9,950	14,490	10,640	11,760	13,930	**60,770**
Difference	**1,341**	**(883)**	**986**	**1,235**	**1,189**	**3,868**

Table 6-11 indicates that the overall total of the above costs exceed the variance from Target BAU Opex and that based on these costs Barwon Water would achieve the target productivity improvement of 1% per annum (after growth) specified by the ESC.

Therefore no further adjustment of Operational Expenditure is required to achieve this target.

6.3 Conclusions and Recommendations

The review team recommends the following amendments to Barwon Water's operational expenditure forecast for regulatory purposes:

- To reduce the forecast expenditure for electricity in accordance with the preamble in **Section 3.2.1,** and **Sections 6.2.3**and **6.2.12.**
- To reduce forecast expenditure for increased labour costs as discussed in **Section 6.2.2**
- To reduce forecast expenditure provided for implementation of pandemic contingency measures as discussed in **Section 6.2.7**
- To reduce forecast expenditure provided for flouidation as discussed in **Section 6.2.10.**

No further amendment is recommended in order to achieve the 1% per annum productivity improvement as specified by the ESC as the additional costs associated with "new" activities fully account for the Variance from Target BAU Opex.

Table 6-12 outlines the impact on Barwon Water's operating expenditure forecasts for the five year regulatory period arising from the above recommendations.

Table 6-12: Potential Impacts and Changes to Barwon Water's Regulatory Operational Expenditure for Regulatory Purposes

Change Item	Item/Description		$M 2008-09	2009-10	2010-11	2011-12	2012-13
1	Electricity (excluding borefields and NWP)	Original Water Plan Forecast:	4.15	4.21	4.25	4.26	4.28
		Recommended Revised Forecast:	3.51	3.61	3.62	3.67	3.73
		Recommended Net Change:	-0.64	-0.59	-0.63	-0.59	-0.55
2	Electricity - Borefields (electricity djustment only)	Original Water Plan Forecast:	-	-	-	-	-
		Recommended Revised Forecast:	-0.68	-0.77	-0.41	-0.08	-0.08
		Recommended Net Change:	-0.68	-0.77	-0.41	-0.08	-0.08
3	Labour (all including 1.25% p.a. Real, new positions)	Original Water Plan Forecast:	23.02	23.28	23.58	24.24	24.89
		Recommended Revised Forecast:	22.72	22.85	23.02	23.55	24.06
		Recommended Net Change:	-0.31	-0.43	-0.56	-0.69	-0.83
4	Pandemic contingency measures	Original Water Plan Forecast:	1.00	1.00	1.00	1.00	1.00
		Recommended Revised Forecast:	0.05	0.05	0.05	0.05	0.05
		Recommended Net Change:	-0.95	-0.95	-0.95	-0.95	-0.95
5	Fluoridation	Original Water Plan Forecast:	0.00	0.50	0.50	0.50	0.50
		Recommended Revised Forecast:	0.00	0.13	0.13	0.13	0.13
		Recommended Net Change:		-0.37	-0.37	-0.37	-0.37
6	Additional "Productivity" Contribution [to achieve ESC specified minimum productivity improvement of 1% pa (after growth)]	Original Water Plan Forecast:					
		Recommended Revised Forecast:					
		Recommended Net Change:					
		Total Recommended Net Change:	$ (2.58)	$ (3.11)	$ (2.91)	$ (2.68)	$ (2.78)
		Original Water Plan Total Regulatory Opex:	$ 76.05	$ 81.09	$ 77.75	$ 79.32	$ 81.98
		Recommended Revised Total Regulatory Opex:	**$ 73.47**	**$ 77.98**	**$ 74.83**	**$ 76.64**	**$ 79.20**

References

1) Australian Government, Department of Climate Change, 2008, *National Greenhouse Accounts (NGA) Factors*, January 2008

2) Barwon Water, 2007a, *Water Supply Demand Strategy*, August 2007.

3) Barwon Water, 2007b, *Biosolids: Community Information Bulletin,* September 2007.

4) Barwon Water, 2007c, *2008 Water Plan*, October 2007.

5) Environmental Protection Agency, 2006, *Principles to Establish EPA Environmental Obligations for Water Businesses for the 2008-2013 Pricing determination*, EPA Publication 1069, November 2006.

6) Institute for Sustainable Futures, 2007, *Barwon Water Strategy: Final Report*, February 2007

7) Sinclair Knight Merz, 2004, *Expenditure Forecast Review for the Victorian Regional Urban Water Businesses: Final Report – Recommendations on Expenditure Forecasts,* 13 December 2004

8) Sinclair Knight Merz, 2007, *Technical Services to Support Preparation of the 2008-2013 Water Paln: sewerage Servicing Plans: Armstrong Creek,* 2007

9) Water Services Association of Australia, 2007, *National Performance Report, 2005-06: Major Urban Water Utilities.*

Appendix A Futures Price of Electricity

Article from the Australian Financial Review of 16th January 2008.

