Expenditure Forecast Review for the Victorian Regional Urban Water Businesses

- COLIBAN WATER
  Recommendations on Expenditure Forecasts
  FINAL REPORT
- 27 March 2008

Expenditure Forecast Review for the Victorian Regional Urban Water Businesses

- COLIBAN WATER

  Recommendations on Expenditure Forecasts

  FINAL REPORT
- 27 March 2008

Sinclair Knight Merz
ABN 37 001 024 095
590 Orrong Road, Armadale 3143
PO Box 2500
Malvern VIC 3144 Australia
Tel: +61 3 9248 3100
Fax: +61 3 9248 3400
Web: www.skmconsulting.com

Contents

Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Draft A	Febraury 2008	Pat Little	David Lynch	Febraury 2008	
Final	31 March 2008	Pat Little	David Lynch	27 March 2008	

Distribution of copies

Revision	Copy no	Quantity	Issued to
Draft A	e-mail	e-mail	Marcus Crudden (ESC)
Final	e-mail	e-mail	Marcus Crudden (ESC)

Printed:	1 April 2008
Last saved:	1 April 2008 01:59 PM
File name:	I:\VWES\Projects\VW04246\Deliverables\Final Report\A_ESC FINAL\Coliban Water\VW04246_Final Report_Coliban_Mar08.doc
Author:	Pat Little, Stephen Sonnenberg, David Lynch
Project manager:	Steve Sonnenberg
Name of organisation:	Essential Services Commission
Name of project:	Expenditure Forecast Review for the Victorian Regional Urban Water Businesses
Name of document:	**Coliban Water** – Recommendations on Expenditure Forecasts - Final Report:
Document version:	Final
Project number:	VW04246

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. Coliban 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 Coliban 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** Error! Reference source not found. 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:

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

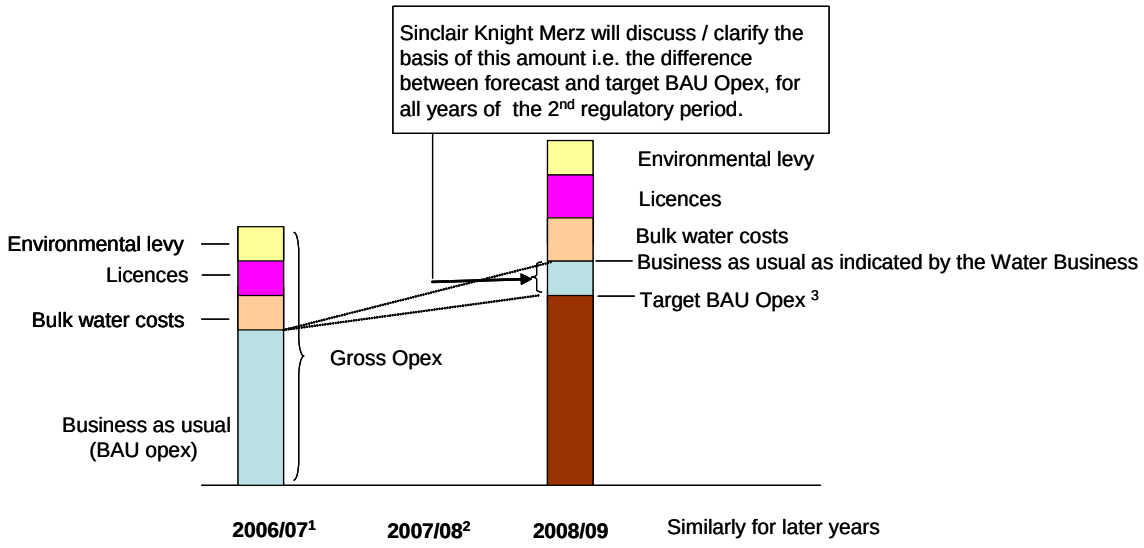
Where **A** is the Growth Adjusted Target BAU OPEX for year n;

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 Coliban 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 Error! Reference source not found..

- **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** Error! Reference source not found.).

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. Coliban Water: Overview

The approach to the review of the Water Plan expenditure forecast for Coliban 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). Information on the key issues was summarised in a memorandum communicated to Coliban Water on 29 November 2007 in the File Note titled "Coliban Water: 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 Coliban Water personnel on 6 December 2007;
  - Additional information provided by Coliban Water in response to the issues identified in the File Note and to queries arising out of the meeting on 6 December;
  - A number of telephone discussions with Coliban Water staff, held during December 2007 and January 2008 and supporting email correspondence.
- Feedback received from Coliban Water on the preliminary recommendations outlined in the Draft Report dated 1 February 2008 and further discussions with Coliban Water to clarify any remaining issues through:
  - Coliban Water's written response to the Draft Report preliminary findings and recommendations, dated 28 February 2008;
  - A meeting and further discussion of the expenditure forecasts and key issues with relevant Coliban Water personnel on 14 February 2008;
  - Further responses and the provision of additional information by Coliban Water in response to queries arising out of and discussions at the meeting on 14 February 2008.

4.1 Key Issues

Some of the key points noted in relation to Coliban Water's Water Plan include:

- The estimated average annual price increase for tariffs in Coliban Water's region, based on the CAPEX and OPEX forecasts submitted by Coliban Water is 13.08%. This estimate is similar to the estimate of 14.7% shown in Coliban Water's Water Plan (page ii);
- Coliban Water's aggregate expenditure forecasts over the second regulatory period are - $214.10M for its Capex program and $262.32M for Opex.;
- Prior to the first regulatory period Coliban Water adopted, and still maintains, a business policy of contracting out of functions and services and procure its specialist infrastructure

projects by the private sector (under BOOT type arrangements) wherever this can be demonstrated to deliver benefits to the businesses and its customers. Toll payments to BOOT type contractors thus inflate Coliban Water's Opex forecasts and should tend to diminish Coliban Water's capital expenditure compared with what it would have been otherwise;

- The region served by Coliban Water experienced unprecedented drought conditions leading up to and during the first regulatory period. This drought is not yet broken. Substantial investment has occurred to import water to the Coliban region and the Goldfields Superpipe project (total capital cost $99.4M excluding bulk water purchases) commenced partial operation in September 2007 with full operation expected to commence in November 2007 (status to be confirmed with Coliban Water). The Epsom Spring Gully recycling scheme is a further new water resources project under development that is expected to drive an increase in operating costs.
- Coliban Water has adopted targets related to sustainability including:
  - 100% biosolids beneficial reuse by the end of the second regulatory period;
  - Increasing the level of water recycling (of effluent) to 82% by the end of the second regulatory period (forecast level in 2008/09 is 64%);
  - Reduction of greenhouse gas emissions by 20% by 2015, relative to levels in the base year of 2004/05 – and it is planned to achieve this by the end of the second regulatory period as a stretch target.
  - The Water Plan does not identify targets for recycling and reduction in per capita water use.
- 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)

5.1 Deliverability of the Capex Program

Coliban Water's forecast capital expenditure during the regulatory period is shown in **Table 5-1** both by asset category and by cost driver.

- **Table 5-1: Coliban 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		**22.08**	**85.14**	**124.21**	**51.52**	**44.49**	**45.74**	**43.92**	**28.43**
Gross capex - business as usual		22.08	85.14	124.21	51.52	44.49	45.74	43.92	28.43
Gross capex - new obligations					-	-	-	-	-
Approved 1st period gross capital expenditure		19.70	14.94	16.31					
Gross 1st period capex	77.14								
Gross 2nd period capex	42.82	Annual 2nd period capex is on average 44% lower than the 1st period							
Breakdown of business as usual gross capex									
Water headworks		-	-	-	-	-	-	-	-
Water pipelines / network		3.44	32.47	59.53	17.55	21.61	25.91	15.24	12.09
Water treatment		0.61	2.89	5.85	10.16	4.92	-	-	0.28
Water Corporate		0.36	0.58	1.20	1.17	0.45	0.35	0.31	0.39
Water sub-total		***4.41***	***35.94***	***66.58***	***28.88***	***26.98***	***26.26***	***15.55***	***12.76***
Sewerage pipelines / network		8.94	2.08	4.15	16.50	10.17	7.05	4.74	9.87
Sewage treatment		3.43	1.68	5.77	0.26	0.51	1.86	0.06	0.79
Sewerage Corporate		0.31	0.51	1.05	1.02	0.40	0.31	0.27	0.34
Sewerage sub-total		***12.68***	***4.27***	***10.97***	***17.78***	***11.08***	***9.22***	***5.07***	***11.00***
Bulk Water sub-total		1.12	0.49	0.70	0.93	0.60	1.11	0.62	0.37
Recycled water		0.95	26.65	16.68	0.57	1.27	1.28	17.04	0.05
Rural Water		2.92	17.79	29.28	3.36	4.56	7.87	5.64	4.25
Breakdown of BAU gross capex by cost driver									
Renewals					8.37	6.41	15.35	5.42	5.48
Growth					1.07	4.96	4.32	- 0.82	0.02
Improved service					10.68	16.47	15.26	16.93	12.67
Compliance					29.11	14.36	8.19	20.16	7.97
Government contributions					-	-	-	-	-
Customer contributions					2.29	2.28	2.62	2.25	2.28

It is noted in respect of capital delivery performance that:

- Overall the proposed size of the capital program is significantly lower than the programs for 2006/07 and 2007/08.
- The completion of the Goldfields Superpipe and Epsom to Spring Gully recycling project in 2007/08 will lead to diminished levels of Capex spend during the second regulatory period.
- The average annual capital expenditure across the second regulatory period is forecast to be $42.82 million compared to actual annual average delivery of $53.61 million over the first two years of the *current* water plan.
- The 2006/07 and 2007/08 years were however dominated by a couple of large projects and the underlying capital spend is estimated to be approximately $30M p.a. On this basis there is a material increase in the typical capital expenditure program for each of the five years of the second regulatory period.