Electricity futures lose some spark

Stephen Wisenthal

Financial Review 16 January 2008

Queensland electricity futures prices have slumped more than 35 per cent in the past three months, increasing the opportunities for power retailers to vie for customers in a market that opened to competition last July.

Utilities, including NSW government-owned EnergyAustralia, CLP Holdings-owned TRUEnergy and several smaller companies that had been planning to enter the Queensland market, scaled back or abandoned their plans as the cost of locking in electricity prices soared last year.

But summer rain in south-east Queensland has started refilling dams, reducing the chances that power plants will have to cut output because they cannot get enough water for cooling.

This has reduced the risk of power shortages, while electricity demand has dropped due to low summer temperatures.

The spot electricity price in Queensland has averaged $39.45 a megawatt hour so far this month.

Contracts on the Sydney Futures Exchange that lock in Queensland power prices for all of 2008 rose as high as $92 a megawatt hour in June, three times their price at the beginning of last year, as dam levels fell toward 17 per cent.

But they have fallen to $56.24 a megawatt hour this week.

Power price futures for Victoria and NSW have also declined from their mid-2007 peaks, but have not dropped as steeply as Queensland prices.

The cost of locking in prices for 2008 in NSW is $54.62 a megawatt hour, while Victorian 2008 futures are $56.72 a megawatt hour.

South Australian futures have bucked the trend, amid concern about generation capacity, rising to $81.55 a megawatt hour this week, from $45 a megawatt hour a year ago.

The slump in Queensland wholesale power prices increases the margins that are available to retailers.

AGL Energy and Origin Energy each spent $1.2 billion last year to buy power retailers from the Queensland government.

They have each said they have hedged their electricity price exposure this year, although AGL's profit downgrade last year included a $12 million reduction in earnings because of lower margins on sales to retail customers.

But the 18 per cent annual rate of "churn", or changing of supplier, by Queensland retail customers in December, indicates the state's market is becoming more attractive to utilities.

"Churn is a sign that there is more margin available," UBS analyst David Leitch said.

This was likely to bring back some of the big retailers that avoided Queensland when full competition started, he said.

But the tough credit market could hamper the efforts of smaller groups to gain the loan guarantees they needed.

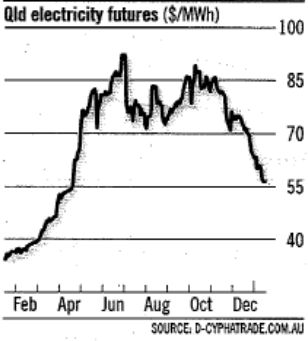
Origin and AGL are both working to increase the proportion of their electricity sales that they generate themselves. Origin is spending $1.3 billion to build a 630 megawatt power station near Dalby, fuelled by gas from its coal-seam methane fields.

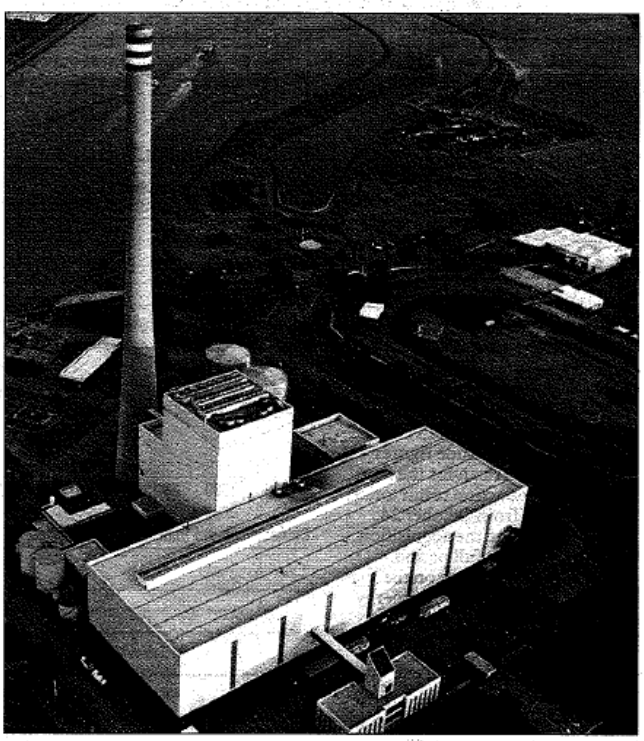
And AGL has locked in electricity supply from a power plant that Queensland Gas is building on its coal-seam methane fields.

This reflects the longer-term outlook for rising electricity prices, as costs of fuel and new power plants increase.

"Some of the heat has gone out of the market," Mr Leitch said. "Over a three to five-year view there is still a lot of cost pressure on the generating sector."

Sparking interest





Low summer temperatures have reduced Queensland electricity demand. Photo: JAMES DAVIES