Coliban Water is aware of the high levels of capital expenditure forecast in the Victorian water industry and the pressure that this will pace on available resources and have taken the following measures to ensure timely delivery of its capital works program:

- Use of a panel of consultants for design services;
- Regular use of local contractors to provide ongoing workload for these contractors.
- Streamlining, and thereby shortening, the internal approvals process for less complex projects. Currently this process can incur unnecessary delays for straightforward projects and it is planned to eliminate this. Changes to the current approvals process for complex projects are not envisaged.

5.2 Key Projects

Coliban Water's Water Plan forecasts $214.10M of capital expenditure over the regulatory period. The eleven projects nominated by the review team for assessment as shown in **Table 5-2** makes up over $161.42 million (75%) of this total. These projects comprise Coliban Water's top ten projects (ranked by total forecast expenditure during the second regulatory period) and the Water Quality Improvement Program.

Subsequent to the Draft Report Coliban Water advised that it had been necessary to revamp its capital works program to take account of the significantly increased overall cost of the Water Quality Improvement Program. These changes have resulted in a small reduction overall in the capital program from $214.1M to $212.9M.

The revised forecast costs to be incurred in the second regulatory period following the changes to the capital works program ares shown in the lower half of **Table 5-2** and the changes exceeding $1M to projects are summarised in **Table 5-3.** The Water Quality Improvement Program increases considerably in cost to become the second ranked project costwise. Some of the cost estimates for the other top ten projects have been reduced, mainly the Harcourt Recycled Water Scheme, where expenditure is shifted into the third regulatory period and the Leitchville and Gunbower water treatment plant works, adjusted downwards in cost in line with the discussion in the Draft Report.

Table 5-2: Major projects planned by Coliban Water

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 (Original submission)										
Key projects										
1	Rural channel system configuration	500	3,000	5,000	8,000	12,000	12,000	**40,000**	***19%***	
1A	Water Quality Improvement Program	4,965	5,040	-	-	-	-	**5,040**	***2%***	
2	Sewer improvement strategy - Bendigo trunk and reticulation mains	842	11,857	2,378	2,378	1,949	3,459	**22,021**	***10%***	
3	Bulk water purchases (permanent water rights)	14,000	6,000	6,000	6,000	4,000		**22,000**	***10%***	
4	Recycled water scheme - pipeline to Barker Creek Reservoir (Harcourt Valley recycling)					17,000		**17,000**	***8%***	
5	Pipelines for potable supply - Bridgewater, Raywood, Sebastian and Goornong		5,375	5,375	2,352	1,176		**14,278**	***7%***	
6	Main channel refurbishment			1,760	8,250			**10,010**	***5%***	
7	Water augmentation - for 2013 demand (Bendigo distributionand reticulation systems)			5,031	3,931	399	203	**9,564**	***4%***	
8	Leithchville and Gunbower water treatment plant		4,455	4,455				**8,909**	***4%***	
9	Sewer pump stations (renewals - all districts)		2,593	443	714	1,618	1,279	**6,647**	***3%***	
10	Sewer improvement strategy - Echucha trunk and reticulation mains		519	1,436	277	209	3,517	**5,958**	***3%***	
	Total	***20,307***	***38,840***	***31,878***	***31,901***	***38,352***	***20,458***	161,428	***75%***	
	Gross capital expenditure	***124,210***	***51,520***	***44,490***	***45,740***	***43,920***	***28,430***	214,100	***100%***	
	% of total Capex in financial year indicated		75%	72%	70%	87%	72%			
Capital Expenditure (Revised submission)										**Difference wrt original**
1	Rural channel system configuration	500	3,000	5,000	8,000	12,000	12,000	**40,000**	***19%***	**-**
1A	Water Quality Improvement Program	5,000	20,000	-	-	-	-	**20,000**	***9%***	**14,960**
2	Sewer improvement strategy - Bendigo trunk and reticulation mains	991	11,157	1,678	1,678	1,249	2,759	**18,521**	***9%***	**(3,500)**
3	Bulk water purchases (permanent water rights)	18,200	17,500	2,500	-	-	-	**20,000**	***9%***	**(2,000)**
4	Recycled water scheme - pipeline to Barker Creek Reservoir (Harcourt Valley recycling)	-	-	-	-	3,000	4,000	**7,000**	***3%***	**(10,000)**
5	Pipelines for potable supply - Bridgewater, Raywood, Sebastian and Goornong		5,375	5,375	2,352	1,176		**14,278**	***7%***	**-**
6	Main channel refurbishment			1,760	8,250			**10,010**	***5%***	**-**
7	Water augmentation - for 2013 demand (Bendigo distributionand reticulation systems)			5,031	3,931	399	203	**9,564**	***4%***	**-**
8	Leithchville and Gunbower water treatment plant	300	2,885	2,885	-	-	-	**5,770**	***3%***	**(3,139)**
9	Sewer pump stations (renewals - all districts)	1,123	4,172	413	684	888	1,249	**7,406**	***3%***	**758**
10	Sewer improvement strategy - Echucha trunk and reticulation mains	-	519	1,436	277	209	1,338	**3,780**	***2%***	**(2,179)**
	Total	***26,114***	***64,608***	***26,078***	***25,171***	***18,922***	***21,549***	156,329	***73%***	**(5,100)**
	Revised Gross Capital Expenditure	***83,663***	***87,615***	***35,996***	***37,886***	***23,739***	***27,570***	212,806	***100%***	**(1,294)**
	% of total Capex in financial year indicated	31%	74%	72%	66%	80%	78%			

SINCLAIR KNIGHT MERZ

- **Table 5-3: Major changes (over $1M) to Coliban Water's Capital Program**

Project	Add	Delete
Echuca 8.5Ml CWS (New tower site)		$1.0m
Bendigo to Axedale Pipeline (carry over)	$1.2m	
Rochester Winter Storage	$1.7m	
Small town water main replacements (reduce)		$1.1m
Leitchville/Gunbower Water Treatment (reduce)		$3.1m
Water Quality Improvement (carry over/new)	$15.0m	
Leitchville clear water tanks reline (carry over)	$1.4m	
Bendigo upsize under capacity sewers (reduce)		$1.0m
Echuca RM 11 sewer duplication		$2.2m
Echuca Replace SPS 4 (carry over)	$1.3m	
Bendigo Trunk Sewer Replacements (reduce)		$2.5m
Bendigo WRP odour control (carry over)	$1.6m	
Castlemaine WRP odour control (carry over)	$1.2m	
Castlemaine recycled water to Harcourt (reduce)		$10.0m
Huntly recycled water 3rd pipe		$1.2m
Goulburn System water purchases (reduce)		$2.0m
Goldfields Superpipe (carry over)	$2.0m	

5.2.1 Rural Channel System Reconfiguration

(Original and revised forecast total expenditure during second regulatory period: - $40M.)

Coliban Water's customer base includes approximately 1,725 rural customers supplied with untreated water through a supply network of over 500km of mainly open channel varying from concrete lined box channel to earthen channel. Individual water use varies from 1 ML/year to over 275 ML/year and 70% of licences are less than 2ML/year. The total licenced volume is 14,790 ML/year. The system commenced operation in 1877. High water losses are experienced in the distribution system, especially from the earthen channels, and almost 25% of water released into the channels remains unaccounted for. These losses have received a lot of attention, and adverse publicity, during the drought. The National Performance Report of Australian water authorities for 2005-06 (WSAA, 2007) indicated that Coliban Water's water losses were 348 litres / connection /day, three times the national average. This high rate of loss is directly attributable to inclusion of the water losses from the rural channel system in the data.

Coliban Water has, through its Water Supply Demand Strategy, committed to:

- Undertake a major reconfiguration of the Coliban Rural System, over the next 15 to 20 years, saving up to 3,000 ML/year (Action 8);

- Expend $200,000 to reduce leakage from rural channels, saving up to 200 ML/year by 2007;
- Spend $1.25 million replacing inefficient manual flow control and measurement devices with automated devices, saving up to 800 ML/year.

Coliban Water has provided information on its assessment of the relative unit costs of initiatives to save or "produce" water ($/ML/year basis) – as summarised in **Table 5-4**Error! Reference source not found..

Investigations into the cost of water savings resulting from channel reconfiguration indicate that, at approximately $1,370 /ML/year, it is a relatively very expensive option compared with nearly all other options.

- The unit cost of water savings derived from reconfiguring the rural channel system is over 40% higher than any other identified option. Furthermore it is understood that investigations completed since the above costs were derived indicate that the targeted savings are likely to be more difficult and expensive than envisaged when Error! Reference source not found. was prepared.
- **Table 5-4: Average annual cost of water augmentation / water savings**

Item	Project name	Average Annual Yield / Savings (ML p.a.)	Average cost ($/ML)
1	Permanent water savings measures	775	13
2	Water savings incentives	163	31
3	Pricing incentives	195	31
4	Rural channel system flow control	700	114
5	*Existing supply (for comparison purposes only)*	*33,424*	*116*
6	Urban leakage control	468	186
7	Non residential conservation	253	337
8	Community education	114	615
9	Epsom Spring Gully recycling	4258	789
10	Goldfields Superpipe (permanent water)	8000	948
11	Castlemaine water recycling to Harcourt	800	964
12	Rural channel system configuration	2604 (*3 tranches*)	1,368
13	Channel Leakage control	100	7461

- The capital cost of works indicated is $40M in the second regulatory period alone (and this is only a portion (perhaps less than half) of the total costs envisaged to achieve the 3, 000 ML/year savings whereas by comparison a $1M augmentation of the Bendigo urban leakage

reduction program is expected to save 4,000 ML/year (Section 4.3.3 of the Water Plan (Reference 3));

- Additional water can be obtained by purchasing water rights and delivery through the completed Goldfields Superpipe. The review team acknowledges that this will not reduce the wasteful use of water distributed through the Rural Channel System but make this point to emphasise our view that the cost of savings to be achieved on the rural Channel System is excessively expensive, and there is no present clearly identified need for the water to resolve supply shortages.

The review team considers that it would be prudent to reduce the planned level of expenditure on this item, during the second regulatory period, and to undertake further investigations to more clearly establish more cost effective ways of reducing system losses and/or to prioritise the sub-component initiatives within this category of works. The improved monitoring and flow control are expected to assist with this.

The envisaged total savings of 3,200 ML/year (Reference 4) represent slightly less than 10% of the total consumption in the Coliban Water Supply System. [NB: The above table indicates total savings of 3,300 ML p.a., comprising Items 4 and 12.] Whilst the scheme remains desirable in the longer term, the completion of the Superpipe would appear to reduce the need and urgency to undertake the rural channel system reconfiguration works and realisation of the associated water savings less critical. It would seem that Coliban Water has some time to improve on the affordability of the scheme, while still meeting commitments outlined in its Water Supply Demand Strategy.

The cost of automating the flow control system appears to be well justified, based on the data in **Table 5-4**Error! Reference source not found..

The proposed adjustments to the capital expenditure for 'rural system reconfiguration' project works are indicated in **Table 5-5.** In effect the expenditure for this item is spread over a longer period (including beyond the second regulatory period) and it is recommended that the expenditure forecast by Coliban Water during the second regulatory period be reduced by half.

In making these recommendations the review team acknowledges that there may be broader policy or other objectives to be achieved but these need to be weighed against the fact that the proposed initiatives and works of this project appear to be clearly uneconomic.

5.2.2 Water Quality Improvement Program

(Original total expenditure during second regulatory period: - $5.04M

Revised forecast expenditure during second regulatory period: - $20M.)

The works planned arise out of the requirements of the *Safe Water Drinking Act* and will be incurred in the completion of works undertaken, and already committed to, for the Water Quality Improvement Program. The revised cost is based on the preferred tender recently received.

The review team considers that the project works proposed are sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable.

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflecting the change from Coliban Water's original forecast to the revised forecast**.** The review team also recommends that for regulatory expenditure purposes that the expenditure be spread evenly across the first two years of the second regulatory period.

5.2.3 Sewer improvement strategy – Bendigo trunk and reticulation mains

(Original total expenditure during second regulatory period: - $22.02M

Revised forecast expenditure during second regulatory period: - $18.52M.)

This project is designed to upgrade the sewerage system, minimise chokes and subsequent overflows, and provide sewerage capacity for developing areas at the southern end of Kangaroo Flat in Bendigo. An options analysis considered four options as well as a "do nothing" scenario to arrive at the preferred solution. This solution involves duplication of two lengths of trunk sewer to be undertaken in 2008/09 and upsizing or duplication of reticulation sewers throughout the regulatory period. The analysis is supported by CCTV inspections of the pipes.

The reduction in expenditure shown in the revised forecast assumes reduced expenditure of $0.5M in each year of the second regulatory period in a program involving expenditure averaging approximately $4.4M/year. The review team considers that this deferral of expenditure should not have significant adverse effects.

The review team considers that the project works proposed are sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable (in terms of the costs of similar schemes in the current market environment).

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflecting the change from Coliban Water's original forecast to the revised forecast**.**

5.2.4 Bulk water purchases (permanent water entitlements)

(Original total expenditure during second regulatory period: - $22M

Revised forecast expenditure during second regulatory period: - $20M.)

The revised expenditure totalling $20 million has been forecast spanning the first two years of the second regulatory period. This is an accelerated program relative to that envisaged in the (original)

Water Plan and conforms to the recommendations made in the Draft Report. The revised estimate assumed a cost of $2,500/ML and that 7,000 ML/year would be purchased in 2008/09 and 1,000 ML in 2009/10 – a total of 8,000 ML of further purchases. This will supplement the 12,000 ML of purchases completed to achieve the desired total of 20,000 ML.

Coliban Water has increased the estimated average costs of permanent water entitlement purchases relative to that envisaged in the Water Plan from $2000/ML to $2500/ML to reflect increased levels of purchases at a time when the supply available is likely to be less. The review team considers that this is reasonable.

The review team considers that the revised forecast submitted by Coliban Water to be sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable.

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflecting the change from Coliban Water's original forecast to the revised forecast**.**

5.2.5 Recycled water scheme – pipeline to Barker Creek reservoir (Harcourt Valley recycling)

(Original total expenditure during second regulatory period: - $17M

Revised forecast expenditure during second regulatory period: - $7M.)

This scheme involves the recycling of Class C treated effluent from the Castlemaine WWTP by means a new pump station and 17km long, 250mm diameter, pipeline to the Barkers Creek Reservoir which is located approximately 5km from the town of Harcourt. The scheme is primarily intended to secure the water supplies to the important irrigators situated in the Harcourt Valley, and will also achieve increased use of recycled water, and recycled water substitution, supporting the business strategies. **Table 5-4** Error! Reference source not found.shows that the unit cost of potable substitution is high ($964 /ML/yr) but similar to the Goldfields Superpipe.

Studies to date have been at the pre-feasibility level only. The detail of the cost estimate is appropriate to that level of study and includes allowances for contingencies (15%) and design and management fees. The study evaluates several options and alternative treatment strategies to produce either Class A or Class C water. Coliban Water has indicated that the option selected, as described above, may be changed depending on the outcomes of further studies. The cost estimate is therefore considered indicative.

The revised expenditure forecast indicates that the expenditure profile of the project should span the second and third regulatory periods. This is considered reasonable and no change from the revised expenditure forecast is recommended.

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflecting the change from Coliban Water's original forecast to the revised forecast**.**

5.2.6 Pipelines for potable supply - Bridgewater, Raywood, Sebastian and Goornong

(Original and revised forecast total expenditure during second regulatory period: - $14.28M.)

These projects form part of the Water Quality Improvement Plan to be undertaken as obligations in terms of the *Safe Drinking Water Act, 2003*. It is planned to upgrade local supplies by extending potable water supply pipelines from Bendigo to these areas. These projects had been included in the capital works program for the first regulatory period but have been held over primarily because of the drought, water shortages in Bendigo, and ensuing emergency schemes that diverted resources to those projects.

Options analyses have identified the preferred solution(s). Cost estimates have been updated and are based on detailed schedules of quantities using currently applicable contract rates, with appropriate allowances for investigations during the design period, and contingencies and uncertainty allowances (totalling approximately 10%). The review team notes that the costs for these projects are approximately trebled the costs forecast for these projects as indicated in Coliban Water's first Water Plan.

The review team considers that the project works proposed are sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable in terms of the costs of similar schemes in the current market environment.

5.2.7 Main channel refurbishment

(Original and revised forecast total expenditure during second regulatory period: - $10.01M.)

The Coliban Main Channel is approximately 70 km long and forms part of the delivery system between Lake Eppalock and Bendigo. It requires ongoing maintenance to remain serviceable. The works planned form part of the ongoing repairs and maintenance strategically planned during an asset review undertaken in 1996, and recently updated. The channel has been visually inspected (by "walking" the length of the asset) and each section assigned a remaining life based on its structural and service condition. The cost covers repairs to selected sections, not previously attended to whose remaining life is between 2 and 5 years. The condition of the channel is to be reassessed during the second regulatory period and final commitment to works being made on the basis of this reassessment the current condition and a revised assessment of remaining asset life. The Back Creek Syphon is a particular section of concern where repairs are expected to occur.

At this stage, the review team considers that the project works proposed are sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable (in terms of the costs of similar work in the current market environment). The extent of the works in aggregate is deliverable in the period and reasonable in the context of prudent asset management.

5.2.8 Water augmentation – for 2013 demand (Bendigo distribution and reticulation systems)

(Original and revised forecast total expenditure during second regulatory period: - $9.56M.)

The forecast expenditure allows for the Coliban Water to upgrade its reticulation networks in Bendigo to allow for growth and maintain customer service standards (principally to maintain minimum flow and pressure levels). The expenditure forecast is based on cost estimates of specific works planned up to 2013 as set out in the strategy developed for the Bendigo water reticulation system. Steps involved in preparing the strategy included:

- Review of system operation to:
  - Define current and future problems areas based on hydraulic modelling and future projections;
  - Identify areas requiring augmentation to satisfy future demands;
- Identify improvement options:
  - Identify range of possible improvements;
  - Option assessment including use of hydraulic modelling;
  - Estimate net present value of range of possible improvements and associated risks;
  - Identify triggers for augmentation works;
  - Workshop strategy with relevant planning and operational staff.

The review team considers that the project works proposed are sufficiently justified and that the forecast expenditure is necessary, prudent and reasonable (in terms of the costs of similar work in the current market environment). The extent of the works in aggregate is deliverable in the period according to timeline currently envisaged.

5.2.9 Leitchville and Gunbower Water Treatment Plant

(Original total expenditure during second regulatory period: - $8.91M

Revised forecast expenditure during second regulatory period: - $5.77M.)

Coliban Water is obliged to undertake improvements to provide compliant water quality to consumers in Leitchville and Gunbower in terms of the *Safe Drinking Water Act.* Communication between Coliban Water and the Department of Human Services sighted by the review team provided evidence that the high levels of organics in raw water at Leitchville was the cause of this problem. A range of options was analysed including water treatment plant refurbishment, replacement or bringing the supply from another source. The preferred option adopted is to refurbish the treatment plant at Leitchville and provide a pipeline (approximately 9km long) from that point into Gunbower.

Expenditure forecast for the Water Plan totalled approximately $8.91M, spread equally over the first two years of the second regulatory period. Further work carried out by Coliban Water since submission of the Water Plan and prior to the Draft Report, (and still in draft form) has refined and reduced the estimate to $4.381M. This revised estimate is based on detailed schedules of quantities and includes a 10 % contingency allowance.

The revised forecast recently submitted by Coliban Water totals $5.77M as opposed to the updated cost estimate totalling $4.381M. The revised estimate includes $1.2M for design and temporary works to be included into the updated cost estimate – increasing it to $5.581M.

The review team considers that the project and the proposed works are sufficiently justified, the revised cost estimate is high by $0.169M ($5.770M- $5.581M) and the proposed expenditure is necessary and prudent. The extent of the works in aggregate is deliverable in the period according to the schedule proposed.

The proposed adjustment in capital expenditure is indicated in **Table 5-5.**

5.2.10 Sewer pump stations (renewals – all districts)

(Original total expenditure during second regulatory period: - $6.65M

Revised forecast expenditure during second regulatory period: - $7.41M.)

The forecast expenditure is driven by risk assessments completed on each of the sewer pump stations. Although a number of criteria were identified and used during the risk assessment the primary drivers for sewer pump station renewal were the potential of spillage during the 1:5 year storm event and severity of ensuing environmental impact (to comply with the relevant State Environment Protection Policy that requires this standard to be met by 2010). Spillage risk was determined from hydraulic modelling. The costs of upgrading were then estimated through an options analysis and identification of the preferred solution in each case. Typically the options assessed included:

- Provision of a generator;
- Provision of emergency storage;
- Enlarging the wet well;
- Uprating (or downsizing) the pumps to change the pump capacity;
- Installation of variable speed drives for the motors.
- Provision of an additional or back-up pump;
- Amending the stop/ start levels of the pumps.

Further modelling is planned to refine the proposed solutions that have been adopted as indicated in the expenditure forecast for the Water Plan. The review team understands that the uneven

expenditure profile (see **Table 5-2**) has been determined by the criticality of possible spillages and the schedule planned for the hydraulic modelling and refinement of the proposed solutions. The high expenditure forecast in 2008/09 totalling $2.593M primarily relates to Sewage Pumpstation #1 in Echuca which is to be superseded by a new upsized pump station at a cost of $1.17M.

The increase in expenditure evident in the revised expenditure forecast (relative to the original) is attributable to the carry over of works originally planned for 2007/08 into the second regulatory period. This is considered reasonable (and is favourable in the overall context of customer prices).

The review team considers that the project and the proposed works are sufficiently justified, the revised cost estimate is reasonable and the proposed expenditure is necessary and prudent. The extent of the works in aggregate is deliverable in the period according to the schedule proposed.

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflecting the change from Coliban Water's original forecast to the revised forecast**.**

5.2.11 Sewer improvement strategy - Echuca trunk and reticulation mains

(Original total expenditure during second regulatory period: - $5.96M

Revised forecast expenditure during second regulatory period: - $3.78M.)

Planned expenditure of approximately $5.96 million spread unevenly across the second regulatory period is based on the strategy developed in 2003. The strategy addressed staged development of works to meet service standards and growth expectations over a twenty year period. The strategy was based on condition assessments undertaken on pump stations, risk assessments carried out on all components of the sewerage system and using a predicted 1:5 year storm flow for years 2003, 2011 and 2023 stage development.

Three alternative strategies were developed and a preferred strategy (Alternative 2) adopted. Works were designated according to their urgency for implementation according to the potential for spills to occur during the 1:5 year storm event. A detailed program of works has been drawn up for implementation during the second regulatory period comprising twelve separate sections of gravity or rising main whose lengths are detailed and which are to be upsized, relined, replaced , duplicated or redirected.

The reduction in expenditure shown in the revised forecast assumes that expenditure for the duplication of one of the sewerage mains (Echuca - RM11, duplicate 6200m with 450mm from SPS11 to WRP) will bed deferred by one year into the third regulatory. The review team considers that this deferral of expenditure is unlikely to have significant adverse effects, but has not reviewed this issue in great detail.

The review team considers that the project and the proposed works are sufficiently justified, the cost estimate is reasonable and the proposed expenditure is necessary and prudent. The extent of the project works in aggregate is deliverable in the period according to the schedule proposed.

The proposed adjustment in capital expenditure is indicated in **Table 5-5** reflects the change from Coliban Water's original forecast to the revised forecast**.**

5.3 Recommendations

Recommendations on adjustments to Coliban Water's capital expenditure forecasts, as summarised in **Table 5-5,** are that:

- expenditure for the Rural Channel System Configuration be reduced substantially (by 50%) with and the balance deferred to the third regulatory period
- expenditure adjustments be implemented in accordance with the changes to the capital works program as submitted by Coliban Water in respect of the works for the
  - Water Quality Improvement Strategy;
  - Sewer Improvement Strategy (Bendigo and Echuca)
  - Bulk Water Purchases;
  - Harcourt Valley Recycled Water Scheme;
  - Sewer Pump Station Renewals and
- the revised cost estimate for the water quality related improvements to Leitchville and Gunbower be adopted in preference to the original estimate provided with the Water Plan.
- expenditure adjustments be implemented in accordance with the overall change to the capital works program as submitted by Coliban Water in respect of the works for the balance of the capital works program (ie works not included in second bullet point above).

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

[NB: The Recommendations table, **Table 5-5** is on the next page.]

Table 5-5: Coliban Water: 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	Rural Channel System Configuration	Original Water Plan Forecast:	0.50	3.00	5.00	8.00	12.00	12.00	
		Recommended Revised Forecast:	0.50	2.00	2.00	3.00	3.00	10.00	20.00
		Recommended Net Change:		-1.00	-3.00	-5.00	-9.00	-2.00	20.00
2	Water Quality Improvement Projects	Original Water Plan Forecast:	4.97	5.04	0.00	0.00	0.00	0.00	
		Recommended Revised Forecast:		10.00	10.00				
		Recommended Net Change:	-4.97	4.96	10.00				
3	Leitchville and Gunbower WTP	Revised Water Plan Forecast:	0.30	2.89	2.89	0.00	0.00	0.00	
		Recommended Revised Forecast:	0.30	2.79	2.79	0.00	0.00	0.00	
		Recommended Net Change:		-0.09	-0.09				
4	Sewer Improvement Strategy :Bendigo and Echuca works	Original Water Plan Forecast:	0.84	12.38	3.81	2.65	2.16	6.98	
		Recommended Revised Forecast:	0.99	11.68	3.11	1.95	1.46	4.10	
		Recommended Net Change:	0.15	-0.70	-0.70	-0.70	-0.70	-2.88	
5	Bulk Water Purchases	Original Water Plan Forecast:	14.00	6.00	6.00	6.00	4.00	0.00	
		Recommended Revised Forecast:	18.20	17.50	2.50	0.00	0.00	0.00	
		Recommended Net Change:	4.20	11.50	-3.50	-6.00	-4.00		
6	Harcourt Valley Recycling Water Scheme	Original Water Plan Forecast:	0.00	0.00	0.00	0.00	17.00	0.00	
		Recommended Revised Forecast:	0.00	0.00	0.00	0.00	3.00	4.00	10.00
		Recommended Net Change:					-14.00	4.00	10.00
7	Sewer Pump Station Renewals	Original Water Plan Forecast:	0.00	2.59	0.44	0.71	1.62	1.28	
		Recommended Revised Forecast:	1.12	4.17	0.41	0.68	0.89	1.25	
		Recommended Net Change:	1.12	1.58	-0.03	-0.03	-0.73	-0.03	
8	Overall Capex program adjustment *Reflecting the overall revision to other miscellany of projects* [as advised by Coliban Water]	Original Water Plan Forecast:	0.00	0.00	0.00	0.00	0.00	0.00	
		Recommended Revised Forecast:	-40.55	7.19	-5.83	-1.12	-0.75	-1.95	
		Recommended Net Change:	-40.55	7.19	-5.83	-1.12	-0.75	-1.95	
Total Recommended Net Change:			(40.04)	23.43	(3.16)	(12.85)	(29.18)	(2.86)	30.00
Original Water Plan Total Regulatory Capex:			124.21	51.52	44.49	45.74	43.92	28.43	
Recommended Revised Total Regulatory Capex:			**84.17**	**74.95**	**41.33**	**32.89**	**14.74**	**25.57**	

6. Operating Expenditure (Opex)

A significant portion of Coliban Water's operating costs are driven, and effectively locked in, by contracts for the provision of outsourced services and the operation of BOOT facilities covering the regulatory period and beyond.

The upper half of **Table 6-1** presents a breakdown of forecast operating expenditure by cost driver as provided by Coliban Water and indicates that contracted out services and BOOT type schemes will comprise almost 60% of Opex during the second regulatory period. The bottom half of **Table 6-1** shows the increases (or decreases) in each year relative to the cost incurred in the base year of 2006/07 for each cost driver line item.

The upper half of this table is similar to Table 5-2 on page 37 of Coliban Water's Water Plan but provides a more detailed breakdown, including energy and "Outside Services" costs. The latter represents costs directly managed by Coliban Water comprising mainly Consultancy services.

The lower half of this table indicates that energy and bulk water purchases are the key drivers of increased operational expenditure for the second regulatory period relative to actual expenditure in 2006/07. The contribution each of these items makes to overall increased expenditure are:

- Energy (63% of total increase);
- Bulk water (49% of total increase).

These increases are largely attributable to the operational requirements of new infrastructure, mainly the Goldfields Superpipe.

There is also a decline in some expenditure items (relative to 2006/07), although the only significant cost reduction is for "outside services" which reduces by approximately 20%. However this is off what appears to be a significantly higher cost base in 2006/07.

Table 6-1: Coliban Water: Breakdown of Historical and Forecast Opex by Cost Driver

Expenditure in $ 000 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	%
Labour	4,632	4,846	4,929	4,993	5,009	5,076	5,144	25,150	10%
Materials and Vehicles	814	317	317	317	317	317	317	1,585	1%
Other expenses	1,226	1,375	1,731	1,669	1,699	1,721	1,744	8,564	3%
Energy	1,584	4,324	4,880	4,540	4,583	4,616	4,650	23,269	9%
Licences	264	256	239	239	239	239	251	1,207	0%
Bulk Water	645	4,912	5,537	3,146	2,363	2,024	2,084	15,155	6%
Outside services	4,516	3,142	3,591	3,433	3,481	3,152	3,623	17,280	7%
Outsourced Contractors	15,920	18,226	17,021	16,692	16,000	15,339	14,696	79,747	32%
BOOT Schemes	13,361	14,234	13,939	13,731	13,463	13,256	12,983	67,371	27%
Environmental Contribution	1,740	1,687	1,687	1,687	1,687	1,687	1,687	8,437	3%
Total	**44,702**	**53,319**	**53,870**	**50,448**	**48,842**	**47,426**	**47,178**	**247,764**	**100%**
Increase over 2006/07									
Labour	-	214	297	361	377	443	512	1,989	8%
Materials and Vehicles	-	(497)	(497)	(497)	(497)	(497)	(497)	(2,483)	-10%
Other expenses	-	149	505	443	473	495	518	2,435	10%
Energy	-	2,740	3,296	2,956	2,999	3,032	3,066	15,349	63%
Licences	-	(8)	(25)	(25)	(25)	(25)	(13)	(113)	0%
Bulk Water	-	4,267	4,892	2,502	1,718	1,379	1,439	11,930	49%
Outside services	-	(1,374)	(926)	(1,083)	(1,036)	(1,364)	(894)	(5,303)	-22%
Outsourced Contractors	-	2,306	1,101	772	80	(581)	(1,224)	148	1%
BOOT Schemes	-	873	578	370	102	(105)	(378)	566	2%
Environmental Contribution	-	(53)	(53)	(53)	(53)	(53)	(53)	(264)	-1%
Total	**-**	**8,618**	**9,168**	**5,746**	**4,140**	**2,724**	**2,476**	**24,255**	**100%**

6.1 Derivation of the Variance to Target BAU Opex

Table 6-2 below summarises Coliban Water's forecast operating expenditure and shows the derivation of the Variance to Target BAU Opex in the manner explained in **Section** Error! Reference source not found..

Table 6-2: Coliban 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	43.18	42.08	48.03	49.47	48.26	47.76	47.68	48.57
New obligations				-	-	-	-	-
Sub-total Opex	***43.18***	***42.08***	***48.03***	***49.47***	***48.26***	***47.76***	***47.68***	***48.57***
Bulk water charges	0.81	0.60	3.38	3.79	2.25	1.75	1.54	1.59
Licence fees	0.23	0.27	0.25	0.24	0.24	0.24	0.24	0.25
Enviro levy	1.79	1.74	1.69	1.69	1.69	1.69	1.69	1.69
Gross operating expenditure	**46.01**	**44.69**	**53.35**	**55.19**	**52.44**	**51.44**	**51.15**	**52.10**
Target BAU Opex			**42.30**	**42.53**	**42.77**	**43.00**	**43.24**	**43.47**
Variance from Target BAU Opex			**5.73**	**6.94**	**5.49**	**4.76**	**4.44**	**5.10**
Customers and Consumption								
Total customers ('000)	-	64.01	64.99	66.01	67.05	68.10	69.16	70.24
Growth relative to 2006-07	-	1.00	1.02	1.03	1.05	1.06	1.08	1.10

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 totals $26.73M 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 Coliban 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. The explanations of the variance involved are discussed in the following section.

Coliban Water has requested that consideration be given to using the average number of water sewerage customers, instead of the numbers of water customers alone, when estimating growth for purposes of calculating the Target BAU Opex. This is because the growth rates of sewerage and water customers may differ, and in some instances, such as with the development of sewer backlog schemes, this difference may be significant. Using this approach the Variance from Target BAU Opex may be estimated as shown in the **Table 6-3**, which also shows the comparison with the Variance from target BAU Opex produced in the table above.

Under this approach, 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 totals $26.55 M in aggregate – or only $0.18 M less than for the growth allowance based on water customers. That is there is no material difference.

- **Table 6-3: Estimate of Variance from target BAU Opex based on both water and sewerage customer numbers**

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
Target BAU Opex			**42.31**	**42.55**	**42.77**	**43.09**	**43.29**	**43.49**
Variance from Target BAU Opex			**5.72**	**6.92**	**5.49**	**4.67**	**4.39**	**5.08**
Customers and Consumption								
Total water customers ('000)	-	64.01	64.99	66.01	67.05	68.10	69.16	70.24
Total sewerage customers ('000)	-	55.89	56.78	57.68	58.56	59.71	60.53	61.37
Average number customers ('000)	-	59.95	60.88	61.85	62.80	63.90	64.85	65.81
Growth relative to 2006-07	-	1.00	1.02	1.03	1.05	1.07	1.08	1.10
Variance from Target BAU Opex								
Water customers only			5.734	6.936	5.491	4.757	4.442	5.098
Average of water and sewerage customers			5.723	6.924	5.488	4.674	4.394	5.083
Difference			**0.011**	**0.012**	**0.003**	**0.083**	**0.048**	**0.014**

Note: In most years the difference is very small with the greatest being approximately $80K and $50K in the years 2010/11 and 2011/12 respectively. Overall this difference influences the Variance from Target BAU Opex by approximately 0.7% overall (with greatest difference in any one year of 1.7% in 2010/11).

6.2 Explanation of the Variance

Coliban Water's Water Plan identifies six significant items driving the variance from target BAU Opex. These items are summarised and quantified in **Table 6-4**.

- **Table 6-4: "New" Costs or Explanation of the Variance from Target BAU Opex submitted by Coliban Water**

Expenditure in $ millions 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	%
Superpipe	0.00	5.94	7.07	4.40	3.59	3.21	3.23	21.49	59%
Epsom Spring Gully	0.00	2.01	2.04	2.04	2.04	2.04	2.04	10.20	28%
Recycling and Green Offsets	0.00	0.18	0.33	0.39	0.39	0.39	0.47	1.96	5%
Water treatment compliance	0.00	0.06	0.09	0.09	0.09	0.09	0.09	0.45	1%
Lagoon desludging	0.00	0.00	0.48	0.00	0.48	0.00	0.48	1.45	4%
Dams inundation and risk	0.00	0.15	0.00	0.49	0.00	0.00	0.00	0.49	1%
Electricity and DSE projects	0.00	0.18	0.30	0.01	0.02	0.03	0.03	0.39	1%
Total	**0.00**	**8.51**	**10.31**	**7.41**	**6.61**	**5.75**	**6.35**	**36.44**	100%
Variance from Target BAU Opex		**5.73**	**6.94**	**5.49**	**4.76**	**4.44**	**5.10**	**26.72**	
Difference (Total - Variance)			**3.38**	**1.92**	**1.85**	**1.31**	**1.25**	**9.71**	

The sum of the new/additional expenditures associated with the items put forward by Coliban Water as justifying the Variance from Target BAU Opex. (refer third last line in **Table 6-4**) is greater than the Variance from Target BAU Opex requiring justification (refer second last line in **Table 6-4**) for each year of the regulatory period. If fully justified this would provide a satisfactory explanation of and justify the Variance from Target BAU Opex.

The review team's assessment of the items and the associated expenditures put forward by Coliban Water is provided in the following sections.

6.2.1 Goldfields Superpipe

The new/additional operating expenditure put forward by Coliban Water for this new infrastructure totals $21.49 million over the regulatory period and accounts for nearly 60% of the explanation of the Variance from Target BAU Opex.

The Goldfields Superpipe was constructed to deliver up to 20,000 ML/year of water from the Waranga Channel, sourced from Lake Eildon, to supply Bendigo. This new supply augmentation comprises a pump station at Colbinabbin, and approximately 45km of pipeline delivering water into Lake Eppalock. Water may then be delivered from Lake Eppalock using previously existing infrastructure facilities including the booster pump station at Axe Creek. The Goldfields Superpipe became partially operational in September 2007, and full operation commenced at the end of 2007.

The operational expenditure for the Superpipe will comprise the following: elements:

- Electricity charges for pumping of water at Colbinabbin pump station;
- Electricity charges for delivering Goulburn River sourced water at Axe Creek pump station;
- Purchase costs of temporary water rights;
- Fixed and annual volumetric charges for permanent water rights;
- Operations and maintenance costs of the new Goldfields Superpipe infrastructure;
- Costs to offset greenhouse gas emissions.

A spreadsheet of the breakdown of these costs was provided by Coliban Water to the review team and this information is shown in summarised form in **Table 6-5**Error! Reference source not found.**.** Coliban Water made some adjustments to the estimates provided in the Water Plan and hence the original cost claimed (top line of **Table 6-5**) does not exactly match the total of the summarised breakdown.

- **Table 6-5: Expenditure breakdown for the Goldfields Superpipe**

Expenditure in $ millions real (1/1/07)		SECOND REG PERIOD					
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Superpipe - total cost claimed by Coliban Water	5.94	7.07	4.40	3.59	3.21	3.23	21.49
Breakdown							
Bulk Water Annual Fixed Charge	0.17	0.30	0.32	0.32	0.32	0.32	1.56
Bulk Water Annual Volume Charge	0.16	0.32	0.57	0.57	0.57	0.57	2.60
Power	1.78	2.12	1.89	1.92	1.94	1.96	9.83
Green Power Offsets	0.20	0.40	0.40	0.40	0.40	0.40	2.02
Operations and Maintenance - Fixed	0.08	0.08	0.08	0.08	0.08	0.08	0.39
Operations and Maintenance - Variable	0.16	0.31	0.31	0.31	0.31	0.31	1.55
Temporary Bulk Water	2.71	4.52	-	-	-	-	4.52
Total	**5.26**	**8.05**	**3.57**	**3.59**	**3.61**	**3.63**	**22.46**
Underlying assumptions							
Volume pumped (GL)	10	20	20	20	20	20	
Permanent water rights held (GL)	12	19	20	20	20	20	
GMW allocation (%)	50%	60%	100%	100%	100%	100%	
Permanent use scenario (GL)	6.0	11.4	20.0	20.0	20.0	20.0	
Temporary water entitlements purchased (GL)	4.0	8.6	-	-	-	-	
Cost of temporary water ($/ML) [1]	350	325	300	250	250	250	

Note 1: The volume of temporary water entitlements to be purchased is premised on temporary water rights being subject to similar allocations to the permanent water entitlements.

There are a number of assumptions underlying the cost estimate:

- 20,000 ML of water is assumed to be delivered each year throughout the second regulatory period. This quantity is underpinned by an assumed target of achieving at least 2 years supply in Coliban water's storages at the end of the regulatory period, predicated on continuance of low rainfall conditions. The review team considers this assumption to be appropriate and prudent.
- Permanent water rights may not be available for purchase immediately, and will be subject to reduced allocations. Following the Draft Report, Coliban Water indicated a more rapid rate of purchasing permanent water rights. The revised rate of such purchases is considered reasonable. The annual fixed charge assumed is $15/ML and volumetric charge is $27/ML and the review team recommends minor changes to the total annual costs to more accurately reflect these charge rates.
- Coliban Water proposes to purchase temporary rights to make up any difference between the water requirement (20,000 ML/year) and allocations obtained through permanent water rights purchased. The review team considers the costs put forward in this regard to be appropriate. A summary of the planned purchases of temporary water rights and associated costs as contained in Coliban Water's Water Plan and final recommendation of the review team is contained in **Table 6-6**.

Table 6-6: Purchase of temporary water rights

Item		SECOND REG PERIOD					
Expenditure in $ millions real (1/1/07)	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Original Water Plan Submission							
Volume purchased (ML)	11,000	13,000	5,000	2,000	-	-	20,000.00
Cost of temporary water ($/ML)	350	325	300	250	250	250	
Cost ($m real 01/01/2007)	3.85	4.23	1.50	0.50	-	-	6.23
Revised Submission							
Volume purchased (ML)	8,000	14,333	-	-	-	-	14,333.00
Cost of temporary water ($/ML)	350	325	300	250	250	250	
Cost ($m real 01/01/2007)	2.80	4.66	0.00	0.00	0.00	0.00	4.66
Review team recommendation							-
Volume purchased (ML)	4,000	8,600	-	-	-	-	8,600.00
Cost of temporary water ($/ML)	350	450	350	250	250	250	
Cost ($m real 01/01/2007)	1.40	3.87	-	-	-	-	3.87
Cost difference (Original to recommendation)	**(2.45)**	**(0.36)**	**(1.50)**	**(0.50)**	**-**	**-**	**(2.36)**

The key differences between Coliban Water's revised submission and the review team recommendation relate to the volume of purchases and average cost. Coliban Water incorrectly assumed that temporary water rights would be subject to the same volumetric reductions applicable to permanent rights according to the annual water allocations. The increase in costs of temporary water rights (from $325/ML to $450/ML) is based on recent market conditions which the review team expects to continue through 2008/09.

The accelerated pace of purchase of permanent water rights infers additional Opex costs associated with the Bulk Water Annual Fixed and Variable charges to be paid to Goulburn Murray Water for permanent water rights held. These costs amount to approximately $1.2M in Opex compared with the Water Plan.

- Operations and maintenance costs have been based on current costs being experienced at a similar sized pump station being operated by CAMS on behalf of Coliban Water. The review team considers the cost proposed to be reasonable.
- Energy costs have been estimated based on consumption of peak and off-peak energy, network and demand charges, and a loss correction factor. The review team has confirmed that the consumption rates and charges used correspond to the agreement that has been recently negotiated with its supplier. The contract is applicable until the end of 2010/11 and the review team recommends that costs thereafter remain constant in real terms (see **Section 3.2.1**).
- The greenhouse gas emissions attributable to energy consumption (32,220 tonnes/year) should be offset using a combination of 20% GreenPower energy and 80% carbon offsets. The costs of Greenpower purchases and carbon offsets are based on the most favourable quotation received from suppliers. The forecast cost of GreenPower equates to $26,523 per kilogram of CO_2, and cost of carbon offsets is $12,890 per kilogram of CO_2. In aggregate the total cost is considered reasonable (see **Section 3.2.2**). Following the Draft Report Coliban Water has also included the costs for purchases of carbon offsets (which had previously been omitted) – this is considered reasonable. These costs amount to approximately $1.2M over the regulatory period which are additional to the Opex costs in the Water Plan.

In summary the costs considered as forming part of the explanation of the Variance to Target BAU Opex are shown in **Table 6-7.**

- **Table 6-7: Operational expenditure for the Goldfields Superpipe recommended to form part of the explanation of variance to Target BAU Opex**

Expenditure in $ millions real (1/1/07)		SECOND REG PERIOD					
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Superpipe - total cost claimed by Coliban Water	5.94	7.07	4.40	3.59	3.21	3.23	21.49
Breakdown							
Bulk Water Annual Fixed Charge	0.18	0.29	0.30	0.30	0.30	0.30	1.49
Bulk Water Annual Volume Charge	0.14	0.32	0.54	0.54	0.54	0.54	2.48
Power	1.78	2.12	1.89	1.92	1.92	1.92	9.77
Green Power Offsets	0.20	0.40	0.40	0.40	0.40	0.40	2.02
Operations and Maintenance - Fixed	0.08	0.08	0.08	0.08	0.08	0.08	0.39
Operations and Maintenance - Variable	0.16	0.31	0.31	0.31	0.31	0.31	1.55
Temporary Bulk Water	1.40	3.87	-	-	-	-	3.87
Total	**3.92**	**7.39**	**3.53**	**3.55**	**3.55**	**3.55**	**21.57**
Underlying assumptions							
Volume pumped (GL)	10	20	20	20	20	20	
Permanent water rights held (GL)	12	19	20	20	20	20	
GMW allocation (%)	50%	60%	100%	100%	100%	100%	
Permanent use scenario (GL)	6.0	11.4	20.0	20.0	20.0	20.0	
Temporary water entitlements purchased (GL)	4.0	8.6	-	-	-	-	
Cost of temporary water ($/ML) [1]	350	450	350	250	250	250	

6.2.2 Epsom Spring Gully Recycling Scheme

The aggregate operating expenditure put forward by Coliban Water for the Epsom Spring Gully Recycling Scheme is $10.2 million over the regulatory period and accounts for nearly 30% of the claimed explanation of the Variance from Target BAU Opex.

The Epsom Spring Gully Recycling Scheme is being implemented to provide up to 4,000 ML/year of potable water substitution into the Coliban Rural Channel System for irrigation of parks, school grounds and the botanical gardens. The scheme comprises three main elements - an advanced treatment facility to provide Class A water using effluent from the Bendigo Water Reclamation Plant, and a pipeline to deliver the recycled water to Spring Gully Reservoir. The third element is the reverse osmosis facility to be used to purify water sourced from mine dewatering which is to be fed into the delivery pipeline.

The pipeline and Class A treatment plant are both already operational and the reverse osmosis plant and associated brine lagoons are expected to become operational in March 2008.

Coliban Water submitted a detailed breakdown of the forecast operating costs following the Draft Report. The costs submitted were in nominal terms and included an assumed 2.5% per annum inflation. These costs were revised to convert them to real 2006/07 $ and are summarised in **Table 6-8**

Table 6-8: Operational Expenditure for the Epsom Spring Gully Recycling Scheme

Expenditure in $ 000 real (1/1/07)		SECOND REG PERIOD					
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Epsom Spring Gully - total cost claimed by Coliban Water	**2,013**	**2,039**	**2,039**	**2,039**	**2,039**	**2,039**	**10,196**
Breakdown							
Power	417	479	542	604	666	729	**3,020**
Labour (Operations)	210	210	210	210	210	210	**1,050**
Labour (Maintenance)	25	25	25	25	25	25	**125**
Switchboard (Service Contract)	4	4	4	4	4	4	**20**
Sodium hypochlorite and metabisulfite supply	157	157	157	157	157	157	**785**
Replacement UV lamps	72	72	72	72	72	72	**360**
Replacement UV ballasts	8	8	8	8	8	8	**38**
Service contract with UV Vendor	5	5	5	5	5	5	**25**
Analysers (annual service)	4	4	4	4	4	4	**20**
Turbility meters (annual service)	2	2	2	2	2	2	**10**
(Fuel, oil, tools, spare parts…)	12	12	12	12	12	12	**60**
Maintenance of valves	10	10	10	10	10	10	**50**
Maintenance of pipeline	6	6	6	6	6	6	**30**
SCADA	2	2	2	2	2	2	**10**
Chemicals	173	173	173	173	173	173	**865**
Salt Removal	-	-	-	-	-	272	**272**
Service Agreement with membrane supplier	70	70	70	70	70	70	**350**
Total	**1,176**	**1,239**	**1,301**	**1,363**	**1,426**	**1,760**	**7,089**

The review team has assessed these revised costs and considers them reasonable and to contribute to the justification of the explanation of the variance to target BAU Opex. The power costs shown above are inclusive of Green power offsets and have been evaluated to ensure that the tariffs assumed are realistic and that no real increases in price of electricity has been assumed after 2010/11.

The recommended change in forecast expenditure shown in **Table 6-11** matches the change submitted by Coliban Water in the further discussions following the Draft Report.

6.2.3 Recycling and Green Offsets ($1.96 million)

The review team understands that the recycling and green offsets comprise two items:

- an allowance of $50K p.a. for the purchase of carbon offsets (total of $0.25M for the regulatory period) and that this comprises the entire allowance for this issue, in addition to purchases to offset the operational aspects of the Superpipe.
- Recycling costs of $1.71M over the regulatory period.

This former expenditure is considered prudent, reasonable and justifiable component of the Variance from Target BAU Opex.

The recycling costs are comprised of $87K / year for a recycling water officer who commenced work in September 2007 and the remainder provides for the operating costs of the Harcourt Valley recycling scheme. As this scheme is now planned for completion in the third regulatory period the costs involved will be similarly deferred.

The recommended costs to be provided are shown in **Table 6-9.**

- **Table 6-9: Recycling and Green Offsets**

Expenditure in $ 000 real (1/1/07)	SECOND REG PERIOD					SECOND REG PERIOD
	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Recycling and green offsets						
Green offsets	50	50	50	50	50	250
Recycling officer	88	89	90	91	93	452
Harcourt Vallley Recycling Scheme	-	-	-	-	-	-
Total	138	139	140	141	143	702

6.2.4 Water treatment compliance

This item covers the operating and maintenance costs of new facilities provided under the Water Quality Improvement Program. The annual costs were estimated by operating staff and totalled approximately $150K p.a. This estimated cost for inclusion in the Water Plan was reduced to $90K per annum to allow for productivity improvements provided by the new equipment to be employed by CAMS, and other factors.

The review team considers that this expenditure is reasonable, prudent and justifiable for inclusion in explaining the Variance from Target BAU Opex.

6.2.5 Lagoon desludging.

Coliban Water is in the process of developing a Biosolids Management Strategy, including its approach to lagoon desludging, and a draft strategy is available.

The operating expenditure proposed is $480K every second year commencing in 2008/09. The review team has confirmed that there was no such expenditure in the base year (or 2007/08) and therefore that the expenditure put forward by Coliban Water is all additional expenditure relative to the base year.

The review team's view is that the costs for desludging appear necessary, reasonable and appropriate and the quantum is consistent with similar expenditure for other water authorities on a comparable unit mass removal cost basis. This expenditure would form part of the explanation of the Variance from Target BAU Opex.

6.2.6 Dams' inundation and risk

The forecast operating expenditure on dam inundation risk covers:

- Consulting services to reassess dam risks in accordance with ANCOLD guidelines and obligations in the Statement of Obligations. This risk assessment is required every ten years and was last undertaken in 1998; and
- A survey to quantify extent of area at risk from potential dam-break failure.

The expenditure proposed is $490K in 2009/10. The review team's view is that such expenditure is necessary, appropriate and reasonable and to form part of the explanation of the Variance from Target BAU Opex.

6.2.7 Electricity and DSE cost

The costs claimed are relatively minor being $390K in aggregate over the regulatory period, with $300K of this in 2008/09. This is consistent with the scope of energy cost increases discussed in **Section** Error! Reference source not found. both in quantum and timing of this expenditure.

On this basis, the review team's view is that this expenditure is necessary, appropriate and reasonable and forms part of the explanation of the Variance from Target BAU Opex.

6.2.8 Summary

The review team's final view of items contributing to the justifiable explanation of the Variance from Target BAU Opex is summarised in **Table 6-10**.

- **Table 6-10: Final View of Items Contributing to the Explanation of the Variance from Target BAU Opex**

Expenditure in $ millions real (1/1/07)	SECOND REG PERIOD					
	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Superpipe	7.39	3.53	3.55	3.55	3.55	21.57
Epsom Spring Gully	1.24	1.30	1.36	1.43	1.76	7.09
Recycling and Green Offsets	0.14	0.14	0.14	0.14	0.14	0.70
Water treatment compliance	0.09	0.09	0.09	0.09	0.09	0.45
Lagoon desludging	0.48	0.00	0.48	0.00	0.48	1.45
Dams inundation and risk	0.00	0.49	0.00	0.00	0.00	0.49
Electricity and DSE projects	0.00	0.00	0.04	0.10	0.03	0.17
Total	**9.34**	**5.55**	**5.67**	**5.31**	**6.06**	**31.93**
Variance from Target BAU Opex	**6.94**	**5.49**	**4.76**	**4.44**	**5.10**	**26.72**
Difference (Total - Variance)	**2.40**	**0.06**	**0.91**	**0.87**	**0.96**	**5.20**

As highlighted in the final row of **Table 6-10**, the review team's view of the aggregate increase in operating expenditure that is justifiable as contributing to the Variance from Target BAU Opex exceeds the Variance from Target BAU Opex in each year during the regulatory period (for all the items identified by Coliban Water). This indicates that (after allowing for growth) productivity improvements exceeding 1% per annum relative to the 2006/07 base year are expected in each year of the regulatory period.

6.3 Recommendations

The review team's final recommendations on the adjustments to Coliban Water's operational expenditure forecasts for regulatory purposes are that:

- the allowance for the new operational costs associated with the Superpipe (excluding the adjustments in respect of temporary water rights which are listed separately) be increased as discussed in **Section 6.2.1** reflecting additional costs for Bulk Water Annual Fixed and Variable charges and costs associated with carbon offsets previously omitted from the Water Plan**;**
- the allowance for the operating costs for the Epsom Spring Gully Recycling Scheme be reduced in accordance with the updated information supplied to the review team by Coliban Water following the Draft Report;
- the allowance for recycling (which have been included under "green energy and recycling") be reduced as discussed in **Section 6.2.3**, as the Harcourt Valley recycling scheme is not expected to become operational during the second regulatory period;

- an adjustment be made for real energy cost increases as the review team sees no grounds for expecting further real increases in the final two years of the second regulatory period. This is discussed in **Sections** Error! Reference source not found.; and
- a decrease of the allowance for purchase of temporary water rights for the Goldfields Superpipe.

The review team notes that no further adjustments are necessary to achieve the Target BAU opex and productivity improvement of 1% per annum.

Table 6-11 lists the final recommendations on adjustments to be made to the operating expenditure forecasts and illustrates the impact of the recommendations.

- **Table 6-11: Outline of Recommended Changes to Coliban Water's Regulatory Operational Expenditure for Regulatory Purposes**

Change Item	Item/Description		$M				
			2008-09	2009-10	2010-11	2011-12	2012-13
1	Goldfields Superpipe *(excluding temporary water rights)*	Original Water Plan Forecast:	2.84	2.90	3.09	3.21	3.23
		Recommended Revised Forecast:	3.52	3.53	3.55	3.55	3.55
		Recommended Net Change:	0.68	0.63	0.46	0.34	0.32
2	Epsom Spring Gully Recycling Scheme	Original Water Plan Forecast:	2.04	2.04	2.04	2.04	2.04
		Recommended Revised Forecast:	1.24	1.30	1.36	1.43	1.76
		Recommended Net Change:	-0.80	-0.74	-0.68	-0.61	-0.28
3	Green offsets and recycling	Original Water Plan Forecast:	0.33	0.39	0.39	0.39	0.47
		Recommended Revised Forecast:	0.14	0.14	0.14	0.14	0.14
		Recommended Net Change:	-0.19	-0.25	-0.25	-0.25	-0.33
4	Electricity - adjustment to allowance for real cost increases *[excluding Superpipe and Epsom Spring Gully]*	Original Water Plan Forecast:					
		Recommended Revised Forecast:	-0.37	-0.10	0.02	0.05	0.07
		Recommended Net Change:	-0.37	-0.10	0.02	0.05	0.07
5	Temporary Water Rights *(for Goldfields Superpipe)*	Original Water Plan Forecast:	4.23	1.50	0.50	0.00	0.00
		Recommended Revised Forecast:	3.87	0.00	0.00	0.00	0.00
		Recommended Net Change:	-0.36	-1.50	-0.50		
Total Recommended Net Change:			$ (1.04)	$ (1.96)	$ (0.95)	$ (0.48)	$ (0.22)
Original Water Plan Total Regulatory Opex:			$ 55.19	$ 52.44	$ 51.44	$ 51.15	$ 52.10
Recommended Revised Total Regulatory Opex:			**$ 54.15**	**$ 50.48**	**$ 50.49**	**$ 50.67**	**$ 51.88**

References

1) Environmental Protection Agency, 2006, Principles to Establish EPA Environmental Obligations for Water Businesses for the 2008-2013 Pricing determination, EPA Publication 1069, November 2006.
2) Coliban Water, 2007a, Goldfields Superpipe: Community Update
3) Coliban Water, 2007b, Water Plan, 8 October 2007
4) Coliban Water, "Water Plan 2055", November 2006, (public version of Coliban Water's Water Supply Demand Strategy)
5) Sinclair Knight Merz, 2003, Echuca Sewerage Scheme Augmentation Strategy: Strategy Report, August 2003
6) Sinclair Knight Merz, 2004, Expenditure Forecast Review for the Victorian Regional Urban Water Businesses: Final Report – Recommendations on Expenditure Forecasts, 13 December 2004
7) 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.

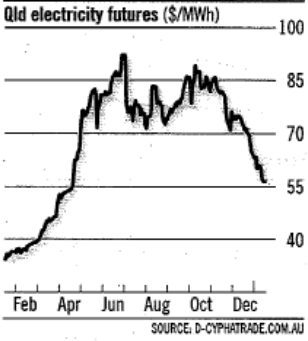
Origin and AGL are both working to increase the proportion of their electricity sales that they generate themselves. Origin is spending $1.3 billion to build a 630 megawatt power station near Dalby, fuelled by gas from its coal-seam methane fields.

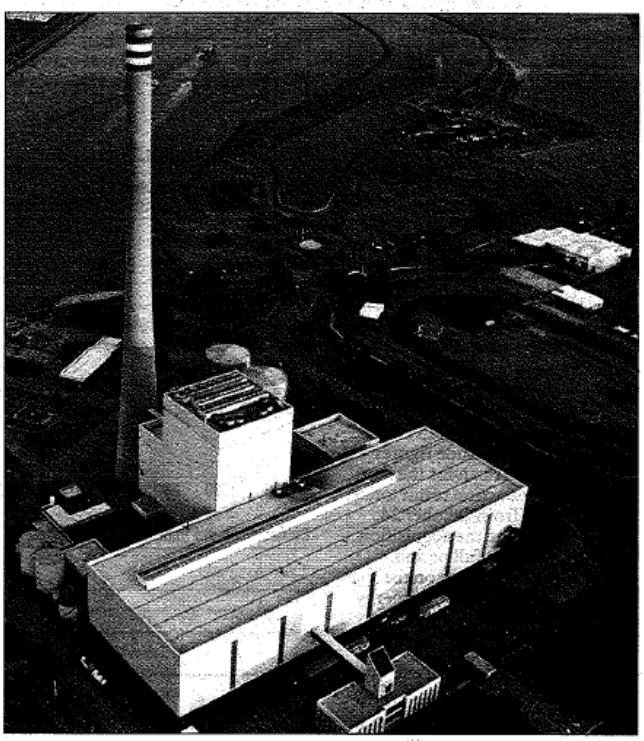
And AGL has locked in electricity supply from a power plant that Queensland Gas is building on its coal-seam methane fields.

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